

Science and Technical Advisory Committee

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Forecasting:

Coastal Energy Production and Exploration in North Carolina: Emerging Issues

Position:

Increased global industrial and economic development in emerging nations and the volatility of the global petroleum market has led to rising energy costs in the United States. The offshore drilling moratorium has recently expired leading to the conclusion that the federal coastal waters adjacent to North Carolina, including waters off the Albemarle-Pamlico region, will be a likely site for exploration and production. In addition to increased interest in East and West Coast petroleum resource development, there is also significant interest in the implementation of alternative energy sources. For example, with its relatively shallow waters very suitable sites for wind generation facilities exist in the Albemarle-Pamlico Sounds. Resources from APNEP's Partners should be directed toward a Programmatic Environmental Impact Statement to assess the environmental and economic impact of future oil exploration/production and wind generator facilities on the Albemarle-Pamlico Regional Ecosystem so that local, state, and federal managers will be in a position to make well-informed decisions.

Supporting Statement:

Statistical information from the Energy Information Administration indicates that world energy consumption is projected to increase by 50% from 2005 to 2030. Total energy demand in the non-OECD (Organisation for Economic Co-operation and Development) countries (e.g., China, India) is projected to increase by 85 percent, compared with an increase of 19 percent in the OECD countries (e.g., United States, European Union) ([International Energy Outlook 2008](#)). This increase in economic development and demand for energy will result in economic and political pressure to exploit untapped sources of energy, both traditional sources (e.g., oil, natural gas) and alternative sources (e.g., wind, solar). This increased demand represents the primary driver for seeking new sources of energy. The following is an explanation of this and other drivers that affect exploration, production, and public perception, and expected possible responses.

Drivers:

Global Economic Development

Rapid economic development in emerging nations has increased competition for global petroleum reserves leading to higher prices and shortages. This increased competition will result in higher energy prices in the U.S. and will increase interest in the exploration and production of national petroleum resources. In addition, alternative energy resources, such as wind power, will also become more attractive for development.

Competition for Finite Resource

Competition for foreign sources of petroleum will occur in the global marketplace leading to volatility in both oil prices and availability. Acceptance of energy conservation measures in the U.S. to decrease dependency on foreign petroleum and a move toward

sustainable energy practices as in the case of solar and wind power can somewhat mitigate the volatility for U.S. consumers.

Conflicting Priorities at the Federal, State and Local Level

Policies and management decisions made at the National, State, and local levels may conflict depending upon differences in the prioritization of issues such as the maintenance of healthy tourism, fisheries, and property values vs. energy production.

National Energy Policy

The U.S. National Energy Policy will influence public perception of offshore oil exploration/production and also determine the regulatory environment for environmental protection.

Responses

Physical Systems

- Transported pollutants from the coastal ocean to water bodies in the Albemarle-Pamlico Estuarine System (APES) will tend to persist due to high residence time of these lagoonal estuarine systems.
- It may be difficult to predict the impact that oil exploration and production may have on the APES as a result of the dynamic nature of coastal waters off the North Carolina coast. The area where exploration and production will occur is where the Gulf Stream and Labrador Currents meet and is known as the “Graveyard of the Atlantic.” This area is also highly susceptible to hurricanes, tropical systems and nor’easters. Oil spills are a concern, but of possible equal concern is simply the amount of human waste products that are accidentally or purposefully ejected from oil platforms and rigs that may end up in NC coastal waters.

Natural Biological Systems

- In the event of an oil spill, highly productive estuarine and coastal waters, fisheries, etc. of the APES may be negatively impacted.
- There may be a possible impact of wind generators on migrating birds. Studies have been equivocal concerning harm to avian populations. For example, observations from the operation of a wind generator field in the California Altamont Pass indicate a significant impact on migratory birds. A study commissioned by the U.S. Fish and Wildlife Service (Kerlinger, 2000) indicate other structures that are equally harmful, for example, communication towers (radio, television, cell phone, etc.).
- Large oil spills occurring in other systems have been shown to be catastrophic. Case studies from Santa Barbara spill (1969), IXTOC spill that impacted Texas Gulf coast (1979), Exxon Valdez tanker spill (1989) will provide biological and economic impact information useful in determining management and policy decisions for the APES.
- The response of benthic communities to drilling mud (in the case of oil exploration/production activities) may provide localized degradation of biological systems (Montagna and Harper, 1996)
- The APES region is located in an area where two major Atlantic currents mix forming a very rich marine environment. Large mats of *Sargassum* form surface reefs and concentrate rare and endangered seabirds, marine mammals, marine turtles and fish. The

APES region and coastal ocean is an important commercial and sport fishing area, as well as an important commercial bird watching area. This site has the greatest diversity of seabirds and marine mammals in the southeastern United States. There could be significant impact on migratory seabirds, waterfowl and marine mammals due to coastal energy exploration and production.

Human Systems

- Concerns over potential loss of tourism due to change in environment from ‘visual pollution’ if wind turbines are installed or an oil spill, or waste products causes the fouling of beaches.
- Potential loss of fisheries (finfish and shellfish) in the event of a coastal oil spill or in the event that oil spill is transported into the Sounds. The 1988 red tide bloom caused by *Karenia brevis* (Tester et al., 1991) provides an interesting proxy for advection of an oceanic source plume into Bogue Sound, a coastal embayment of the APES.
- Concerns over the potential for the introduction and subsequent exposure of human populations to pollutants and toxins from oil exploration/production.
- Depending on where additional infrastructure is installed (e.g. Wilmington, North Carolina or Norfolk, Virginia) for facilities supporting wind and petroleum exploration/production activities, pressure may occur on these communities due to increases in urban development and the requirement for more services (e.g. roads, harbor space).

Recommendations

Given the potential effects of coastal energy production activities on most components of the Albemarle-Pamlico Regional Ecosystem, we recommend that efforts commence to examine the environmental and social impacts on the biological and human systems at risk due to production and exploration activities. It is also important that modeling studies be conducted to determine various scenarios that might occur during a large oil spill in reference to advection of the oil into the sounds and coastal bays. We also recommend that the environmental and social impacts of the construction, operation, and maintenance of wind generator facilities be examined. Also, if oil exploration and/or production are initiated, state agencies should strictly define expectations from individuals and businesses involved in offshore oil resource development. For example, it would be useful if state statute [Article 21A, Oil Pollution and Hazardous Substances Control Act of 1978, Part 2C, Offshore Oil and Gas Activities. Adverse Environmental Impact Protection](#) is examined by the State of North Carolina for applicability for present day offshore petroleum activities.

The varying impacts of oil and wind energy development should be intensively studied further. It is recommended that a reevaluation of previous proposals and research studies conducted in NC on natural resource implications of oil exploration and development be undertaken (e.g., Lee and Soggi 1989; Deep Sea Research Part II: Topical Studies in Oceanography, vol. 41, 1994).

Full support should be given to the recently NC legislature appointed committee to examine economic, environmental impacts of gas and oil exploration headed by Dr. James Leutze, former

University of North Carolina at Wilmington chancellor, and Dr. Doug Rader, chief oceans scientist for the Environmental Defense Fund.

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