Department of Energy

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Bonneville Power Administration Comments
Oregon Department of Energy Floating Offshore Wind Study HB 3375
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The Bonneville Power Administration (BPA) appreciates the opportunity to comment on the Oregon Department of Energy's (ODOE) prompting questions its HB 3375 (2021) Floating Offshore Wind Study.

About BPA

Bonneville is a nonprofit federal power marketing administration based in the Pacific Northwest. Although BPA is part of the U.S. Department of Energy, it is self-funding and covers its cost by selling its products and services. BPA operates and maintains about three-fourths of the high-voltage transmission in its service territory across Idaho, Oregon, Washington, western Montana, and small parts of eastern Montana, California, Nevada, Utah, and Wyoming. BPA also markets wholesale electrical power from 31 federal hydroelectric projects in the Northwest, one nonfederal nuclear plant and several small nonfederal power plants.

BPA Comments

As a transmission service provider most of the prompting questions are outside of BPA's area expertise. Rather than responding to specific questions, BPA has responded to some of the general themes raised in the transmission section of the prompting questions and provided additional resources that we believe might be helpful to complete ODOE's study.

General Responses to Questions 25, 26, 27

The amount of offshore wind that could be integrated on the Oregon Coast is not yet known. The two gigawatt (GW) offshore wind estimate from the National Renewable Energy Lab 2021 study[1] should be viewed as a preliminary placeholder for the purposes of exploratory analysis. Development of more comprehensive transmission studies, such as a generation interconnection study or transmission service request, will provide greater clarity on the amount of offshore wind that can be integrated without significant terrestrial transmission upgrades. The transmission network on the Oregon Coast was designed for local deliveries to meet load service, and comprehensive transmission planning studies need to be performed for determining (a) the amount of offshore resources that can be interconnected using the existing system, and (b) what transmission system reinforcements are needed for integrating large offshore resources and exporting that power to major load centers east of the cascade range.

[1] Novacheck, Josh, Marty Schwarz. 2021. Evaluating the Grid Impact of Oregon Offshore Wind. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A40-81244. https://www.nrel.gov/docs/fy22osti/81244.pdf.

While integrating some amount of offshore wind distributed along the Oregon coast could be beneficial for local load service in meeting some of the existing demand, large scale integration requires more extensive planning.

Transmission planning studies are performed according to the North American Electric Reliability Corporation's (NERC) TPL-001-4 Reliability Standard https://www.nerc.com/files/TPL-001-4.pdf. The standard requires development of study cases that represent expected system conditions during various operating seasons and on a 10 year horizon. The standard then prescribes contingencies and expected minimum performance criteria. Where results do not meet performance criteria, transmission reinforcements developed to mitigate those system deficiencies. Feasibility of the proposed transmission reinforcements are assessed next to develop a final plan of service and associated cost estimates.

For generation interconnection studies, base cases are modified to include the proposed generation interconnection project as well as other generation interconnection projects higher in BPA's interconnection queue. Those studies, using performance requirements identified in NERC TPL-001-4 and BPA's Technical Requirements for Interconnection to the BPA Transmission Grid, would identify what the requirements are for interconnecting the requested project to BPA's transmission system. As a separate effort, transmission service studies are required to determine what transmission system reinforcements would be required to transmit power from the designated Point of Receipt (POR) to a designated Point of Delivery (POD). Once the studies are completed, BPA will need to conduct environmental review process for the plan of service and determine the subsequent cost of the identified plan of service.

Additional Resources

The California Independent System Operator (CAISO) recently published their 20-year transmission outlook http://www.caiso.com/InitiativeDocuments/Draft20-YearTransmissionOutlook.pdf.

The CAISO outlook assessed interconnection of four GWs of offshore wind from the Northern California coast. Pages 32 to 34 describe transmission reinforcements identified by CAISO that are required to integrate the offshore wind. The Southern Oregon coast transmission system is similar in principle to the Northern California coast transmission system, therefore similar reinforcements could be expected within Oregon side to large scale of offshore resources to load centers. Environmental review and construction timelines for large-scale reinforcements across the Oregon Cascade Range could be expected to take over a decade.

During a February 7 presentation, CAISO staff provided information on the development of terrestrial transmission and the costs associated with the two scenarios for offshore wind included in their 20-year transmission outlook. The below graph (PDF page 153) was from the presentation and outlines the very preliminary estimated costs associated with the needed transmission development.

Transmission Development	Description	Cost Estimate
Offshore Wind		**$8.11 B**
Humboldt Bay Offshore wind area	Total of 4,000 MW offshore wind connected through two of the following options: - Option 1 (Fern Road): $2.3 B - Option 2 (Bay Hub): $4.0 B - Option 3 (Collinsville): $3.0 B Facilities required to interconnect the transmission options connecting to the different offshore wind areas: $0.5B-$1.0 B.	$5.8 B–$8.0 B
Diablo – Morro Bay Offshore wind area	- Total of 6,000 MW offshore wind. Connected to Diablo 500 kV and the new Morro Bay 500 kV substation. - The cost estimate is only for a 500 kV switching station and looping in the existing Diablo – Gates 500 kV line into it.	0.11 B

Again, BPA appreciates the opportunity to provide additional perspective on terrestrial transmission planning and the development of offshore wind in Oregon.