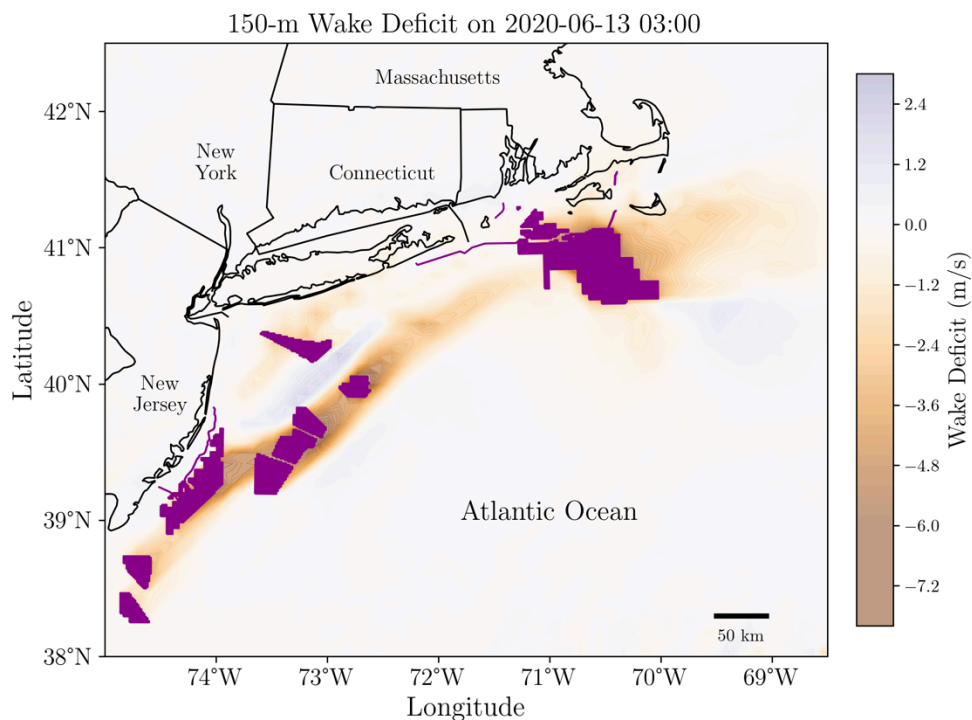


FOR IMMEDIATE RELEASE
August 12, 2024

Press Release: JOINT INDUSTRY PROJECT MAKES PROGRESS TO MINIMIZE FARM-TO-FARM WAKE EFFECTS AND MAXIMIZE OFFSHORE WIND POWER PRODUCTION IN THE U.S.

A Joint-Industry Project (JIP) is uniting government entities, industry leaders, and research institutions to address the challenges of wake effects in offshore wind farms along the U.S. East Coast. Wake effects, which occur when wind turbines create wind speed shadows behind them, result in a reduced wind resource for downstream turbines. While wake effects are a known phenomenon that are accounted for using layout optimization design tools in single projects, as the United States prepares for extensive offshore wind arrays, addressing and minimizing wake-induced power losses from farm to farm becomes paramount. To this end, the National Offshore Wind Research and Development Consortium (NOWRDC) has joined forces with leading subject matter researchers from the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) to deepen the understanding of wake effects by considering various wind farm layouts, turbine spacing, and meteorological conditions, to ensure optimal power generation and efficiency in future US offshore wind developments.



Difference in wind speeds at 150 m height from two mesoscale model simulations: one including the presence of wind farms, and one without. This figure presents a snapshot in time that serves as a helpful visual in depicting the phenomena, but does not represent long-term average deficits.



Project Objectives

A state-of-the-art assessment of farm-to-farm wakes in the north and mid-Atlantic U.S. is conducted to address industry needs, while maintaining a collaborative dialogue among leaseholders, coastal Atlantic states, regulators, and research organizations. The project aims to recommend criteria for future lease area siting based on high-fidelity data and create new tools that can quantify the impacts of potential new leases on current project areas.

"NOWRDC is proud to convene this Joint Industry Project, which unites government, industry, and researchers to tackle the critical issue of wake effects in offshore wind power production," said Lyndie Hice-Dunton, PhD, Executive Director of NOWRDC. "Our role is to facilitate collaboration and innovation, fostering partnerships that drive timely solutions for offshore wind development in the United States."

"NREL is uniquely positioned to address the ongoing concerns about wake-induced power losses on the U.S. East Coast. NREL has developed state-of-the-art modeling capabilities which are leveraged to shed light on the complex interactions between the atmosphere and cluster turbine wakes." said Dr. Georgios Deskos, JIP's Principal Investigator and Senior Research Engineer at NREL. "In addition, this Joint Industry Project has brought together developers, regulators, and government entities in a productive dialogue, helping us understand their needs and collaboratively explore solutions as an impartial third party."

Project Overview

Administered by NOWRDC with research conducted by NREL, this project is funded by participants contributing between \$150-250K USD each. The project has also invited participants to make in-kind support through collaborative advice and validation data. Current participants include the Department of Energy (DOE), the Bureau of Ocean Energy Management (BOEM), the Bureau of Safety and Environmental Enforcement (BSEE), Maryland Energy Administration, Shell Energy, RWE, and TotalEnergies. The project had its kickoff meeting in October of 2023 and is expected to conclude in September of 2025.

Project Deliverables

The JIP aims to develop new methods to study cluster wakes and enhance existing tools like FLORIS to better account for farm-to-farm wake effects. The project will use a multi-fidelity optimization framework to identify key criteria for future turbine spacing and help select new wind energy sites on the Atlantic Outer Continental Shelf (OCS). The findings, including the combined power losses from cluster wake effects of multiple arrays, will be presented on a geo-spatial map so that regulators and other decision-makers will be able to use the data in order to optimize future U.S. offshore wind production.



For more information about the project, please contact Julian Fraize at julian.fraize@nationaloffshorewind.org.

About NOWRDC:

The National Offshore Wind Research and Development Consortium, established in 2018, is a not-for-profit public-private partnership focused on advancing offshore wind technology in the United States through high impact research projects and cost-effective and responsible development to maximize economic benefits. Funding for the Consortium comes from the U.S. Department of Energy and the New York State Energy Research and Development Authority (NYSERDA), with each providing \$20.5 million, as well as contributions from the Commonwealths of Virginia and Massachusetts and the States of Maryland, Maine, New Jersey, California, and other partnerships that bring total investment to over \$60 million. For more information, please visit nationaloffshorewind.org.
