

Environmental Studies Program: Studies Development Plan | FY 2024–2025

Field	Study Information
Title	BOEM Offshore Wind Energy Facility Emission Estimating Tool Version 3.0 (AT-24-01)
Administered by	Office of Renewable Energy Programs
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Procurement Type(s)	Contract
Performance Period	FY 2024–2025
Final Report Due	September 30, 2024
Date Revised	November 04, 2022
Problem	EPA guidance from April 2022 indicates the current port emission inventories within the BOEM Offshore Wind Energy Facility Emission Estimating Tool version 2.0 are out of date. This potentially affects all wind energy development on the Outer Continental Shelf (OCS) which is supported by this tool.
Intervention	Updating the port emission inventories to the most recent EPA guidance will correct any erroneous calculations developed using previous port emission inventories. In addition, enhancements and improvements to the user interface (UI) will promote usage of this tool and provide consistency to analyses and submissions.
Comparison	With no updates to this tool, incorrect output will be generated with respect to the estimated emissions from ports used in the construction, operation and maintenance, and decommissioning of offshore wind facilities on the OCS. This will add time to the development of any submissions in which these emissions are necessary, as well as lead users away from this tool, and any other associated outputs generated within this tool.
Outcome	An updated tool will allow end users to correctly estimate emissions from ports expected to be used in the development of offshore wind energy on the OCS, have a more robust analysis of avoided emissions with the inclusion of a social cost of greenhouse gas calculation, and overall improvements to the UI will promote consistent use of this tool by the end user.
Context	All offshore wind planning areas.

BOEM Information Need(s): The current BOEM Offshore Wind Energy Facility Emission Estimating Tool version 2.0 (BOEM Wind Energy Tool) is out of date with respect to Port Emission Inventory guidance from the Environmental Protection Agency (EPA). This potentially affects all proponents of wind energy development on the OCS as their submissions require the estimation of emissions from activities related to the construction, operation and maintenance, and decommissioning of any proposed offshore wind development. For each of BOEM’s regions with offshore wind activity (Atlantic, Pacific, and the Gulf of Mexico), this study will obtain emissions estimates for each phase of the lease: site characterization, site assessment, construction, operation, and decommissioning. These improved emissions estimates will

better inform EAs and EISs that will be developed in the future in support of offshore wind leasing. The public will be better informed because they will have reasonable estimates of project emissions and potential impacts on neighboring areas. Additionally, improvements to the user interface (UI) will promote the use of this tool among offshore wind energy developers and provide more consistency in their associated analyses within COP's and EIS's submitted to BOEM.

Background: EPA guidance from April 2022 (EPA-420-B-22-011) indicates the current port emission inventories within the BOEM Offshore Wind Energy Facility Emission Estimating Tool version 2.0 are out of date. Updating to the most recent EPA guidance will provide the end user with the most relevant port emission inventory data. This will allow the end user to more accurately calculate the total emissions, to and from the proposed ports, parse the amount of Federal Waters Emissions, State Waters Emissions, twenty-five mile emissions (typically used for the OCS air permit), the project's avoided lifetime emissions, and the net emissions. This information is used in the NEPA process to determine level of impacts of the project on the Air Quality Geographic Area of Analysis (AQ-GAA). Currently, this tool only supports the Atlantic region. Expanding this to cover the Gulf of Mexico and Pacific would increase its utility. Much of our current knowledge of Pacific offshore lease air impacts are derived from East Coast projects and documentation. The Pacific emissions may be quantitatively different. Possible reasons are stricter California air quality standards, the use of ultra-low sulfur marine diesel in California, and the use of floating (not fixed) infrastructure off the Pacific.

Objectives: Provide improved emissions calculations through updating the current emissions inventory calculator.

Methods: This project will develop and implement the following tasks while maintaining the 'stand-alone' nature of the tool such that the end user will be able use this tool with no other support files. Bi-Weekly (or other agreed upon frequency) meetings will provide updates and support budget tracking. User Acceptance Testing (UAT) will be required prior to completion by the developer.

- Update and expand the tool database:
 - Complete an update to the port emission inventories following EPA guidance (April 2022).
 - Expand the domain covered to include the Gulf of Mexico and the Pacific OCS areas.
 - Quantify air emissions that can be expected for all leasing activities by stage for four Pacific offshore wind areas.
 - Establish approvable methodologies for deriving this emissions information.
- Allow the administrator the ability to modify emissions as needed.
- Provide an updated users guide.
- Make needed modifications and additions to the UI, such as:
 - Inclusion of an AVoided Emissions and geneRation Tool (AVERT) region confirmation process if lease area does not relate to AVERT region.
 - Clarification and description of the various lease areas.
 - Addition of CO₂E as an output and include output calculations related to the Social Cost of Greenhouse Gasses (SCC-GHG) for each pollutant.

- Addition of a 'quick-add' option for decommissioning estimates that duplicate construction estimates.
- Add interactive support within the application to further enhance the UI as needed, such as:
 - Development of an interactive map of ports, ship lanes, and airports to lease area.
 - Inclusion of a filter on the output that allows the user to further parse emissions by year.
 - Addition of a default number of vessels and trips.
 - Allow the end user to select vessel engine type.
 - Allow the end user to override default avoided emissions.

Specific Research Question(s):

- What air emissions are expected from offshore wind operations in the Pacific, Gulf of Mexico, and Atlantic?
- Are these air emissions significant?
- Are there potential mitigations for these air emissions?

Current Status: N/A

Publications Completed: N/A

Affiliated WWW Sites: N/A

References:

- Transportation and Climate Division, Office of Transportation and Air Quality, U.S. Environmental Protection Agency. 2022. Port emissions inventory guidance: methodologies for estimating port-related and goods movement mobile source emissions. 235 p. Report No.: EPA-420-B-22-011.
- Chang R, Mendenhall S, Lamie C, Perez H, Billings R. 2021. User's guide for the offshore wind energy facilities emission estimating tool, version 2.0. Sterling (VA): U.S. Department of the Interior, Bureau of Ocean Energy Management. 32 p. Report No.: OCS Study BOEM 2021-046.