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Title: Visualizing Floating Wind Farms and the Scale of a Whale

Abstract: Floating offshore wind farms have been proposed in the deep ocean waters off the U.S. west coast and Hawaii to provide renewable energy to coastal populations in states with aggressive renewable energy portfolio standards. As of 2019, there is only one offshore wind farm operating in the U.S. and its platforms are driven into the seabed, not floating. Anchoring floating wind platforms to the seabed requires multiple mooring lines that pass through the water column from the platforms at the surface to the sea floor. Electrical cables will also be draped in the water column between wind platforms to transmit the electricity generated. Commercial interest in floating offshore wind farm development - a novel use of ocean space - has raised questions about large marine mammals encountering and potentially experiencing harm from the wind farms' mooring lines and electrical cables. To begin to understand the potential risk to whales and other marine mammals, the Bureau of Ocean Energy Management asked the Pacific Northwest National Laboratory to create an animated simulation of a humpback whale mother and her calf swimming through a hypothetical floating wind farm. The animation helps to illustrate the potential interactions between the whales and the wind farm's underwater components. Though designed to address concerns about marine mammals, the animation can also serve as a tool for visually communicating the scale of a floating wind farm to coastal communities and stakeholders. The realistic scaling of the animation can clarify stakeholders' perceptions about floating wind farm size, spacing between wind platforms, and navigability through the underwater components.