

## **ENVIRONMENTAL STUDIES PROGRAM: Ongoing Studies**

**Region:** Atlantic

**Planning Area(s):** North and Mid-Atlantic

**Title:** Literature Review on the Environmental Risks, Fates, and Effects of Chemicals Associated with Wind Turbines on the Atlantic Outer Continental Shelf

**BOEM Cost:** \$194,307

**Period of Performance:** FY 2012-2014

**Conducting Organization(s):** Research Planning, Inc. (M12PD00035)

**BOEM Contact:** [Callie Hall](#)

### **Description:**

Background: The construction and operation of wind turbine facilities requires the use of a variety of chemicals. A general evaluation of these chemicals and their potential environmental effects was first made in the [Final Programmatic Environmental Impact Statement for Alternative Energy Development and Production and Alternate Use of Facilities on the Outer Continental Shelf](#). Based on data submitted to BOEM for Atlantic offshore wind turbines, a wind turbine array consisting of 100 – 130 wind turbine generators and electrical service platform contains approximately 40,000 gallons of hazardous fluids, primarily electrical insulating oil, diesel fuel, and lubricating oil. During the public comment process, concern was expressed about a catastrophic event in which all the entire facility releases all chemicals to the marine environment. The synergistic effects of these chemicals must be assessed if an accident occurs in which these chemicals are released simultaneously.

The purpose of this study is to provide an evaluation of the potential environmental consequences of a spill of the chemicals typically found in wind turbines. This study will review the literature and modeling options available for assessment of the environmental risks, fates, and effects of chemicals associated with offshore wind turbines. BOEM would incorporate these references, analysis, and model estimates in future EISs and would use the study to identify potential mitigation measures for chemical spills associated with offshore wind turbines. Models developed to estimate the transport, concentration levels, and environmental effects of these hazardous chemicals can greatly enhance the information available to turbine operators, regulatory and permitting agencies, and chemical spill response teams. This study will provide the basic information to more accurately address the potential effects of a range of spill scenarios.

Objectives: The objective of this study is to provide an evaluation of the potential environmental consequences of a spill of the chemicals typically found at wind turbine facilities that could be accidentally released to the marine environment. This study will accomplish the following tasks:

- Identify the chemicals and quantities that could be present in different types of commercial wind turbines designed for offshore use (direct drive, 3.5 MW, 5 MW, 10 MW, etc.);
- Identify and evaluate models available to determine the transport and fate of the identified chemicals (e.g., Oil Spill Risk Analysis (OSRA), CHEMMAP Chemical Discharge Model System, Chemical Hazard Assessment and Risk Management (CHARM) system, Chemical Oil Spill Impact Model (COSIM), etc.); and
- Evaluate the potential environmental consequences through a combination of reviewed literature and available models.

**Importance to BOEM:** Future EISs for wind energy proposals must analyze the impacts these chemicals may have on benthic habitats, marine flora and fauna, and water quality, and the environments likely affected by transport of these hazardous materials. This study will review the literature and modeling available for assessment of the environmental risks, fates, and effects of chemicals associated with offshore wind turbines. BOEM would incorporate these references and model estimates to draft future EISs and would use the study to identify potential mitigation measures for chemical spills associated with offshore wind turbines.

**Current Status:** Contract awarded on September 21, 2012. Post-award conference occurred on October 10, 2012.

**Final Report Due:** November 21, 2013

**Revised Date:** December 17, 2012

### **ESPIS: Environmental Studies Program Information System**

**All completed ESP studies can be found here:**

[http://www.data.boem.gov/homepg/data\\_center/other/espis/espisfront.asp](http://www.data.boem.gov/homepg/data_center/other/espis/espisfront.asp)