

## Testing the Robustness of Optimal Vessel Fleet Selection for Operation and Maintenance of Offshore Wind Farms

<b>Authors</b>	Sperstad, Iver Bakken Stålhane, Magnus Dinwoodie, Iain Endrerud, Ole-Erik Vestøl Martin, Rebecca Warner, Ethan
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<b>Abstract</b>	<p>Among the many operation and maintenance (O&amp;M) challenges facing offshore wind farm operators, one important strategic decision problem is selecting the O&amp;M vessel fleet, i.e. the crew transfer vessels or other logistics solutions for accessing the wind turbines to conduct maintenance. A number of different O&amp;M models and tools exist that can be used to support this decision. In this paper we apply four simulation models, one mathematical optimisation model and one analytic spreadsheet-based tool to the problem of selecting the optimal O&amp;M vessel fleet of a reference wind farm. Comparing the results, we find that the decision support tools show broad agreement on which vessel fleet is the best, but they only agree partially on the overall ranking of the different vessel fleets. The tools also generally agree on how robust the optimal vessel fleet selection is to different input data assumptions. The ranking of the vessel fleets is particularly sensitive to the limiting significant wave height for access assumed for the vessels, but this is also the parameter where the disagreement between different tools is largest. Based on the findings, we suggest recommendations for carefully using strategic decision support tools for selecting the O&amp;M vessel fleet.</p>