Social and Environmental Implications of Outer Continental Shelf Oil and Gas Development
OCS Planning Areas
OCS Planning Areas

Department of the Interior
Outer Continental Shelf Oil and Gas Strategy

- Green: Currently Open for Exploration and Development
- Yellow: Areas Open for Exploration, Study, and Potential Development
- Red: Newly Protected Areas
- Blue: Low Resource Potential
- Black: OCS Planning Area Boundary

Chukchi Sea
Beaufort Sea
ALASKA

Additional Note:
The Maritime boundaries and limits shown above, as well as the division between planning areas, are for initial planning purposes only and do not prejudice or affect United States jurisdiction in any way.
Economic analysis

Net economic value

- Environmental costs
+ Consumer surplus

= Net benefits
Environmental and Social Costs

- MMS has utilized the “Offshore Environmental Cost Model” to address the environmental and social cost component of the net benefit calculation.

- First model developed in the early 1990s; last modified in 2001.

- IEc team retained to develop the third generation model, with the goal of increasing transparency, usability, and flexibility.
Cost Taxonomy (1)
Cost Taxonomy (2)

<table>
<thead>
<tr>
<th>Life Cycle Stage</th>
<th>“Cause”</th>
<th>“Effect”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploration &amp; development</td>
<td>Physical presence</td>
<td>Use impacts</td>
</tr>
<tr>
<td>Production</td>
<td>Operations</td>
<td>Ecological impacts</td>
</tr>
<tr>
<td>Decommissioning</td>
<td>Oil spills</td>
<td>Media impacts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Socioeconomic impacts</td>
</tr>
</tbody>
</table>
## Cost Taxonomy (3)

- **Proposed to be addressed in revised model version 1.0**

<table>
<thead>
<tr>
<th>Category</th>
<th>Impacts</th>
</tr>
</thead>
</table>
| **Operations**                  | Air quality impacts  
                                   | Fiscal impacts                                                         |
| **Physical presence**           | Increased commercial fishing costs  
                                   | Injury to fish/wildlife/habitat  
                                   | Property value impacts                                                  |
| **Oil spills**                  | Reduced commercial fishing revenues  
                                   | Lost recreational use opportunities  
                                   | Subsistence harvest impairment (Alaska)  
                                   | Injury to fish/wildlife/habitat                                          |
Example: Air Quality - Methodology Overview

- Emissions Activity Info by Planning Area & E&D Scenario
- Emission Factors (provided by MMS)
- Air Quality Coefficients for Offshore Emissions
- Dose-response functions and valuation estimates

- Emissions by pollutant and offshore grid cell
- Monetary Value of Air Quality Impacts, by Planning Area
- $/ton, by pollutant and offshore grid cell
Example: Air Quality - Location of Offshore Emissions
Example: Air Quality - Location of Offshore Emissions
**Example: Air Quality - Impact of Offshore Emissions**

- **APEEP Air Quality**
  \[ A_j = T_{p1j} E_{p1} + T_{p2j} E_{p2} + \ldots + T_{pij} E_{pi} \]

  where
  - \( A_j \) = Ambient pollutant concentration in location \( j \).
  - \( E_{pi} \) = Emissions of pollutant \( p \) at location \( i \).
  - \( T_{pij} \) = Transfer coefficient relating emissions of pollutant \( p \) in location \( i \) to air quality in location \( j \).

- To estimate onshore air quality impacts of offshore emissions...
  \[ T_{pij} = B d_{ij} \]

  where
  - \( d_{ij} \) = distance between location \( i \) and location \( j \).
  - \( B \) = coefficient for estimating the transfer coefficient as a function of distance.

  \( T_{pij} \) estimated by directional relationship.
One Last Question You May Be Asking. . .

Does/will the model capture the impact of “really big” spill events?
Contact

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