

UNITED STATES DEPARTMENT OF THE INTERIOR
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

Draft Guidance Regarding the
Use of a Project Design Envelope in a Construction and Operations Plan

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Introduction

Before a lessee may build an offshore wind energy facility on their commercial wind lease, they must submit a Construction and Operations Plan (COP) for review and approval by the Bureau of Ocean Energy Management (BOEM) (*see* 30 CFR 585.620(C)). Pursuant to 30 CFR 585.626, the COP must include a description of all planned facilities, including onshore and support facilities, as well as anticipated project easement needs for the project. It must also describe the activities related to the project including construction, commercial operations, maintenance, decommissioning, and site clearance procedures. There are benefits to allowing lessees to describe a reasonable range of project designs in a COP, because of the project complexity, the unpredictability of the environment in which it will be constructed, and/or the rapid pace of technological development within the industry. In the renewable energy industry, a permit application or plan that describes a reasonable range of project designs is referred to as taking a Project Design Envelope (PDE) approach.

BOEM has decided that it will give offshore renewable energy lessees the option to use a PDE approach when submitting a COP. This draft guidance outlines the use of a PDE approach in a COP. This PDE approach is an entirely voluntary option.

The information presented with the COP, including the PDE, will assist BOEM in complying with the National Environmental Policy Act (NEPA) and other relevant laws, which will still include multiple opportunities for public involvement throughout the environmental review process. Once BOEM deems the COP complete and sufficient, the COP will be made available to the public via BOEM's website. Adoption of a PDE will allow the public access to all reasonable project parameters earlier in the development process.

A PDE approach is a permitting approach that allows a project proponent the option to submit a reasonable range of design parameters within its permit application, allows a permitting agency to then analyze the maximum impacts that could occur from the range of design parameters, and may result in the approval of a project that is constructed within that range. Through this draft guidance document, BOEM hereby communicates its support of, and preliminary recommendations for the voluntary use of the PDE approach in the submission and review of COPs for offshore wind energy facilities in the United States (U.S.). This draft guidance is also proposed pursuant to BOEM's commitment in its September 2016 *National Offshore Wind Strategy*¹ to evaluate a design envelope approach for the environmental review of COPs (*see*

¹ U.S. Department of Energy (DOE) and U.S. Department of the Interior (DOI). 2016. National Offshore Wind Strategy. Available at: <https://www.boem.gov/National-Offshore-Wind-Strategy/>.

Action 2.1.3 in DOE and DOI, 2016). While this guidance document is specifically drafted in the context of offshore wind energy projects, the use of the PDE approach may be applicable to other offshore renewable energy technologies, such as marine hydrokinetic projects.

The PDE approach is a standard approach used in the United Kingdom (U.K.) and other European countries for permitting offshore wind energy development.² In those countries, the PDE approach allows offshore wind project proponents to identify in their permit application a reasonable range of potential project design parameters for certain key components of a development, including: type and number of turbines; foundation type; location of the export cable route; location of an onshore substation; location of the grid connection point; and construction methods and timing.³ The permitting agency then uses the PDE approach to assess potential impacts on key resources (e.g., marine mammals, fish, benthic habitats, commercial fisheries), focusing on the design parameters that represent the greatest potential impact to each resource—referred to in this guidance document as the “maximum design scenario.” If the permitting agency approves a permit that used a PDE approach and the project proponent’s final design does not stay within the approved range of design parameters in the permit, the permitting agency conducts further review before allowing construction to commence. The PDE approach is also a mechanism through which phased development may be presented, interpreted, and assessed.

BOEM has extensively analyzed other countries’ use of the PDE approach for offshore wind projects, and believes that giving its lessees a voluntary option to submit a COP that uses a PDE approach will allow them appropriate flexibility to accommodate final design decisions in later stages of the process (e.g., micro-siting to optimize generation efficiency and address site constraints). Given the focus on flexibility, BOEM views this guidance document as a framework for developers to use and does not intend to develop more detailed guidelines at this time. It should also be noted that BOEM does not intend to require the use of the PDE approach, as it may not be appropriate for all projects.

Regulatory Background

BOEM believes that the Outer Continental Shelf Lands Act (OCSLA) and its implementing regulations allow a lessee to submit a reasonable range of design parameters within a COP, and for BOEM to approve a COP containing such a range of designs. OCSLA authorizes BOEM to grant leases, easements, and rights-of-way for activities that produce or support production, transportation, or transmission of energy from sources other than oil and gas, and the process by

² Originally, this concept was commonly referred to as the “Rochdale Envelope” after a U.K. planning law case (In fact two cases: *R. v Rochdale MBC ex parte Milne* (No. 1) and *R. v Rochdale MBC ex parte Tew* [1999] and *R. v Rochdale MBC ex parte Milne* (No. 2) [2000], see Shearer, 2013; Gudiña, 2014), which involved a retail complex in the city of Rochdale, northern England. It has since become the standard approach in the U.K. offshore renewables industry (offshore wind, wave and tidal energy developments) to describe project parameters and undertake “maximum design scenario” or “worst-case scenario” assessments of environmental impact against project parameters. This guidance document uses the term “maximum design scenario” as the “worst case analysis” was withdrawn from the CEQ’s NEPA implementing regulations in 1986.

³ Infrastructure Planning Commission (IPC). 2011. Using the ‘Rochdale Envelope’. Advice note nine: Rochdale Envelope. Available at: <https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2011/02/Advice-note-9.-Rochdale-envelope-web.pdf>.

which such activities may be approved is described in departmental regulations.⁴ Under BOEM’s offshore renewable energy regulations, a lessee must submit a COP for BOEM’s review and approval prior to the construction of a wind energy facility.⁵ The COP must include a description of all planned facilities, including onshore and support facilities, as well as anticipated project easement needs for the project.⁶ The COP must also describe the activities related to the project, including construction, commercial operations, maintenance, and conceptual decommissioning and site clearance procedures.⁷ Additionally, the COP must include the results of all environmental and geological surveys required to define the site conditions.⁸

A lessee must submit detailed information with its COP that describes resources, conditions, and activities that could be affected by the proposed project.⁹ BOEM reviews the COP to determine if the information provided is complete and sufficient to conduct environmental and technical reviews and consultations.¹⁰ A lessee’s COP provides the basis for BOEM’s analysis of the environmental and socioeconomic effects and operational integrity of a lessee’s proposed construction, operation, and decommissioning activities.¹¹ This information assists BOEM in complying with statutory obligations under NEPA and other environmental statutes, including the Endangered Species Act (16 U.S.C. §§ 1531-1544), Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§ 1801-1884), and National Historic Preservation Act (54 U.S.C. §§ 300101 - 306122). After BOEM conducts its environmental and technical reviews of a lessee’s COP, it decides whether to approve, approve with modification, or disapprove the COP.¹² BOEM has concluded that the project-specific information in a COP may be submitted in the form of a PDE, and that BOEM may approve a COP using a PDE approach, so long as the PDE description provides sufficient detail to allow BOEM to analyze its environmental impacts and conduct required consultations consistent with the requirements of NEPA and other relevant environmental statutes.

Investigation of Design Envelope Approaches

As part of its commitment to Action 2.1.3 of the *National Offshore Wind Strategy*, BOEM conducted an in-depth investigation of possible design envelope approaches for the United States by engaging in discussions with other Federal agencies, current U.S. lessees, European developers, and BOEM’s European regulatory counterparts, for whom the design envelope is commonplace. BOEM’s investigation has informed this draft guidance.

First, BOEM completed a one-year study on August 3, 2017, “Phased Approaches to Offshore Wind Developments and Use of the Project Design Envelope,” through which BOEM contracted with RPS Group (RPS) to analyze potential approaches to the process and preparation of the

⁴ See 43 U.S.C. § 1337(p)(1)(C).

⁵ See 30 CFR 585.620(c).

⁶ See 30 CFR 585.620(b); 626(b).

⁷ See 30 CFR 585.620(a) and (b); 626(b).

⁸ See 30 CFR 585.626(a).

⁹ See 30 CFR 585.627(a).

¹⁰ See 30 CFR 585.628(a).

¹¹ See 30 CFR 585.628(a), (b).

¹² See 30 CFR 585.628(f).

design envelope for phased offshore wind development in the U.S.¹³ As part of the study, RPS developed a hypothetical PDE based on consultation with stakeholders in the U.K. (Dong Energy U.K.; MeyGen Limited, and Marine Scotland) and by reviewing the most recent projects in the U.K., including projects that have been awarded consent, those still in determination, and one project still at an earlier stage. Using publicly available information, such as environmental statements and scoping reports, RPS examined the common parameters included in each PDE and the range of values that were typically included in each parameter. RPS also used publicly available information from the U.S., including developer websites and a technical report from the National Renewable Energy Laboratory,¹⁴ to verify the feasibility of the U.K. data for U.S. projects. Furthermore, RPS invited BOEM's lessees to review and further refine the parameters in RPS's hypothetical PDE, and provide comments based on their knowledge of the industry and their own projects. BOEM published the final results of the study on BOEM's website in August 2017. BOEM included key findings and recommendations from the completed study by RPS in this draft guidance document. The final report is available on BOEM's website at <https://www.boem.gov/Phased-Approaches-to-Offshore-Wind-Developments-and-Use-of-Project-Design-Envelope/>.

In addition to the completed study, BOEM has and will continue to investigate European policies, guidelines, and other documents related to the review and approval of offshore wind energy facilities, including the use of the PDE. This research includes conversations with our European counterparts. For example, in June 2016, BOEM held a knowledge exchange webinar with representatives of the U.K.'s Department of Energy and Climate Change and The Crown Estate regarding their use of the PDE and challenges they have identified. BOEM also gathered information via video conference with representatives of the Danish Energy Agency (DEA) in April 2017 regarding DEA's use of a PDE, and held a wider-ranging in-person knowledge exchange with DEA in Washington, D.C., in June 2017.

Preliminary Project Design Envelope Approach for the U.S.

BOEM is providing lessees with the option to submit COPs that use a PDE approach that would allow: a lessee to describe its project, the lessee to provide detailed information within a reasonable range of parameters, and BOEM to analyze the most significant, reasonably foreseeable impacts within those parameters. This approach would provide lessees a certain level of flexibility throughout the project development process. At the same time, it would also allow BOEM to analyze the environmental impacts of the proposed project in a manner that could reduce or eliminate the need for subsequent environmental and technical reviews. In addition, because a lessee could submit its COP before all of its design decisions have been

¹³ RPS. 2017. Phased Approaches to Offshore Wind Developments and Use of Project Design Envelope. U.S. Department of the Interior, Bureau of Ocean Energy Management, Sterling, VA. OCS Study. Available at: <https://www.boem.gov/Phased-Approaches-to-Offshore-Wind-Developments-and-Use-of-Project-Design-Envelope/>.

¹⁴ National Renewable Energy Laboratory (NREL). 2015. 2014–2015 Offshore Wind Technologies Market Report. Technical Report NREL/TP-5000-64283, September 2015. Available at: <https://energy.gov/sites/prod/files/2015/09/f26/2014-2015-offshore-wind-technologies-market-report-FINAL.pdf>.

finalized, BOEM could begin its NEPA evaluation of the project proposal earlier in the development process.¹⁵

COP Submittal

Lessees choosing to submit a COP using a PDE approach should describe the reasonable range of project designs in detail in each relevant section of their COP (e.g., the foundation envelope; the turbine envelope). An indicative schedule/construction program should outline the periods over which key elements of the development will take place (e.g., when pile installation occurs; when the export cable is installed). In addition to identifying the highest-impact parameters by physical, biological, and socioeconomic resource, the lessee's COP should also discuss potential variances in impacts among parameters (e.g., similarity in magnitude and effects).

BOEM Analysis

BOEM will assess the impacts of the reasonable range of project designs that are described in a COP that uses a PDE approach by using a "maximum design scenario" process that analyzes the aspects of each design parameter that will cause the greatest impact for each physical, biological, and socioeconomic resource. Using a "maximum design scenario," BOEM will consider the parameters (or combination of parameters) that represent the greatest effect for an individual impact for each environmental resource. BOEM will consider the interrelationship between aspects of the PDE, rather than simply viewing each design parameter independently. BOEM will also analyze the cumulative impacts of the "maximum design scenario" alongside other reasonably foreseeable past, present, and future actions.¹⁶

Note that there could be multiple "maximum design scenarios" for certain resources. For example, the size of turbines would affect the density of turbines in the wind facility and the distance those turbines are visible from shore. Accordingly, there could be two different "maximum design scenarios" for visual impacts of the project. A larger turbine would be more visible from a greater distance; therefore, the larger turbines present the "maximum design scenario" in that respect. However, because of the greater turbine density required for smaller turbines, more turbines could be visible from shore, presenting a different kind of "maximum design scenario." Therefore, it may be necessary for a lessee to prepare a visual assessment for each end of its range of potential turbine sizes.

If a lessee's COP is approved or approved with modifications, the lessee must submit a Facility Design Report (FDR) and a Fabrication and Installation Report (FIR) for BOEM's review pursuant to 30 CFR 585.700-702, prior to fabricating and installing those proposed facilities. In situations where a lessee's FIR and/or FDR describe a project that deviates substantially from the range of parameters outlined in the PDE of a lessee's approved COP, if necessary, BOEM may require a revision to a lessee's COP and may initiate additional NEPA review and other environmental consultations.¹⁷

¹⁵ See 40 CFR §1501.1(a), §1501.2, and §1502.5 and CEQ's memorandum *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations* (1981).

¹⁶ See 40 CFR 1508.7.

¹⁷ See 30 CFR 585.634.

Additional Considerations

- **Timing of PDE development.** BOEM recommends that a lessee who chooses to submit a COP using the PDE approach consult with BOEM, other permitting and consulting agencies, and relevant stakeholders regarding its PDE well in advance of COP submittal. Early consultation will allow BOEM to provide comments on the size and scope of the PDE, and is particularly important because the use of a PDE may add complexity to BOEM's environmental review and consultation processes. The more information on the PDE that BOEM has prior to COP submittal, the earlier BOEM can begin the NEPA scoping process and initiate its consultation processes, including engaging stakeholders.
- **Size of the PDE.** It is also important for lessees who choose to submit a COP using a PDE approach to develop a reasonable and realistic range of values for each parameter within the PDE. An overly broad PDE could lengthen a project's review and approval timeline, complicate BOEM's environmental review, and potentially result in overestimation of project impacts (including cumulative impacts).¹⁸ Conversely, an overly narrow PDE could defeat the purpose of a PDE by requiring subsequent revisions to the COP and additional environmental review in the event that the final project design varies substantially from the approved PDE.
- **Scope of the PDE.** Because BOEM's environmental review will also consider connected activities outside of the lease or project area, when the lessee chooses to submit a PDE, it is best for the lessee's PDE to also address parameters associated with onshore and coastal activities. For instance, if the lessee has not yet determined the location of its construction staging area or service base for operations and maintenance, it can describe the candidate ports and potential modifications required for each port.¹⁹ The lessee could also identify multiple details regarding its proposed export cable, including all potential installation methods, alternate routes, and landfall locations.
- **PDE and Phased Development.** Pursuant to 30 CFR 585.629, a leaseholder or an applicant may include in its COP a request to develop its commercial lease in phases. Developers may use a PDE to describe later development phases of their project, since those parameters will be less certain. A lessee's COP may present a PDE that includes a high-level construction plan demonstrating the different phases of development. This would help ensure that phasing of the development can be fully interpreted by BOEM and the implications fully understood. Each time a lessee is ready to proceed with development of an additional phase of its commercial lease area, the lessee must submit a revision to its COP that includes previously unspecified details for BOEM's review and approval.²⁰ The extent to which any required revisions to the COP fall within the original PDE assessed by BOEM will determine the level of additional NEPA review necessary for BOEM's approval of the revisions.

¹⁸ Federal agencies, such as BOEM, must analyze the cumulative impact of a proposed project, which is the impact on the environment resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-federal) or person undertakes such other actions (see 40 CFR 1508.7).

¹⁹ Examples of port modifications can be found in the following BOEM-funded studies:

<https://www.boem.gov/ESPIS/5/5508.pdf> and <http://www.data.boem.gov/PI/PDFImages/ESPIS/5/5503.pdf>.

²⁰ See 30 CFR 585.634 and Section 4 Phased Development of *Guidelines for Information Requirements for a Renewable Energy Construction and Operations Plan (COP)* at <https://www.boem.gov/COP-Guidelines/>.

- **PDE and COP Survey Requirements.** BOEM acknowledges the concerns of lessees regarding the timing of their geophysical and/or geotechnical surveys when using a PDE. Conducting these surveys prior to finalizing the project layout could result in unnecessary costs for a lessee. As the results of these surveys are required to be submitted with a COP, a lessee should discuss its options with BOEM, which may include submitting for BOEM's consideration a request for BOEM to issue a case-specific departure from its regulations (e.g., to allow developers to submit enough geophysical and/or geotechnical survey information for BOEM to perform its environmental analysis, but allow final submittal of more granular geophysical and/or geotechnical information once final location of the wind energy turbines has been determined).²¹

Submission of Comments

Before finalizing this guidance document, BOEM welcomes input from all stakeholders. BOEM intends to issue final guidance on its website later this year, while making subsequent revisions as we gain additional experience. Comments and questions about this guidance document should be directed to Algene Byrum at algene.byrum@boem.gov. In addition, on January 31, 2018, BOEM will be hosting a webinar to solicit comments and questions. Details can be found at: <https://www.boem.gov/BOEM-Stakeholder-Engagement/>.

²¹ See 30 CFR 585.103.