MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Larry Hogan, *Governor*
Boyd Rutherford, *Lt. Governor*
Mark Belton, *Secretary*
Joanne Throwe, *Deputy Secretary*

August 16, 2017

Ms. Kelly Hammerle
National Program Manager
Bureau of Ocean Energy Management
45600 Woodland Road
Mailstop VAM-LD
Sterling, VA 20166

RE: 7/3/17 *Federal Register Notice* Request for Information and Comments on the Preparation of the 2019–2024 National Outer Continental Shelf Oil and Gas Leasing Program MAA10400 (82 FR 30886)

Dear Ms. Hammerle:

Maryland opposes opening up the Mid-Atlantic Outer Continental Shelf (OCS) lease area for oil and gas exploration and development activities as part of the 2019–2024, 5-year OCS Oil and Gas Leasing Program. From both an economic and environmental perspective, the Hogan administration is opposed to offshore oil and gas drilling off our coast and has serious concerns about seismic surveys and testing in the Atlantic Ocean.

Rich in natural resources, Maryland and its citizens and communities prosper from a multitude of economic opportunities that are dependent upon the continued health of our ocean and bay waters. Actions to pursue oil and gas development in the Atlantic Ocean would not only put our sensitive coastal and marine areas at risk and increase conflicts with existing ocean uses, but also jeopardize our fishing, maritime, recreational and tourism industries.

Approximately eight million visitors annually visit Ocean City – a year-round resort on Maryland's ocean coast. Assateague Island National Seashore offers more than 37 miles of high-quality ocean beaches in Maryland and Virginia and is one of the few remaining undeveloped barrier island environments in the Mid-Atlantic region. It is also an important regional destination visited annually by more than 2.3 million people who spend more than $98 million, support 1,300 jobs and whose visits result in a net economic benefit exceeding more than $112 million a year[1].

Over the past several years Maryland has worked together with our Mid-Atlantic local, state, federal and tribal partners, as well as our citizens, to begin charting a future for our ocean that ensures a healthy ocean ecosystem and supports sustainable ocean uses. Maryland is concerned about the threat of oil spills and their direct and indirect effects on coastal and bay ecosystems and economies. These risks raise significant questions about the cost and benefit of pursuing oil and gas leasing in sensitive coastal environments. We urge you to exclude the Atlantic OCS lease areas from the 2019-2024 planning program.

[1] Cullinane Thomas, C., and L. Koontz. 2017. 2016 national park visitor spending effects: Economic contributions to local communities, states, and the nation. Natural Resource Report NPS/NRSS/EQD/NRR—2017/1421. National Park Service, Fort Collins, Colorado. https://www.nps.gov/subjects/socialscience/vse.htm

Thank you for the opportunity to comment on the July 3, 2017 Federal Register notice (82 FR 30886) requesting comments on the preparation of a 2019–2024, 5-year OCS Oil and Gas Leasing Program for all 26 OCS Planning Areas. You will find attached a series of technical comments that address our concerns about the potential impacts of oil and gas exploration and development on the marine, coastal and human environments. If you have any questions, please contact Catherine McCall, Acting Director of the Office for Coastal and Ocean Management. She may be reached by calling 410-260-8737 or by e-mail at catherine.mccall@maryland.gov.

Sincerely,

Mark Belton
Secretary

Cc:
Matthew Fleming, Maryland Department of Natural Resources
Catherine McCall, Maryland Department of Natural Resources
Joseph Abe, Maryland Department of Natural Resources
Emily Vainieri, Office of the Attorney General
Elder Ghigiarelli, Maryland Department of the Environment

Attachments:
Technical Comments "MDCommentsLetter_OilGas2019-2024_8.8.17"

Maryland Department of Natural Resource's Technical Comments to the Bureau of Ocean Energy Management's 2019-2024 Oil & Gas Leasing Draft Proposed Program

RE: 7/3/17 *Federal Register Notice* Request for Information and Comments on the Preparation of the 2019–2024 National Outer Continental Shelf Oil and Gas Leasing Program MAA10400 (82 FR 30886)

In assessing foreseeable opportunities, risks and choices associated with Outer Continental Shelf (OCS) oil and gas leases, the full range of oil and gas activities and possible risks to marine, estuarine and coastal resources should be considered over at least a fifty-year time horizon. The full range of oil and gas activities includes geological and geophysical surveys, exploration and production, the development of oil and gas infrastructure, accidents and intentional acts, and decommissioning. The risks analysis should recognize and take into account impacts to not only the ocean and oceanside resources most directly associated with possible Atlantic OCS oil and gas leasing areas but also the nearby bays, estuaries, coastal communities, ports or other shore side infrastructure, and other coastal uses. It is essential that the analysis recognizes and considers the interconnections across marine ecosystems, species and habitats, human uses and interests, and coastal communities and economies. This is especially true for Maryland and the Mid-Atlantic – home to the nation's largest estuary, the Chesapeake Bay, which is on the fragile road to recovery.

With the above issues and interactions in mind, the Maryland Department of Natural Resources requests the Bureau of Ocean Energy Management consider: 1) Economic and Environmental and 2) Analytical and Synthesis Tools Supporting the Development and Evaluation of Alternatives as discussed below.

1. Economic, Environmental and Social Issues

The Maryland Department of Natural Resources (DNR) requests that the Bureau of Ocean Energy Management (BOEM) address the following environmental and economic issues as part of their 2019–2024, 5-year OCS Oil and Gas Leasing Program:

- Oil spills: assess the potential for oil spills, predict their likely effect on Maryland's ocean and coastal environment and communities, and document federal, state and local capacity to adequately respond to a spill event;
- Ocean-dependent industries, ports and coastal communities: document the potential effects and impacts of oil and gas development and production on Maryland's ocean dependent industries (e.g., fishing, shipping, tourism), ports and coastal communities; and,
- Environmental protection: gather, analyze and apply the best available science to identify and understand the effects of oil and gas activities on marine life and ocean habitats in the Mid-Atlantic region.

Oil Spills

Although many safety and protective measures are put into place, accidents such as spills and blow-outs can occur, as evidenced by the 2010 Deepwater Horizon oil spill in the Gulf of Mexico. Sources of accidents may include human error, inadequate safety procedures and protocols, vessel collisions, or natural disasters such as hurricanes. Other sources include intentional acts of destruction. In already and increasingly busy Mid-Atlantic Ocean waters, the risk of such accidents is only expected to grow greater in time.

Oil spills and blow-outs can have major effects on birds, mammals, fish, and other marine life and can result in serious consequences to a coastal economy based on fisheries, recreation and tourism. There is also the potential

for oil to impact important habitats (e.g., beaches and wetlands) that provide critical foraging, nesting and resting habitats for migratory birds and high-quality ocean beaches that are vital to the tourism industry.

In order to better understand the potential effects of an oil spill on Maryland's ocean and coastal resources, we request that BOEM document and consider both the direct and indirect effects that a spill may have on the State's resources. DNR requests that BOEM work with the National Oceanic and Atmospheric Administration and other entities to better characterize how the offshore currents, winds and waves will influence the trajectory of an oil spill. As the interactions between the offshore currents are very dynamic in the Mid-Atlantic region a more in-depth study of these interactions is needed.

Significant concerns exist about the potential environmental and economic effects and impacts to the local/regional recreational, fishing, and tourism industries and natural resources if an oil spill were to occur. BOEM should document these effects and any analysis should take into consideration the following:

- Approximately 8 million visitors annually visit Ocean City, a year-round resort on Maryland's ocean coast that boasts a 10-mile beachfront. Assateague Island National Seashore offers more than 37 miles of high-quality ocean beaches in Maryland and Virginia and is one of the few remaining undeveloped barrier island environments in the Mid-Atlantic region. It is an important regional destination visited annually by more than 2.3 million people who spend more than $98 million, support 1,300 jobs and whose visits result in a net economic benefit exceeding more than $112 million a year[1].

- The Assateague Island beaches provide vital habitats for migratory birds using the Atlantic Flyway. Millions of migratory birds traverse the Atlantic Flyway twice each year, and thousands more either nest on the Atlantic coast or over winter in nearshore and offshore waters of the Atlantic.

- The Atlantic Ocean, Chesapeake Bay and Atlantic Coastal Bays are vital to Maryland's economy and culture. Many commercially- and recreationally-valuable species such as the rockfish, blue crab, oyster, summer flounder, black sea bass, sea scallops, and menhaden and protected species that are dependent on the Ocean, the Bay, its tributaries and the life-sustaining flows and conditions made possible by Ocean-Bay interactions via currents, storm events, tides and wind. If oil, dispersants or other materials or chemicals from a spill were to spill in the ocean and/or be carried into the Chesapeake or the Atlantic Coastal Bays, this could have a devastating effect on the natural resources and the state's economy.

- Even if an oil spill does not directly contact Maryland's coast, there could be significant effects on economic and natural resources important to the State. Interruptions in the operation of the region's shipping and military activities and impacts to one or more life stages of commercially important species (e.g., fish and shellfish) could result in significant impacts to our region's national security and commercial and recreational fishing industries.

No oil and gas industry or existing infrastructure currently exists in the Mid-Atlantic. BOEM should document the current capacity and future needs at the federal, state and local levels to respond to spills and other accidents.

[1] Cullinane Thomas, C., and L. Koontz. 2017. 2016 national park visitor spending effects: Economic contributions to local communities, states, and the nation. Natural Resource Report NPS/NRSS/EQD/NRR—2017/1421. National Park Service, Fort Collins, Colorado. https://www.nps.gov/subjects/socialscience/vse.htm

The long-term impacts of an oil spill along the Atlantic coast should not be underestimated. An accident similar to the Deepwater Horizon incident could have a major effect on Mid-Atlantic coastal communities and natural resources. With the Deepwater Horizon spill in 2010, the long-term impacts are still being felt along the Gulf coast. In many cases the long-term ecological effects to benthic environments, fisheries and coastal waters may not be fully understood for decades.

Ocean Dependent Industries, Ports, and Coastal Communities

Beyond oil spills, the creation of a new long-term oil and gas industry along the Atlantic coast has the potential to affect Maryland's ocean-dependent industries, ports, and coastal communities. The Mid- and South-Atlantic OCS does not presently have an oil and gas industry and supporting infrastructure. Any analysis of oil and gas development in this area should include the ramp up of this industry and its cumulative impacts both in the marine and terrestrial environments. While the previous section focused on accidental spills, below is a brief discussion of normal activities associated with oil drilling and production and infrastructure development to help underscore the many potential impacts Maryland and other coastal states may experience with a new offshore oil and gas industry. Maryland requests that BOEM consider how these oil and gas industry development impacts would accumulate over decades and describe how these cumulative effects may impact ocean dependent industries, ports and coastal communities.

- Day-to-day drilling operations involve a myriad of chemicals, materials, technologies, energy, water, and industrial infrastructure that produce significant atmospheric emissions, waste and water discharges, and directly impact the sea, ocean floor, subsurface habitat and nearby coastal land areas.

- During the drilling phase, drilling mud is used to remove drill cuttings and keep the bore hole open. These muds include toxic chemicals, heavy metals and biocides. Drill cuttings themselves – as well as the placement of the drilling platform – directly impact ocean bottom habitats. Brines, radioactive earth materials, and geothermal heat are also brought up to the surface from the formations and mixed with the human-introduced fluids and chemicals from above.

- Development and production of hydrocarbons involves a considerable amount of produce water which is often re-injected into the formations to maintain production. Produce waters, which contain hydrocarbons, brines, radioactive substances, and chemicals, are often discharged into the sea. This pollution may move through the food chain of the local and regional ecosystem.

- Due to the global nature of oil and gas production, barges, platforms and ships servicing the lease areas have the potential to spread nuisance and invasive species. In the Gulf of Mexico, the brown mussel was introduced much like the zebra mussel invaded the Great Lakes. Ballast water of vessels can introduce microscopic organisms and diseases from distant areas of the world's oceans.

- Dredging associated with vessel traffic and pipelines in more inshore areas can significantly alter wetland and bottom habitat since ultimately the oil and gas must be brought to shore. Pipelines, barges, ships and boats are needed to convey the oil and gas to refineries and markets. Ocean bottom habitats and near shore environments are often severely impaired from traffic and infrastructure associated with oil and gas development. It is important to consider and understand how and where oil and gas will be brought to shore and what the potential impacts would be to our coastal habitats and communities.

In order to adequately assess the impact that the creation of this industry may have on Maryland as well as these described operations activities, DNR requests that BOEM address the impacts to the following existing and anticipated human uses.

Commercial Ship Traffic. Within the Mid-Atlantic there are a number of major ports, one of which is located in Baltimore. Large vessel traffic navigates the entire offshore region, while tug and barge traffic is active in the inshore area. The Port of Baltimore relies upon direct and unimpeded ocean trafficking space to allow ships to travel off the coast and ultimately up the mouth of the Chesapeake Bay or through the Chesapeake & Delaware canal. Shipping traffic supports large industries and distribution chains in Maryland and the Mid-Atlantic region and there may be foreseeable effects of increased ship traffic and construction of permanent oil and gas structures in areas traversed by ships.

Defense Activities. There are important Department of Defense facilities located in the Mid-Atlantic region. The Virginia Capes Operations Area is used for training, testing, and evaluations by the Navy, Army, Air Force and Marine Corps. NASA Goddard Space Flight Center Wallops Flight Facility operates a Research Range just south of Maryland, off Virginia's Eastern Shore. As these facilities are essential to our national security and regional economic development, we must avoid operational conflicts between military operations and offshore oil and gas energy development.

Commercial, Recreational & Charter Boat Fishing. The health of the fishing industry depends on the health of the environment (e.g., habitat and water quality) and the health of fish populations. BOEM should carefully assess how the creation of an offshore oil and gas industry will affect the fishing industry. These impacts would include those anticipated from drilling operations, changes in water quality, introduction of invasive species, habitat loss, changes to trophic and food-web systems, and effects of geologic and geophysical surveys, among others. The main fishing community along Maryland's ocean coast - Ocean City - supports a variety of charter, commercial and recreational fishing vessels. This area is a key economic driver from annual seafood landings, numerous fishing tournaments and a horseshoe crab trawl industry that support the biomedical manufacturing industry. Maryland and the Mid-Atlantic have made significant strides in mapping fishing use and Communities at Sea information and additional details and maps are available upon request.

The 2011 Stock Assessment and Fishery Evaluation Report for Atlantic Highly Migratory Species (HMS) described Maryland's Ocean City fishing community as follows:

> *"Ocean City… is generally considered the only substantial fishing community left in Maryland. There is a large charter boat presence at a variety of marinas, while most of the commercial activity takes place in West Ocean City on the mainland (MRAG Americas, Inc., 2008). Known as the "white marlin capital of the world", Ocean City is a popular destination for recreational anglers targeting HMS. Recreational anglers also target tunas and sharks, and there are a variety of annual tournaments that target white marlin, tunas, and sharks (MRAG Americas, Inc., 2008). Ocean City, MD ranked within the top 50 ports in terms of quantity of seafood landed in the United States in 2010, when 16.7 million pounds of seafood were landed. Between 2009 and 2010, total seafood landings within this port doubled (NMFS 2011b)."*[2]

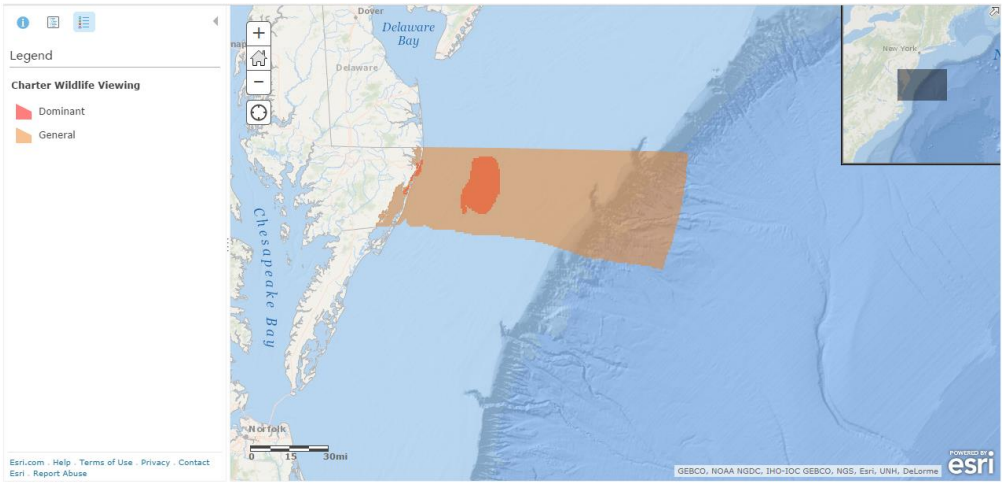
[2] http://www.nmfs.noaa.gov/sfa/hms/documents/safe_reports/2011/2011_safe_report.html

Fishing Tournaments. Numerous fishing tournaments are critical to the local coastal economy of Maryland and could experience deleterious effects from exploring and surveying for and developing an oil and gas industry. Of specific note are the annual multi-million-dollar White Marlin Open and other summer fishing tournaments that are based out of Ocean City, Maryland. These tournaments are of great importance to the local economy and recreational- and sport-fishing communities. Large numbers of recreational fishing vessels depart Ocean City on a path heading directly toward the canyons and back every year. Impacts to this corridor would result in changes to boating access and/or navigation restrictions that could affect these critically important revenue generators.

Horseshoe crabs, the biomedical manufacturing industry and the Red Knot. Commercial trawl fishermen in Maryland are contracted to catch large numbers of horseshoe crabs off the coast of Maryland, where they are then brought ashore to biomedical bleeding facilities in Maryland and surrounding states to extract a biomedical product from their blood for use in IV-solutions, dialysis tubing, pacemakers, other surgical implants, vaccines and other injectable medicines. Once bled, the live horseshoe crabs are returned to their natural environment offshore. Horseshoe crab bleeding facilities and the industries which are supported through this work employ thousands of people throughout the region. In addition to their role employing citizens in biomedics and the fishing industry, horseshoe crab eggs provide an important food source for migrating shorebirds. Several areas offshore are key habitat areas where horseshoe crabs are harvested by fishermen and would be vulnerable to the effects and impacts of developing an oil and gas industry. Significant impacts to both the commercial fishing and biomedical manufacturing industries related to the harvest and use of horseshoe crabs will be realized in Maryland and throughout the region without careful consideration. In addition to the horseshoe crab's contribution to the biomedical manufacturing industry, the horseshoe crabs are a targeted prey species of the Red Knot (*Calidris canutus rufa*), a federally-listed threatened species that migrates along the Atlantic coast.

Recreational and Commercial Activities. Many different coastal commercial and recreational uses occur off Maryland's coast. Water-based opportunities include charter and motorized boating and fishing, wildlife viewing, and diving. These coastal uses allow local businesses, outfitting shops and citizens to enjoy the coastal resources of the region and State, support the local economy and enhance the use of our ocean.

Recreational diving, dive fishing and wildlife viewing may be affected by future geophysical and geophysical surveys, increased ship traffic and oil and gas development. This includes impacts that result from potential contamination or oil spill events. Working with its fishing industry, Maryland DNR has identified a large area – shown in the image below – in which charter boats take guests for pelagic and migratory bird, sea turtle, and/or marine mammal sightings.



Occurrences of marine mammals and sea turtles along the Atlantic coast are generally widespread and whales migrate along the east coast of the U.S. from the North Atlantic in the summer to the South Atlantic in the winter months. Through studies supported over the past several years, our understanding of this resource is increasing and additional information about this work is described below, in the environmental protection section. If the wildlife targeted by viewing boats is impacted by the presence of the seismic survey array and/or the underwater noise associated with construction and operation activities, then they may no longer utilize the same migration or feeding areas, which will negatively impact Maryland's wildlife viewing industry.

Environmental Protection

DNR requests that BOEM gather, analyze and apply the best available science to identify and understand the effects of oil and gas activities on ocean habitats in the Mid-Atlantic region. It is critically important to understand the impacts that any Atlantic coast oil and gas exploration and development activities could have on Maryland's natural resources. In assessing foreseeable environmental risks and damage to marine and estuarine resources, the full range of oil and gas activities and possible risks should be considered. This includes geological and geophysical surveys, exploration and production, accidents and intentional acts, and decommissioning. It is essential that the analysis recognizes and considers the interconnections across marine and estuarine ecosystems, and species and habitats.

Developers will need to conduct localized geological and geophysical surveys to better understand the subsurface resources in each lease area. High-energy seismic activities (e.g., air guns), coring, and electro-surveys can impact marine life and benthic communities in the following ways: death, injury to hearing, difficulty foraging, disruption of migration and reproduction of migratory fish and marine mammals, and alteration of benthic and pelagic habitats. Maryland has serious concerns about these types of surveys in the Atlantic Ocean.

A number of submarine canyons exist along the Mid-Atlantic continental shelf edge. Current data suggest these canyons support unique, highly diverse and vulnerable habitats of exceptional ecological and significant economic importance. In fact, the Mid-Atlantic Fishery Management Council in 2016 issued a deep-sea coral amendment outlining a "range of alternatives aiming to protect corals by restricting fishing in select areas where fishing effort and prime coral habitats overlap, as well as by restricting expansion of effort into less heavily fished areas where corals are known or are highly likely to be present"[3]. More documentation and exploration is underway to refine and expand our understanding of these important offshore areas. BOEM should document and consider the canyons to ensure that these key ocean habitats are protected from the effects that threaten their sensitive and unique features, biological populations and ecological processes.

Marine mammals, fish, sea turtles and other aquatic life that inhabit the ocean offshore Maryland contribute significantly to the economy and quality of life of our coastal communities. Maryland considers marine mammals such as whales, dolphins, porpoises and seals vital coastal resources. The presence of these creatures and healthy ocean waters often define coastal recreational experiences and support numerous coastal uses such as swimming and surfing, boating, recreational and commercial fishing, wildlife watching and diving. As evidence of this commitment, Maryland has committed millions of dollars of state monies studying their abundance and distribution in both state and federal waters.

[3] Mid-Atlantic Fishery Management Council deep sea coral amendment to the mackerel, squid and butterfish fishery management plan, 2016: http://www.mafmc.org/actions/msb-am16

Maryland has and is funding the following three surveys and we encourage BOEM to consider this new data and information as the 2019-2024 oil and gas program develops:

1. Aerial surveys to collect data on presence, density and seasonality of large whale species were conducted along the coastal waters of Maryland from July 2013 to June 2015. There were twenty-four surveys over 16,579 km of track-line. Here are a few highlights:

    a. 23 large whale groups sighted (9 fin whale, 2 humpback, 1 minke whale, 8 right whale and 3 unidentified whales);

    b. 417 bottlenose dolphin groups sighted and 36 groups of other dolphin species (25 common dolphin groups, 1 spotted dolphin group, 10 unidentified dolphin groups); and

    c. 809 loggerhead turtle sightings and 142 sightings of other turtle species (45 green, 14 leatherback, 1 Kemp's and 82 unidentified). The study was conducted by the Virginia Aquarium and Marine Science Center and the Riverhead Foundation for Marine Research and Preservation.

2. Maryland is cost-sharing a study with the Bureau of Ocean Energy Management (BOEM) to collect acoustic data to:

    a. characterize patterns of temporal and spatial occurrence of vocalizing marine mammal species (including right whales, fin whales, humpback whales, minke whale and any small cetacean species); and

    b. characterize the existing ambient noise environment in and around the Maryland Wind Energy Area. The project is being undertaken by the University of Maryland Center for Environmental Science and the Bioacoustics Research Program at Cornell University and is still ongoing with preliminary information and data available upon request.

3. Maryland provided funds to the Biodiversity Research Institute to expand their on-going work with the U.S. Department of Energy (DOE) to:

    a. assess wildlife distribution and abundance patterns and examine temporal variation in these patterns;

    b. development of statistical models to identify ecological drivers of these patterns and predict important habitat and aggregation areas; and o identification of species likely to be exposed to offshore wind energy development or other anthropogenic activities. Maryland funded an extension of the DOE-funded surveys that included the expansion of existing boat surveys into Maryland state waters, the extension of video aerial surveys into areas west and south of the Maryland Wind Energy Area; and an extra aerial survey in Maryland waters. A copy of the final published reports and this work may be found online at: http://www.briloon.org/mabs. There are both Mid-Atlantic- and Maryland-scale data and reports on this website.

2. Tools for Developing Scenarios and Engaging Stakeholders

There are a number of techniques and collaborative planning and communication tools that can be used to help develop and assess scenarios for energy development in the Atlantic OCS. The application of these tools may provide invaluable insight into the social aspects of creating a new oil and gas industry along the Atlantic coast. The Maryland DNR requests that the BOEM consider the following analytical and synthesis tools as they prepare the 2019–2024, 5-year OCS Oil and Gas Leasing Program.

A result of over three years of collaborative effort by the Mid-Atlantic Regional Planning Body members, in December 2016 the White House National Ocean Council certified the first Mid-Atlantic Regional Ocean Action Plan[4]. Scientifically supported data and information are the foundation of the Plan. The Mid-Atlantic region has developed and continues to enhance a significant body of spatial data and other information to inform the interjurisdictional coordination actions that are outlined in the Plan. The Mid-Atlantic Ocean Data Portal[5] is one key resource that informs ocean planning in the Mid-Atlantic, and that should be used by BOEM, developers, and others in assessing feasibility and challenges associated with oil and gas development.

Scenario planning that involves technical experts and key stakeholder groups (e.g., fishing, military, public, energy, and environmental groups) can help capture different elements or perspectives that can shape the future, including science and technology, economics and finance, society, policy and politics, and the environment. Plausible scenarios, or possible stories of how the future might unfold, could showcase different combinations of elements to help participants see and understand interconnections and key drivers shaping the future. Oil companies such as Global Shell and the Defense and Security sector have long used scenario planning to help assess opportunities and risks associated with their investment decisions or strategies. Similarly, communities, industries and countries have used scenario planning to better understand change and make better informed decisions that capture opportunities and avoid or minimize risks. For instance, scenario planning might help answer: If an oil spill occurs offshore Virginia, what areas of Maryland and Delaware might be affected? Do the affected areas have the ability and capacity to respond in a timely fashion? These types of efforts can complement and be woven into scenario planning to make alternative plans more defensible, effective and better informed.

Online and face-to-face collaborative tools that engage diverse stakeholders can help optimally use participants' time and talent by providing dynamic forums where people can contribute to and learn from a focused deliberation on a specific topic, such as offshore energy development. Face-to-face workshops and online exercises can help build constructive relationships and understanding that might otherwise be lacking. For instance, interactive, stakeholder-based workshops such as those conducted under the Maryland's CoastSmart Community Program[6] can help engage people to develop practical individual and collaborative solutions while building constructive partnerships among diverse constituencies.

Collaborative geospatial tools such as SeaSketch[7] can help different interest groups work together online to define areas of plausible project development while protecting sensitive or strategically important coastal resource and coastal use areas. Such online tools take full advantage of web and social media and Geographic Information Systems (GIS) to allow asynchronous and synchronous planning, solution development and coordination while tapping and linking diverse talents and capabilities that otherwise would not be working together.

[4] https://www.boem.gov/Ocean-Action-Plan/
[5] http://portal.midatlanticocean.org/ocean-stories/every-map-tells-a-story/
[6] http://www.cbuilding.org/news/%5Bfield_item_type%5D/interactive-summit-builds-coastsmart-communities-maryland
[7] http://www.seasketch.org/home.html