

ENVIRONMENTAL STUDIES PROGRAM: ONGOING STUDIES

Region: National

Planning Area(s): All

Title: Study to Update and Improve BOEM's Offshore Environmental Cost Model, Market Simulation Model, and Related Analyses (NT-14-x10)

Total Cost : \$353,737

Period of Performance: FY 2014-2016

Conducting Organization: SC & A, Inc.

BOEM Contact: Kristen Strellec

Description:

Background: The Market Simulation Model (MarketSim) is an excel-based model that estimates the substitutions for oil and gas production that would occur in the absence of sales in each of the program areas. MarketSim provides two set of outputs:

- (1) A simulated response of the energy markets to a decision not to implement a new Five Year Program, i.e., the "No Action Alternative" in the Programmatic Environmental Impact Statement (PEIS). This is represented by the combination of increased oil and gas imports, increased domestic onshore oil and gas production, switching to other energy sources, and reduced energy consumption that is likely to occur in the absence of the five-year proposal.
- (2) Estimates of the consumer surplus benefits of OCS oil and/or gas production anticipated to occur as a result of the new Five Year Program.

The production of oil and natural gas on the OCS imposes negative 'externalities' on society: those environmental and social costs imposed on society that are not reflected in the prices of oil or gas. These would include costs such as effects on air and water quality which may affect health, recreation, property values, etc. Most of these costs are associated with the unavoidable degradation of natural resources that result from the OCS oil and gas development process. Likewise, in the absence of OCS production, the 'energy substitutes' (such as additional imported oil) would create their own negative externalities. Consideration of these external costs is an important step in deciding how best to implement the legal mandate to makes OCS oil and gas resources available for development.

The Offshore Environmental Cost Model (OECM) is an Access-based model that uses the levels of OCS activity from exploration and development (E&D) scenarios developed by BOEM along with the energy market substitutions from MarketSim to calculate net environmental and social costs. The OECM performs two sets of calculations. First, it estimates and attaches a dollar value to the gross environmental and social consequences (ESC) of the exploration, development, production, and transport of oil and gas anticipated to result from the program proposal. Second, it estimates and monetizes the environmental and social costs most likely to occur in the absence of a new Five Year OCS leasing program or the selection of the "no sale

option” in one or more planning areas. The published OECM output consists of the Net ESC of the program proposal (i.e. the gross ESC minus the ESC associated with the energy substitutes).

Objectives: The objective is to update and improve the existing models and related analyses to effectively analyze the scope and magnitude of Net Benefits for the 2017-2022 Five Year Program.

Methods: This study will: (1) update the Market Simulation model to reflect changes in the energy sector since its development; (2) update and refine OECM data and the presentation of output in order to: better identify where no sale option costs are expected to occur; incorporate newly available data, including newly available data; and expand data on the other planning areas not included in current Five Year Program that are included in the decision options for 2017-2022 Draft Proposed Program; (3) improve OECM programming to optimize model performance; (4) strengthen BOEM’s understanding of catastrophic oil spills and the monetization of their impacts; and (5) gather information on additional cost categories and ecosystem service values to consider for future OECM enhancements.

Methods include reviewing the current OECM and MarketSim models and documentation, equivalent non-BOEM models, and related publications/literature and initiating consultations with experts in related fields, as necessary, to provide enough background to identify and evaluate new issues related to both models and to recommend any data and/or programming updates needed to both of the models.

Importance to BOEM: As a part of the Five Year Program decision process, BOEM conducts a “net benefits” analysis of the social value of production and related activities anticipated from the program proposal. This analysis examines the quantifiable net benefits to society associated with OCS oil and natural gas production relative to the accompanying costs. The analysis has three basic components: Net Economic Value, Net Environmental and Social Costs, and Consumer Surplus Benefits. Estimates for the latter two components are produced by MarketSim and the OECM. Both MarketSim and OECM need to be routinely updated to incorporate newly available data, reflect changes in the energy sectors, and address internal and external comments regarding model improvements. BOEM will use the updated models to analyze the 2017-2022 Five Year Program decisions.

Current Status: The project kickoff meeting was held on October 6, 2014. The contractor has reviewed the existing models and documentation and related publications / literature and made initial progress on the various contract tasks. They submitted their memo outlining options to optimize OECM’s performance.

Final Report Due: December, 2015

Publications: None

Affiliated www sites: None

Updated: January 13, 2015