# 2017—2022 Outer Continental Shelf Oil and Gas Leasing Proposed Program

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BOEM
Bureau of Ocean Energy Management

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# Abbreviations and Acronyms

| | |
|---|---|
| § | Section |
| 2-D | two-dimensional |
| 3-D | three-dimensional |
| 2016 National Assessment | *Assessment of Undiscovered Technically Recoverable Oil and Gas Resources of the Nation's Outer Continental Shelf, 2016* |
| Area ID | Area Identification |
| bbl | barrels of oil |
| BBO | billion barrels of oil |
| BOE | barrel of oil equivalent |
| BOEM | Bureau of Ocean Energy Management |
| BSEE | Bureau of Safety and Environmental Enforcement |
| Btu | British thermal units |
| *California I* | California v. Watt, 688 F.2d 1290 (D.C. Cir. 1981) |
| *California II* | California v. Watt, 712 F.2d 584 (D.C. Cir. 1983) |
| CSE | Center for Sustainable Economy |
| CZM | Coastal Zone Management |
| D.C. | District of Columbia |
| Department | United States Department of the Interior |
| DMME | Commonwealth of Virginia, Department of Mines, Minerals, and Energy |
| DOD | Department of Defense |
| DOE | Department of Energy |
| DPP | Draft Proposed Program |
| DPS | distinct population segment |
| E&D scenario | exploration and development scenario |
| EA | environmental assessment |
| EEZ | Exclusive Economic Zone |
| EIA | Energy Information Administration |
| EIS | environmental impact statement |
| ESA | Endangered Species Act |
| ESI | environmental sensitivity index |
| ESP | Environmental Studies Program |
| ESPIS | Environmental Studies Program Information System |
| FMV | fair market value |
| FNOS | Final Notice of Sale |
| FY | fiscal year |
| G&G | geological and geophysical |
| G&G PEIS | *Atlantic OCS Geological and Geophysical (G&G) Activities, Mid-Atlantic and South Atlantic Planning Areas, Final Programmatic Environmental Impact Statement* |
| GDP | gross domestic product |
| GHG | greenhouse gas |
| GIS | geographic information system |
| GOM | Gulf of Mexico |
| GOMESA | Gulf of Mexico Energy Security Act of 2006 |
| GRASP | Geologic Resource Assessment Program |
| LME | Large Marine Ecosystem |
| LNG | liquefied natural gas |
| LWCF | Land and Water Conservation Fund |
| *MarketSim* | Market Simulation Model |
| mcf | thousand cubic feet |
| MMS | Minerals Management Service |
| NASA | National Aeronautics and Space Administration |
| NEPA | National Environmental Policy Act of 1969 |
| NEV | net economic value |
| nm | nautical miles |
| NMFS | National Marine Fisheries Service |

| | |
|---|---|
| NOAA | National Oceanic and Atmospheric Administration |
| NOI | Notice of Intent |
| NPP | net primary productivity |
| NRDC | Natural Resources Defense Council |
| OCS | Outer Continental Shelf |
| OECM | Offshore Environmental Cost Model |
| OPEC | Organization of the Petroleum Exporting Countries |
| P.L. | Public Law |
| PADD | Petroleum Administration for Defense District |
| Programmatic EIS | *2017–2022 OCS Oil and Gas Leasing Program Draft Programmatic Environmental Impact Statement* |
| PFP | Proposed Final Program |
| PNOS | Proposed Notice of Sale |
| RFI | Request for Information and Comments |
| ROD | Record of Decision |
| Secretary | Secretary of the Interior |
| TAPS | Trans-Alaska Pipeline System |
| Tcf | trillion cubic feet |
| t C $km^{-2}$ $yr^{-1}$ | metric tons of carbon per square kilometer per year |
| UERR | undiscovered economically recoverable resources |
| U.S. | United States |
| U.S.C. | United States Code |
| USDOI | United States Department of the Interior |
| USGS | United States Geological Survey |
| UTRR | undiscovered technically recoverable resources |
| VGPM | Vertically Generalized Production Model |
| WEB2 | When Exploration Begins, version 2 |
| WFF | Wallops Flight Facility |
| WTI | West Texas Intermediate |

# Overview

Management of the oil and gas resources of the Outer Continental Shelf (OCS) is governed by the OCS Lands Act (43 U.S. Code [U.S.C.] 1331 et seq.), which sets forth procedures for leasing, exploration, development, and production of those resources. Section 18 of the OCS Lands Act calls for the preparation of a nationwide offshore oil and gas leasing program, setting forth a five-year schedule of lease sales designed to best meet the Nation's energy needs. The Bureau of Ocean Energy Management (BOEM) within the U.S. Department of the Interior (USDOI or Department) is responsible for implementing the requirements of the OCS Lands Act related to preparing the leasing program.

BOEM is in the process of preparing a national OCS oil and gas leasing program (generally referred to as the "Five-Year Program" or "Program") for 2017–2022 to replace the current 2012–2017 OCS Oil and Gas Leasing Program. Throughout this document, you will see the 2017–2022 OCS Oil and Gas Leasing Program title shortened to the 2017–2022 Program and past Five-Year Programs referred to in a variation of this short-hand (e.g., 2007–2012 Program). This Proposed Program for OCS oil and gas leasing is the second in a series of three decision documents developed pursuant to the OCS Lands Act, before the Secretary of the Interior (Secretary) may take final action to approve a 2017–2022 Program (43 U.S.C. 1331 et seq.).

The Proposed Program phase provides a basis for conducting further analysis on the potential lease sales and a mechanism for gathering additional information for the Secretary to consider in making future decisions. See Chapter 1 for further information regarding the OCS oil and gas leasing program development process. This Proposed Program decision document consists of the following parts:

**Summary of the Proposed Program Decision** describes the rationale behind the Secretary's Proposed Program decision and presents, in summary fashion, the lease sale schedule and program areas proposed to be included in the 2017–2022 Program.

**Part I: Regulatory Framework** describes the framework for developing a new Program. It discusses the substantive and procedural requirements that are in place for preparing a Program under Section 18 of the OCS Lands Act and describes BOEM's approach to meeting those requirements. This includes a discussion of the criteria relating to OCS oil and natural gas resources and environmental, economic, and social considerations that Section 18 requires to be taken into account in deciding where and when to propose lease sales. Also included is a summary of the judicial guidance obtained from the court decisions regarding the Program.

**Part II: Analysis and Results** presents the Section 18 analyses of the program areas proposed for the 2017–2022 Program, as detailed in the Draft Proposed Program. BOEM prepared and used the Section 18 analyses to develop the Proposed Program Options presented to the Secretary.

**Part III: Lease Sale Options** presents the Proposed Program Options that BOEM prepared based on its analysis of the DPP decision and OCS Lands Act Section 18 criteria. This part also presents the Secretarial Proposed Program decision. Proposed Program Options included for detailed examination through the Proposed Program decision-making process will next be analyzed in the Proposed Final Program decision document and the Final Programmatic Environmental Impact Statement. See Figure 1-5 for a diagram of BOEM's leasing process.

**Appendix A: Summaries of Substantive Public Comments** contains summaries of the substantive comments BOEM received in response to its January 29, 2015, *Federal Register* Notice (80 FR 4941) requesting comments from all interested parties.

# Summary of the Proposed Program Decision

## S.1 Decision-Making Strategy

The Bureau of Ocean Energy Management (BOEM) is responsible for administering the leasing program for oil and gas resources on the Outer Continental Shelf (OCS) and developing a five-year schedule of lease sales designed to "best meet national energy needs for the five-year period following [the schedule's] approval...." Section 18 of the OCS Lands Act, 43 United States Code (U.S.C.) 1344. On January 29, 2015, BOEM published the 2017–2022 Draft Proposed Program (DPP), the first stage of lease sale schedule development. The DPP analysis included all 26 OCS planning areas and was informed by more than 500,000 comments received on the June 16, 2014, Request for Information and Comments. The Secretary of the Interior (Secretary), in accordance with Section 18 of the OCS Lands Act, weighed all eight of the Section 18 factors (described in Chapter 2) to develop a schedule of potential lease sales in the DPP. Over 1 million public comments were received on the DPP.

The current stage in the development of the 2017–2022 OCS Oil and Gas Leasing Program (2017–2022 Program) is publication of this 2017–2022 Proposed Program. The Proposed Program is the second of three proposals required to develop the 2017–2022 Program, and was informed by both the DPP analysis and the public comments received to date. Included in this Proposed Program is an analysis of the lease sale options identified by the Secretary in the DPP as feasible for potential inclusion in an approved Program. The development of the Five-Year Program is a winnowing process; thus, only those areas that the Secretary decided were appropriate to include in the DPP are analyzed for the Proposed Program and the associated Draft Programmatic Environmental Impact Statement (EIS) (for more details, see Table 4-3). Additionally, only those OCS areas that the Secretary includes in the Proposed Program lease sale schedule will be analyzed for the Proposed Final Program (PFP) and in the Final Programmatic EIS. Inclusion of an area at the Proposed Program phase, however, does not necessarily mean that the area will be included in the Program or offered in a lease sale.

The Five-Year Program is an important component of the President's comprehensive energy strategy to allow for safe and responsible domestic oil and natural gas production as a means to support economic growth and job creation, and enhance energy security. In 2014, the United States (U.S.) produced 49 quadrillion British thermal units (Btus) of oil and gas, the highest total level of oil and gas production in U.S. history. Even as the U.S. experiences a rapid increase in unconventional onshore oil and gas production, OCS production has been and will continue to be an important source of oil and gas for decades to come. While offshore oil and gas exploration and development will never be totally risk-free, the U.S. Department of the Interior (USDOI) has made, and is continuing to make, substantial reforms to improve the safety and environmental protection of OCS oil and gas activity since the 2010 *Deepwater Horizon* blowout and oil spill. Working with a host of stakeholders, USDOI has developed and implemented reforms and improvements designed to reduce the risk of another loss of well control in our oceans, and enhance our collective ability to respond to such incidents. With strong regulatory oversight and appropriate measures to protect human safety and the environment, offshore oil and gas development can be conducted safely and responsibly.

As part of the Administration's energy strategy, the Proposed Program continues the tailored leasing strategy set forth in the current 2012–2017 Program that takes into account regional differences in

developing the proposed lease sale schedule. In weighing the Section 18 factors to develop a nationwide program, region-specific considerations were taken into account, including information about resource potential; the status of resource development and infrastructure to support oil and gas activities and emergency response capabilities; recognition of regional interests and concerns; and the need to balance the development of offshore oil and gas resources with protection of the marine, coastal, and human environments. Further, for preparation of the Proposed Program, robust consideration was given to the substantial stakeholder engagement and public comments that stemmed from publication of the DPP. Through the Five-Year Program winnowing process, the Secretary gathers information to determine the timing of lease sales and the combination of offshore areas that will, if leased, best meet the energy needs of the Nation while protecting against environmental damage and adverse impact to the coastal zone.

Grounded in the above principles, and after careful consideration of public input and examination of the OCS Lands Act Section 18(a)(2) factors, the Proposed Program proposes lease sales in OCS areas that have high oil and gas resource values, while recognizing potential environmental and socioeconomic impacts, concerns, and competing uses of ocean and coastal areas. In total, the Proposed Program makes available for leasing areas containing over 70 percent of the undiscovered technically recoverable oil and gas resources estimated to exist on the OCS. The Proposed Program contains a proposed lease sale schedule that includes 13 sales in six OCS planning areas where there are currently existing leases and known or anticipated hydrocarbon potential.

The Gulf of Mexico (GOM) is known to contain significant oil and gas resources and already has world-class, well-developed infrastructure, including established spill response capacity. For the GOM, the Proposed Program schedules 10 region-wide lease sales in the areas of the GOM not under Congressional moratorium. The proposal was designed to make substantial areas available for exploration and development where infrastructure is mature, industry interest and support from affected states and communities is strong, and there are significant oil and gas resources available.

The Proposed Program also schedules three sales offshore Alaska, one in each of the Beaufort Sea, Chukchi Sea, and Cook Inlet. Consistent with the regionally tailored approach, the Alaska proposed lease sale schedule takes a balanced approach. This balanced approach allows ample time for additional consideration of areas that may warrant further protection for ecological and subsistence purposes, as well as additional research and data collection about the hydrocarbon potential, environmental and socioeconomic impacts, and infrastructure needs.

After a robust public comment process, the Mid- and South Atlantic Program Area lease sale proposed for 2021 in the DPP has been removed from the Proposed Program for a number of reasons, including strong local opposition, conflicts with other ocean uses, and current market dynamics. The decision to remove the Atlantic from the 2017–2022 Program was also based on careful consideration of the comments received from Governors of affected states. Section 18(a)(3) of the OCS Lands Act charges the Secretary with the responsibility to select the timing and location of leasing so as to balance, to the maximum extent practicable, the potential for environmental damage, the potential for the discovery of oil and gas, and the potential for adverse impact on the coastal zone. The Secretary has weighed each of the Section 18(a)(2) factors and engaged in the required Section 18(a)(3) balancing on a national scale, with appropriate comparisons drawn among potential program areas.

## S.2 2017–2022 Proposed Program Lease Sale Schedule

The schedule below reflects the lease sale options selected for the Proposed Program. Those selections result in a schedule of 13 potential lease sales in 6 OCS planning areas: Ten sales in the GOM Program Area and one sale each in the Chukchi Sea, Beaufort Sea, and the Cook Inlet Program Areas, offshore Alaska (see Table S-1). No lease sales are proposed for the Pacific or Atlantic. A more detailed description of these lease sale options, including more detailed maps, is presented in Chapter 12.

**Table S-1: 2017–2022 Proposed Program Lease Sale Schedule**

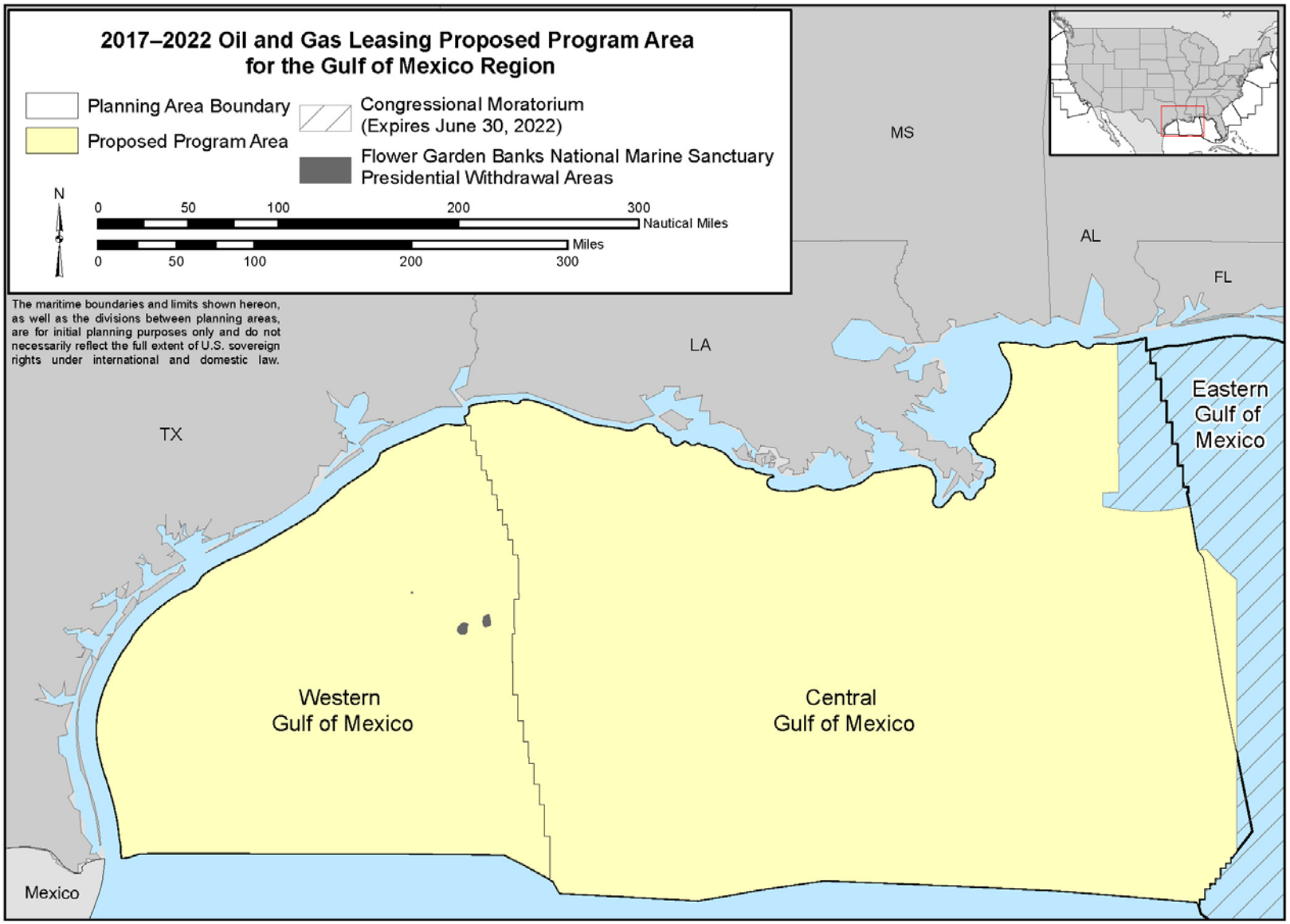
| | Year | Program Area | Sale Number |
|---|---|---|---|
| **1.** | 2017 | Gulf of Mexico | 249 |
| **2.** | 2018 | Gulf of Mexico | 250 |
| **3.** | 2018 | Gulf of Mexico | 251 |
| **4.** | 2019 | Gulf of Mexico | 252 |
| **5.** | 2019 | Gulf of Mexico | 253 |
| **6.** | 2020 | Gulf of Mexico | 254 |
| **7.** | 2020 | Beaufort Sea | 255 |
| **8.** | 2020 | Gulf of Mexico | 256 |
| **9.** | 2021 | Gulf of Mexico | 257 |
| **10.** | 2021 | Cook Inlet | 258 |
| **11.** | 2021 | Gulf of Mexico | 259 |
| **12.** | 2022 | Gulf of Mexico | 261 |
| **13.** | 2022 | Chukchi Sea | 262 |

### *S.2.1 Gulf of Mexico Region*

The GOM combines the most abundant proven and estimated oil and gas resources, broad industry interest, and well-developed infrastructure. The oil and gas resource potential of the Western and Central GOM, as well as the portion of the Eastern GOM not subject to Congressional moratorium, is the best understood of all of the OCS planning areas. Not only are the oil and gas resource volume estimates for the GOM OCS unparalleled, the existing infrastructure to support development is mature for oil and gas activity and response capabilities in the event of an emergency.

In considering and balancing the Section 18 factors, the Proposed Program is tailored to support development commensurate with the presence and maturity, or lack thereof, of offshore oil and gas activity. Of the 13 lease sales included in the Proposed Program, 10 are in the GOM, where infrastructure is best-established and there is strong adjacent state support and significant oil and gas resource potential. The GOM proposal identified for further detailed analysis in the PFP and the Final Programmatic EIS includes region-wide sales: one sale in 2017 and 2022, and two sales in 2018, 2019, 2020, and 2021 (see Figure S-1).

**Figure S-1: 2017–2022 Proposed Program Gulf of Mexico Region Program Area**



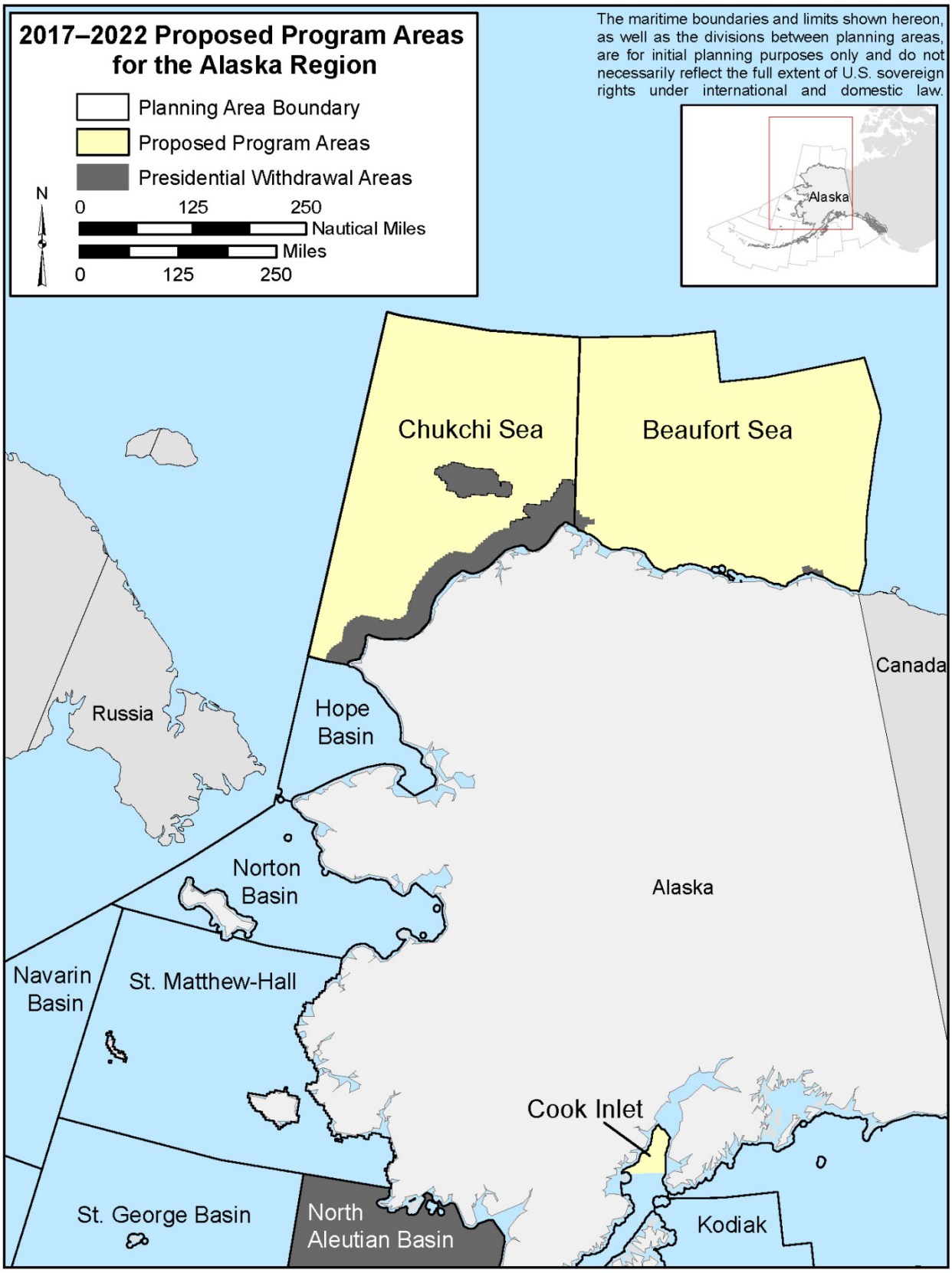
In the past, BOEM has scheduled separate annual sales, generally alternating between the Western and Central GOM, and periodic sales in the portion of the Eastern GOM not under Congressional moratorium. This Proposed Program schedules region-wide sales comprised of the combined Western, Central, and Eastern GOM planning areas' unleased acreage not subject to moratoria. BOEM is proposing this change to provide greater flexibility to industry, including more frequent opportunities to bid on rejected, relinquished, or expired OCS lease blocks, as well as facilitating better planning to explore resources that may straddle the U.S.-Mexico boundary. Furthermore, any individual sale could be scaled back during the pre-lease sale process to conform more closely to the traditional separate planning area model should circumstances warrant. The Proposed Program includes the traditional separate annual sales as an option for analysis in the PFP.

A 15-mile no-leasing buffer south of Baldwin County, Alabama, as requested by the OCS Governors Coalition in a letter to which the Governor of Alabama was a signatory, will also continue to be analyzed in the PFP. It was not included in the Proposed Program because BOEM has, since 1998, included a stipulation in leases in that area that there be no new surface structures south and within 15 miles of Baldwin County. This stipulation addresses concerns over visual impacts while allowing oil and gas recovery in the area.

### *S.2.2 Alaska Region*

In Alaska, the Proposed Program continues to take a balanced approach to development, utilizing the targeted leasing strategy set forth in the 2012–2017 Program by identifying one potential lease sale each in the Beaufort Sea (2020), Cook Inlet (2021), and Chukchi Sea (2022) planning areas (see Figure S-2). These potential lease sales in the three Alaska program areas are currently scheduled later in the Proposed Program to provide additional opportunity to evaluate and obtain information regarding environmental issues, subsistence use needs, and infrastructure capabilities, as well as results from any exploration or development activity associated with existing leases (see Chapter 4 for information on each planning area's history and current status). Consistent with what was set forth in the 2012–2017 Program, BOEM will continue to use developing scientific information and stakeholder feedback to proactively determine, in advance of any potential sale under the 2017–2022 Program, which specific areas offer the greatest resource potential, while minimizing potential conflicts with environmental, subsistence, and multiple use considerations.

**Figure S-2: 2017–2022 Proposed Program Alaska Region Program Areas**



The Proposed Program furthers BOEM's well-established efforts to work with North Slope communities to deconflict oil and gas activities from traditional and subsistence activities on the Arctic OCS. During the Programmatic EIS scoping period, several North Slope organizations, including the North Slope Borough, the Northwest Arctic Borough, and the Alaska Eskimo Whaling Commission, acknowledged that there can be benefits from oil and gas activity, if it is done safely, provided it does not conflict with the traditional and subsistence activities upon which those communities rely. These entities and other North Slope community members, however, also noted the need to protect additional areas from oil and gas activity for maintenance of a traditional way of life. Using input from the North Slope Borough, the Northwest Arctic Borough, the Alaska Eskimo Whaling Commission, Nuiqsut whalers, the Marine Mammal Commission, other commenters, and the best available science, BOEM identified specific environmentally and culturally important areas where there is potential conflict between oil and gas activity and ecologically important habitats and subsistence, cultural, and economic resources. Some of these areas may warrant additional consideration or protection for environmental or subsistence reasons at either the Program or lease sale stage. As BOEM considers the importance these areas have for subsistence and cultural reasons, additional feedback, particularly from the North Slope communities, is needed on the specific boundaries of the areas that are critically important for subsistence and cultural purposes.

Recognizing the significant oil and gas potential in the Arctic OCS region, industry interest, and the views of the State of Alaska, BOEM decided to include the three potential Alaska lease sales in the Proposed Program, and is requesting additional input on the compatibility of oil and gas activities with environmental, subsistence, and cultural uses in the region.

In addition to environmental and subsistence issues, infrastructure is an important component of potential oil and gas activities, both in the near term and long term. The onshore region near the Beaufort Sea Program Area has a developed oil and gas industry with infrastructure to support adjacent land and state water operations. Additional onshore infrastructure may also be developed in the region as a result of existing leases. Cook Inlet has a long history of oil and gas development in state waters, and it is anticipated that existing infrastructure would reduce the need for new infrastructure to accommodate oil and gas development as a result of new leases under this Program. Although the increase in onshore production and low oil prices have reduced the current impetus for Arctic exploration and production, existing leases have the potential to help support additional infrastructure development in the region, thereby providing some of the infrastructure development necessary for activity following future lease sales.

The Alaska program areas have significant oil and gas resource potential (see Table 5-2). Arctic areas (Beaufort Sea and Chukchi Sea) could provide significant sources of domestic energy production. In particular, Arctic OCS oil may be important to Alaska for continued operation of the Trans Alaska Pipeline System (TAPS). In their comments on the development of this Program, the State of Alaska and others raised the issue of the long-term viability of the TAPS and the role that OCS production could play in extending its life (see Appendix A). Declining onshore production from Prudhoe Bay is affecting the usefulness of TAPS, which requires a certain level of throughput to operate without posing major technological challenges. New OCS production could provide the additional throughput needed to extend the life of TAPS, allowing it to continue to carry oil from northern Alaska for many years (NETL 2014).

The Proposed Program includes a potential Beaufort Sea lease sale in 2020. As discussed above, and in Chapter 10, using input from the Programmatic EIS public scoping process, as well as a thorough review of available scientific information, including traditional knowledge, BOEM is considering whether environmentally important areas—such as Cross Island, Barrow Canyon, Camden Bay, an additional area near the existing Kaktovik withdrawal, and other areas identified in the Programmatic EIS—merit additional mitigation or protection during the subsequent phases of the 2017–2022 Program development and/or the lease sale process. The Proposed Program identifies for further analysis an option to advance the lease sale to 2019, in light of the Governor of Alaska's request to advance the lease sale.

The Proposed Program includes a potential Chukchi Sea lease sale in 2022. As discussed above and in Chapter 10, using input from the Programmatic EIS, BOEM will continue to consider potential mitigation or exclusion areas, such as areas near Hanna Shoal, that include a walrus foraging area and movement corridor, during the subsequent phases of both the 2017–2022 Program development and/or the lease sale process.

The Proposed Program also includes a potential Cook Inlet lease sale in 2021 that includes the northern portion of the Cook Inlet Planning Area (see Figure S-2). The design of this lease sale balances the protection of endangered species, for example, taking into account the beluga whale and the northern sea otter critical habitat, as identified in 2013 in the Cook Inlet Lease Sale 244 Area Identification, with the availability for leasing of the areas with industry interest and significant oil and gas resource potential. As discussed in Chapter 12 and the Draft Programmatic EIS, BOEM will continue to consider potential mitigation or exclusion of areas, such as the beluga whale critical habitat, and other environmental concerns, in subsequent steps of the Program development and/or lease sale process.

### *S.2.3 Atlantic Region*

Beginning with the 2012–2017 Program, USDOI set forth a region-specific strategy to address whether conducting offshore oil and gas lease sales in the Mid- and South Atlantic Program Area would be appropriate. Over the course of the last several years, the Department has undertaken a variety of steps to further this information-gathering strategy. These steps included establishing a clear path for geological and geophysical (G&G) permitting in the Atlantic. On July 11, 2014, BOEM issued a Record of Decision (ROD) establishing the highest practicable level of mitigation measures and safeguards to reduce or eliminate impacts to marine life while clearing the way for appropriate G&G survey activities off the Mid- and South Atlantic coast. Such data would update 40-year old information on the region's offshore resources. USDOI has worked, and will continue to work, with permit applicants as they take the necessary steps toward receiving a final decision on the permits. Additionally, the DPP emphasized that the next stages of the 2017–2022 Program development process would involve gathering both public input and additional data, including information about infrastructure needs; ecological concerns; ways to ensure safety; and competing uses of the Mid- and South Atlantic Program Area, including, but not limited to, those of the Department of Defense (DOD). After taking considerable effort to better understand these issues as well as the application to the Atlantic of all the Section 18 factors, the Mid- and South Atlantic Program Area lease sale proposed in the DPP is not included in the Proposed Program.

The analyses of all the Section 18 factors are outlined in the following chapters, but those aspects particularly relevant for this decision are highlighted here. One of the critical ways to tailor the approach for each specific OCS region is to take into account potential environmental and socioeconomic impacts

and competing ocean uses. An important consideration in removing the Mid- and South Atlantic Program Area from the Proposed Program is concern regarding competing uses of the Program Area and the potential harm that oil and gas development could pose to those existing uses. The range, number and nature of conflicts in the Atlantic are unique to the region and require additional work to deconflict prior to including a lease sale in the Program.

As expressed by many stakeholders, ocean-dependent tourism, commercial and recreational fishing, and commercial shipping and transportation are established and important economic uses in and along the coast of the Mid- and South Atlantic Program Area that could be potentially impacted by oil and gas activity. Under current conditions, the economic value of commercial fishing along the coast of the Mid-Atlantic Planning Area could be more than $1.5 billion in total value added gross domestic product (GDP), with the industry being especially important in Virginia. In the Mid- and South Atlantic Planning Areas, ocean-dependent tourism is also a significant economic use, accounting for more than $6.5 billion and $4.4 billion in value added, respectively, to adjacent coastal areas (BOEM 2014). Numerous stakeholders, including many citizens living along the Atlantic coast and their public officials, expressed concern that oil and gas activities and their potential impacts could jeopardize existing economic activities and the health of important contributors to coastal economies.

While the offshore oil and gas industry co-exists with commercial fishing and ocean-dependent tourism in the GOM, that relationship has evolved over many decades. Similarly in Alaska, oil and gas development activity in state waters has initiated the co-existence of the oil and gas activities and other uses. In the Atlantic, however, there has been little history of such co-existence. Rather, the prospect of introducing into the coastal communities of the Atlantic the impacts of oil and gas development and the impacts of accompanying supporting infrastructure, along with the inherent risks (despite the important safety improvements that have been implemented), was met with significant opposition from the citizens and local officials that reside in those communities (see Appendix A for summaries of public comments on the DPP). During the DPP comment period, approximately 40 local governments submitted comments to BOEM stating that the communities opposed offshore oil and gas development and significantly more have voiced opposition since then. While Section 18 of the OCS Lands Act requires the Secretary to consider the laws, goals and policies of affected states as identified by the Governors, the input of local officials and citizens raised concerns regarding other uses of the OCS, which is also a required consideration under Section 18. In this case, the potential conflict between existing ocean uses and oil and gas development in the Mid- and South Atlantic Program Area is an important, albeit not the sole, element that contributes to the decision of removing the Atlantic region from the Proposed Program.

In addition to potential conflicts with commercial fishing and ocean-dependent tourism, oil and gas activity in the Mid- and South Atlantic Program Area raises concerns with regard to DOD activities in these areas. The USDOI respects DOD's mission of protecting the United States and has been working closely with DOD to better understand the military's needs in these areas. In response to the DPP, DOD prepared its 2015 Assessment (see Section 6.6 Other Uses of the OCS), which communicates concerns and important considerations within the Mid- and South Atlantic Program Area. DOD's assessment identifies much of the area offshore Virginia, as well as significant portions of the Program Area offshore North Carolina, as areas that should not be made available for oil and gas development, as such development would be incompatible with DOD's activities. Additionally, DOD recommends that significant acreage of the Mid- and South Atlantic Program Area not be made available for placement of

oil and gas structures due to conflicts with DOD activities. These areas of DOD concern significantly overlap the known geological plays and available resources. DOD's significant competing use of the ocean highlights the incompatibility between the many and longstanding competing uses in the Atlantic and oil and gas activities in those areas. Therefore, prior to proposing a lease sale covering this region, significant additional analysis is needed to determine how oil and gas leasing activities may fit within the already established, complex multiple use landscape along the Atlantic OCS. USDOI remains committed to working with the many stakeholders, including DOD, to understand ways in which this deconfliction could potentially occur.

In addition to conflicts with DOD, there are other ocean conflicts in the Atlantic, including but not limited to, a potential conflict with the National Aeronautics and Space Administration's (NASA) Wallops Flight Facility (WFF) on Wallops Island, Virginia. WFF is a key location for operational testing, integration, and certification of NASA and commercial orbital launch technologies. The facility has an offshore launch hazard area in adjacent waters. BOEM received comments from NASA indicating that there is potential for oil and gas activities in the U.S. Atlantic to impact operations at its WFF (see Figure 6-13 in Section 6.6 of this document). NASA's primary concern is that the presence of oil and gas related activity could result in NASA's inability to meet its own launch commit criteria.

Another important consideration in developing the Proposed Program is a careful analysis of national energy needs. U.S. crude oil production has increased every year since 2008, and oil imports have declined steadily over the past decade. Similarly, total natural gas production has increased 37 percent over Fiscal Year 2008. In addition to continued substantial production offshore, the recent increase in onshore production of natural gas and oil has contributed greatly to U.S. domestic energy supplies and improved national energy security (additional information is included in Section 1.2.1.3). Though additional offshore production is arguably always beneficial to the U.S. economy, the current market of increased onshore production and persistently low oil prices reduces the need for oil and gas development in the Atlantic at this time. Domestic oil and gas production will remain strong without the additional production from a potential lease sale in the Atlantic. Specifically, BOEM estimates that U.S. oil production will be only approximately 0.10 percent lower without the production anticipated from a single lease sale in the Mid- and South Atlantic Program Area than it would have been with that production. Similarly, BOEM estimates that U.S. natural gas production will be 0.06 percent lower without the anticipated Atlantic production (these estimates are based on calculations using the Market Simulation Model, BOEM 2015). Thus, the energy security of the United States will remain strong without offshore leasing in the Atlantic during the 2017–2022 Program. In considering the long-run U.S. national security interests, the Atlantic oil and gas resources could become more valuable at some point in the future.

The decision to remove the Atlantic from the 2017–2022 Program is also based on careful consideration of the comments received from Governors of affected states. In their responses to BOEM, both the Governors of Virginia and North Carolina expressed interest in a lease sale in the Atlantic, but they also acknowledged the developmental risks associated with an offshore oil and gas leasing program in the region, and indicated that a revenue sharing program is necessary to offset these risks. Under current law, however, none of the states adjacent to the Mid- and South Atlantic Program Area would receive any leasing revenues through revenue sharing. The Secretary gave thoughtful consideration to the Governors' positions, but after also considering all the other factors discussed above, did not find the Governors'

positions dispositive for the inclusion of the Mid- and South Atlantic Program Area in the Proposed Program.

In making her decision to remove the Mid- and South Atlantic Program Area from leasing consideration, the Secretary has weighed all eight of the Section 18 factors, using the analyses contained in this Proposed Program decision document, and has balanced the potential for environmental damage, the discovery of oil and gas, and adverse impacts on the coastal zone. Based on those analyses and the Section 18 balancing, the Secretary has decided not to include an Atlantic lease sale in the Proposed Program.

# PART I:
# REGULATORY FRAMEWORK

# Chapter 1 OCS Oil and Gas Leasing Program Development Process

## 1.1 INTRODUCTION

Section 18 of the Outer Continental Shelf (OCS) Lands Act (43 United States Code [U.S.C.] Section [§] 1344) requires the Secretary of the Interior (Secretary) to prepare and maintain a schedule of proposed OCS oil and gas lease sales determined to "best meet national energy needs for the five-year period following its approval or reapproval." The proposed oil and gas leasing program must be prepared and maintained in a manner consistent with the principles specified in Section 18 of the OCS Lands Act. Those criteria, and the manner in which they have been considered in preparing the *2017–2022 OCS Oil and Gas Leasing Proposed Program* (2017–2022 Program), are summarized in Chapter 2.

The OCS is defined as all submerged lands, subsoil, and seabed lying between the seaward extent of the states' jurisdiction and the seaward extent of Federal jurisdiction as defined in the Submerged Lands Act. The United States' jurisdiction lies seaward of most states' jurisdiction of 3 nautical miles (nm); however, Texas, the Gulf coast of Florida, and Louisiana have slightly different jurisdictional limits. The jurisdiction of Texas and that of Florida, off its Gulf coast, extend 9 nm seaward and Louisiana is 3 imperial nm. Several states have had their seaward boundary "fixed" (permanently immobilized) by the Supreme Court that would not be affected by a normally ambulating coastline. In 1983, President Reagan proclaimed the sovereign rights and jurisdiction of the United States over submerged lands and seas adjacent to the United States within the Exclusive Economic Zone (EEZ) as recognized by international law. The EEZ extends a distance of 200 nm from the baseline from which the breadth of the territorial sea is measured. The EEZ 200 nm limit, however, does not define the outer limit of the OCS under the OCS Lands Act and the Submerged Lands Act, and may be better considered in that context as a jurisdictional minimum, except where constrained by the jurisdictional reaches of adjacent coastal nations.

Section 18 of the OCS Lands Act requires that the proposed schedule of lease sales be based upon a comparative analysis of the oil- and gas-bearing regions of the OCS. For administrative and planning purposes, the Bureau of Ocean Energy Management (BOEM) has established four OCS regions comprised of 26 total planning areas, as shown in Figure 1-1 and Figure 1-2. The four OCS regions are Alaska, Pacific, Gulf of Mexico (GOM), and the Atlantic. Administratively, the Pacific Region includes the State of Hawaii. Hawaii does not have any OCS oil or natural gas production because of a lack of hydrocarbon resources, therefore, for the national OCS oil and gas leasing program, the Pacific Region only comprises the four planning areas off the U.S. west coast.

**Figure 1-1: OCS Lower 48 States Planning Areas**

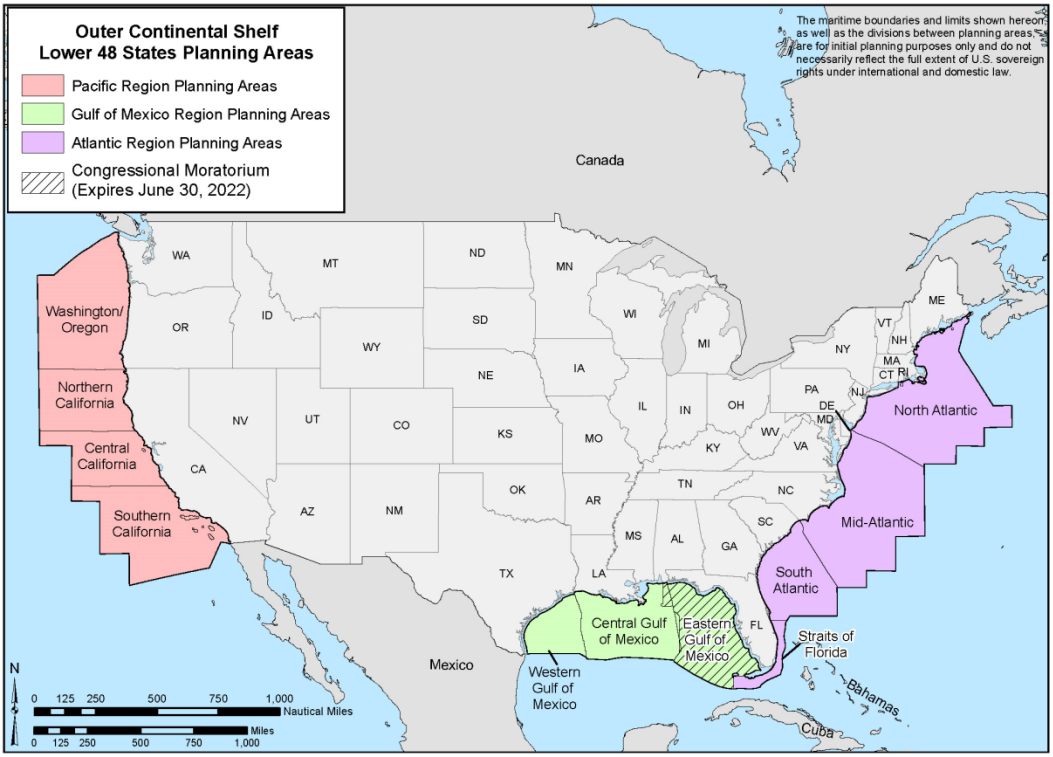
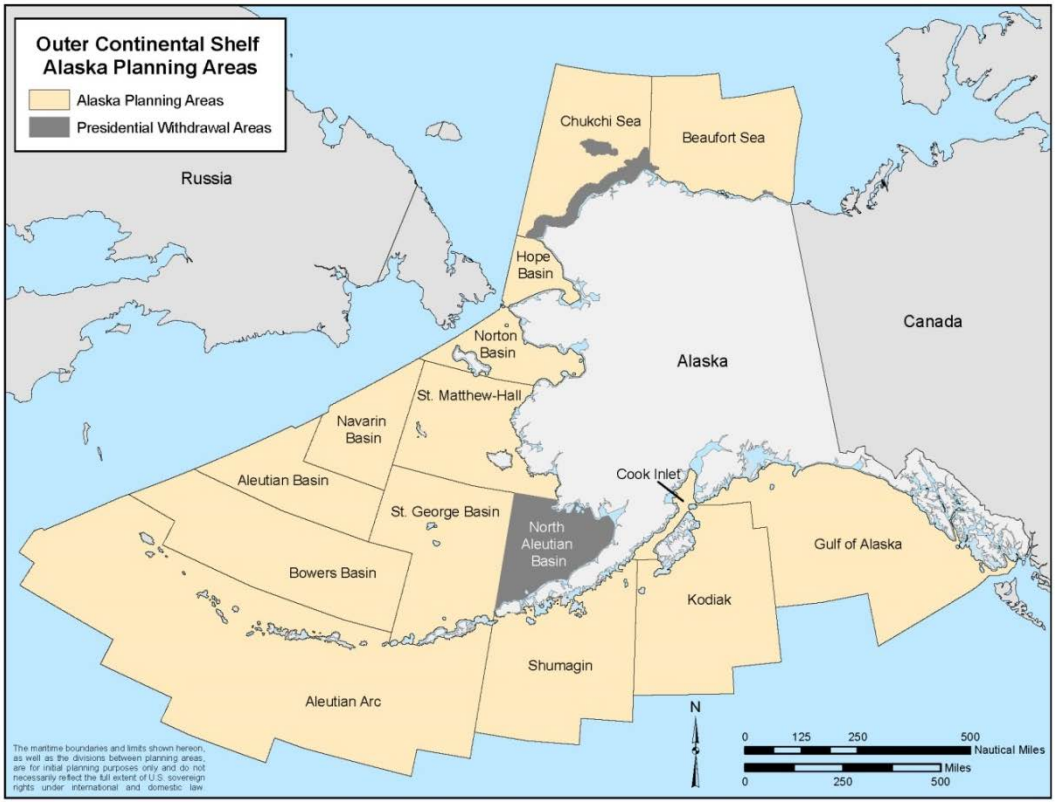



**Figure 1-2: OCS Alaska Planning Areas**



## 1.2 ENERGY NEEDS

Meeting national energy needs is a primary purpose of the OCS Lands Act Amendments of 1978, which established the criteria for the Secretary to consider when developing each new OCS leasing program (Public Law [P.L.] 95-372). Section 18 of the OCS Lands Act was added by the Amendments and requires the Secretary to formulate an OCS leasing program to "best meet national energy needs for the five-year period following its approval or reapproval" (Section 18(a), 43 U.S.C §1344(a)).[1] The OCS leasing program is designed for long-term planning so the decision maker can consider national energy needs over the long-term, 40–70 years into the future.

Energy needs, as recognized in the language of the OCS Lands Act and reinforced by the United States (U.S.) Court of Appeals for the District of Columbia Circuit, is a broad term that includes economic and energy policy goals, national security, dependence on foreign sources of energy, the balance of payments in world trade, and other aspects of national welfare affected by the availability of appropriate quantities and qualities of oil and gas.[2] Despite changes over the past few decades, many of the energy challenges that led to the passage of the Section 18 requirements still remain today, and energy continues to play a central role in the U.S. economy.

OCS oil and gas production is a key component in meeting U.S. energy needs. OCS oil and gas production provides valuable energy resources that contribute to U.S. energy security; an improved balance of payments; trade gains from exporting refined petroleum products; and increases in public revenues, employment, direct output, and value added through the supply chain.

The President's national strategy to meet U.S. energy needs consists of a comprehensive energy strategy with three key purposes: (1) supporting economic growth and job creation, (2) enhancing energy security, and (3) deploying low-carbon energy technologies and laying the foundation for a clean energy future. The OCS oil and gas leasing program and resulting OCS oil and gas development is a key component of the first two of these foundational goals. The President's energy strategy and the OCS Lands Act both indicate that energy needs include not only energy consumption, but also the many ways in which these needs, and meeting these needs, affect the national well-being.

### *1.2.1 Contribution of Oil and Natural Gas to the U.S. Economy*

In recent years, American consumers have spent well over one trillion dollars a year, or more than 8 percent of the gross domestic product (GDP), on energy. Oil and gas consumption account for approximately 63 percent of the energy consumed domestically, and directly or indirectly support the supply chain for delivering nearly all goods and services in our economy (EIA 2015b). Further, oil and gas affect the balance of payments and trade, energy security, and technology, and contribute to employment and public revenues.

[1] Section 18 also requires the Secretary to consider "the location of such regions [oil- and gas-bearing physiographic regions] with respect to, and the relative needs of, regional and national energy markets" (Section 18(a)(2)(c), 43 U.S.C. §1344(a)(2)(c)). Chapter 6 contains the energy markets analysis conducted to help the Secretary meet that requirement.

[2] The Federal circuit court upheld this broad definition of energy needs in *Center for Sustainable Economy v. Department of the Interior*, 779 F.3d 588 (D.C. Cir. 2015). The court stated the premise that "any capacity that is developed domestically helps to ensure that the United States has available domestic sources of fuel for domestic consumption as needed, for example, in the event of international conflict, natural disaster, unexpected foreign fuel shortages, or price volatility in international markets."

The U.S. Geological Survey (USGS) and BOEM estimate that a significant share of the United States' remaining oil (69 percent) and natural gas (26 percent) resources lie on Federal lands, both offshore and onshore (USGS 2013, BOEM 2014). Therefore, energy diversification, including continued oil and natural gas production in the GOM, the primary OCS region currently available for energy production and development activities, remains vital. Additionally, many other OCS planning areas are estimated to have substantial undiscovered resources, and new production from other OCS regions can also contribute to meeting the country's energy needs.

#### *1.2.1.1 Consumption of Energy Sources*

Though U.S. energy needs expand far beyond simply consuming oil and natural gas, these fuels currently are fundamental to powering our economy. Section 6.2.4 provides more information on the consumption of oil and natural gas.

In addition, while oil has largely been replaced by other fuels for electricity generation, its dominant role as a fuel in the transportation sector is unlikely to change significantly in the foreseeable future because of a variety of limiting factors. Other sources of energy have gained less than 5 percentage points of the transportation-fuel market share since 1974, just after the initial oil price shocks of that era, with petroleum still accounting for more than a 91 percent share in 2014 (EIA 2015a). Crude oil is a raw input for gasoline and other transportation fuels, as well as for a variety of petroleum products found in non-fuel markets (e.g., chemicals, plastics, and synthetic materials).

In recent years, advances in the use of hydraulic fracturing ("fracking"), combined with horizontal drilling, have allowed companies to economically produce oil and gas from shale and tight[3] onshore formations, leading to large increases in U.S. production. The increase in domestic natural gas production led to lower prices, which has, in turn, increased the consumption of natural gas. Natural gas has low carbon-emitting potential relative to coal, and is increasingly being used for electricity generation (EIA 2015b). Further, lower gas prices have reduced energy costs for manufacturing and allowed more companies to begin, or to increase, domestic operations (PwC 2011). In addition, low energy costs have allowed more companies to bring formerly overseas operations back to the United States, thus benefitting American workers (Boston Consulting Group 2012). This manufacturing renaissance has benefited all regions of the country. Over the next 20 years, the Energy Information Administration (EIA) expects the United States to rely on greater amounts of oil and natural gas to meet its energy demands, even as alternative sources of energy provide an increasing share of U.S. energy needs.[4]

#### *1.2.1.2 Balance of Payments and Trade*

In recent years, U.S. spending on imports of goods and services exceeded U.S. exports. In 2014, this resulted in a trade deficit of $508 billion dollars (BEA 2015). The cumulative U.S. trade deficit in crude oil and petroleum products was $190 billion, or 37 percent of the cumulative trade deficit in all goods and services (BEA 2015). Even with recent decreases in oil imports, this contribution to the U.S.

[3] Shale and tight formations have lower permeability and/or porosity than those from which oil and gas historically have been extracted.

[4] EIA projects that consumption of liquid fuels, such as condensate, natural gas liquids, and biofuels, will decrease slightly through 2040, but consumption of natural gas will increase over the same period (EIA 2015a).

balance of payments deficit is significant. The increasing export of refined petroleum products has reduced the annual U.S. goods and services trade deficit, but net overall petroleum imports still account for a large portion of the country's current trade deficit.[5] Current projections show U.S. energy imports and exports coming into balance in 2028, with the U.S. becoming a net exporter of natural gas in 2017 (EIA 2015b).[6] The country's transition away from being a net importer of energy will greatly improve the balance of trade. OCS production will remain an important contributor to domestic U.S. oil supplies, helping to further improve the balance.

Over the long term, reducing the trade deficit can be expected to strengthen the value of the dollar. This is because a trade deficit involves the purchase of higher dollar-denominated imports than exports, creating an excess supply of dollars in the global marketplace. To the extent that the trade deficit can be reduced by dampening the United States' need for imports of foreign oil, the value of the U.S. dollar would be strengthened. When the value of the U.S. dollar rises in comparison to currencies of other countries, fewer dollars are required to purchase the same amount of international products—imports become less expensive and, conversely, U.S. exports become more expensive to foreign consumers. In addition, since oil is priced in dollars, the revenues received by oil-producing countries are more valuable on the international market when the dollar is stronger. As such, an increase in the value of the dollar mitigates incentives for the Organization of the Petroleum Exporting Countries (OPEC) to undertake strategies that would result in increased prices to maintain the purchasing power of its revenues. Accordingly, all other things equal, increased domestic petroleum production would reduce the United States' dependence on foreign production, in turn reducing imports, shrinking the trade deficit, and potentially strengthening the value of the dollar.

#### *1.2.1.3 Energy Security*

One of the key elements in the President's energy strategy is to enhance energy security. The President's plan defines energy security to include "energy supply availability, reliability, affordability, and geopolitical considerations" (Executive Office of the President 2014). Domestically produced oil and gas enhance national security. The United States can reduce dependence on foreign oil primarily through two different methods—increasing the supply of domestic energy or reducing consumption. The President's energy strategy focuses on both methods.

The recent boom in onshore production of natural gas and oil from shale and tight formations has contributed greatly to U.S. energy supply security. The bounty of light, sweet crude oil (referred to as "tight oil" in this document[7]) has reduced the U.S. need to import foreign oil and has increased world production, which in turn has permitted greater foreign policy latitude and effectiveness for the United States (Engel and Windrem 2013, Cummings and Gold 2013). All U.S. production contributes to the

[5] While EIA projections indicate that the U.S will continue to be a net exporter of petroleum products through 2040, this is not true for net imports of crude oil, which have been decreasing but are expected to begin increasing by about 2020 (EIA 2015a).
[6] The Fiscal Year 2016 omnibus budget bill, passed while this analysis was in review, contained provisions eliminating crude oil export restrictions that had been in place for more than 40 years. The projections in the *Annual Energy Outlook 2015* did not account for these provisions; however, results from a separate study commissioned by EIA indicate that, while the absence of export restrictions would affect specific projections, the general conclusions in this analysis would not change through 2025, the last year considered in the study (EIA 2015a, EIA 2015c).
[7] According to EIA, the term tight oil does not have a specific technical, scientific, or geologic definition. Tight oil is an industry convention that generally refers to oil produced from very low permeability shale, sandstone, and carbonate formations, with permeability being a laboratory measure of the ability of a fluid to flow through the rock (EIA 2014).

world supply of oil. Although in recent years, due to increased onshore activity, the percentage of OCS oil and gas as a share of domestic production has declined (see Figures 1-3 and 1-4), OCS oil production in particular is projected to increase in future decades and remains an important component for domestic energy and economic and national security.[8] Further, OCS production also provides a vital source of domestic production that can reduce the United States' vulnerability to a supply disruption. As explained in Section 6.2.6.1, the program development and leasing processes provide far more flexibility to adapt to unexpectedly low energy needs (e.g., by reducing sale size, delaying or canceling sales) than to unexpectedly high needs (i.e., new sales and areas cannot be added after the Program has been approved).[9] Including areas in the proposed schedule of sales would provide the Department of the Interior (USDOI) the option of responding to the latter, as well as to new information, during the 5 years of the new Program.

Other components of energy security are affordability of energy supplies and reduction of price volatility. In the absence of artificial rationing or an especially destructive natural disaster, higher prices are often the only publicly visible sign of supply disruptions. Oil is sold in a competitive world market and a reduction in supply (or an increase in demand) in one part of the world causes higher prices globally. Price spikes cause economic disruptions and are damaging to the economy.

The EIA predicts costs for imported energy will increase in real terms over the coming decades. The possibility of high and volatile energy prices, which have been avoided recently due to robust domestic oil and gas production especially for crude oil, raise important energy policy issues about supply options and their effects on the economy and the environment.

#### *1.2.1.4 Technology*

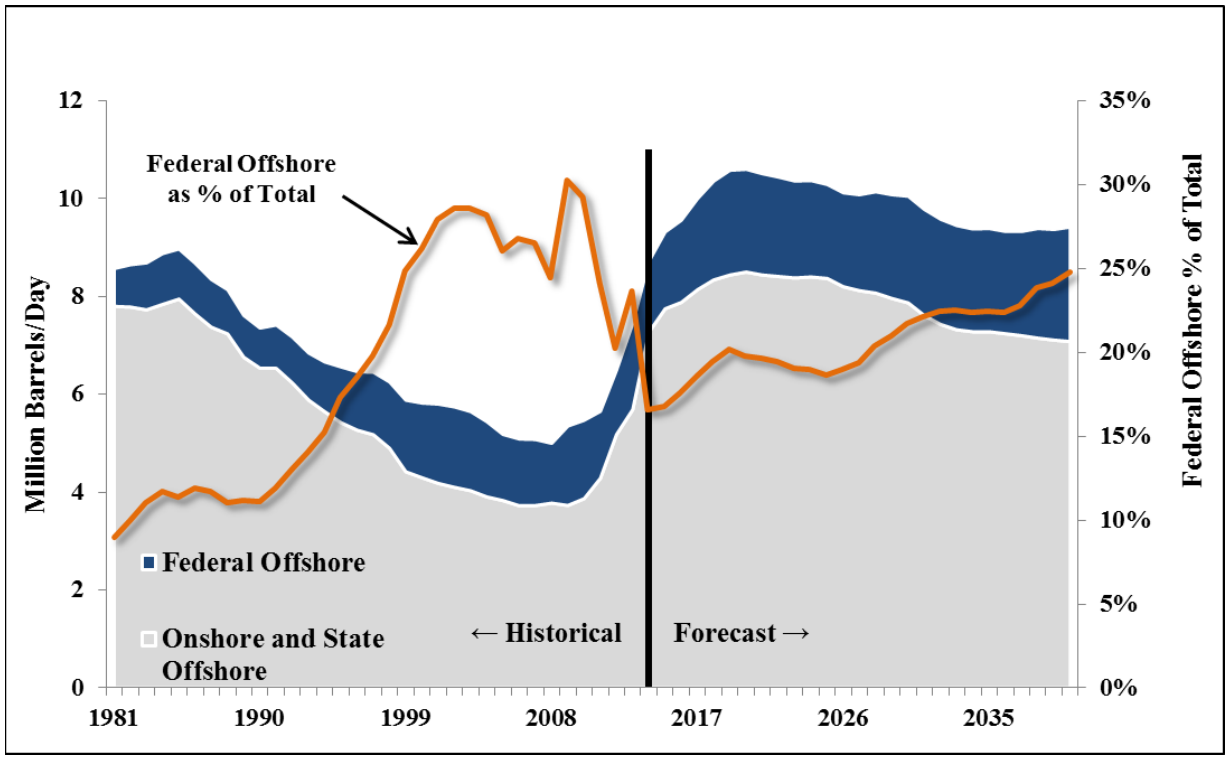
New technologies in the oil and gas industry are, in large part, responsible for the U.S. energy revival. Technological advancements in hydraulic fracturing ("fracking") and horizontal drilling, along with high prices, drove the recent onshore boom in production. Offshore, technological advancements in the oil and natural gas industry over the past several decades have greatly expanded the resources available for production. Additionally, regulatory changes, improvements in industry practices, and enhanced Bureau of Safety and Environmental Enforcement (BSEE) inspection capabilities have made OCS exploration and development safer and more environmentally sound. Companies can explore for and develop previously inaccessible resources. In addition, higher quality geological and geophysical (G&G) data, achieved through state-of-the-art technology, acquisition methods, and processing, aid in identification of prospects and effective well placement, improving the probability of success of drilling operations. Advanced composite materials and materials engineering have improved offshore structures and mooring to better withstand the offshore operating environment. These and other technologies developed for oil and gas operations have contributed to the U.S. leadership in the worldwide energy industry. The importance of the United States as an offshore oil and gas technology leader was

[8] With considerable year-to-year variations, including a 10 percent increase in 2014, the absolute amount of OCS oil production has increased somewhat over the past 10 years. OCS natural gas production, however, has fallen in the last decade, reflecting the decline in gas prices over the same period (BSEE 2015).

[9] In addition, while lessees can decide fairly quickly to cancel or not initiate new OCS projects, companies cannot initiate new OCS projects without going through a long process including planning for a lease sale, bidding, applying for and obtaining approvals, and obtaining the necessary resources to determine prospect viability by exploration.

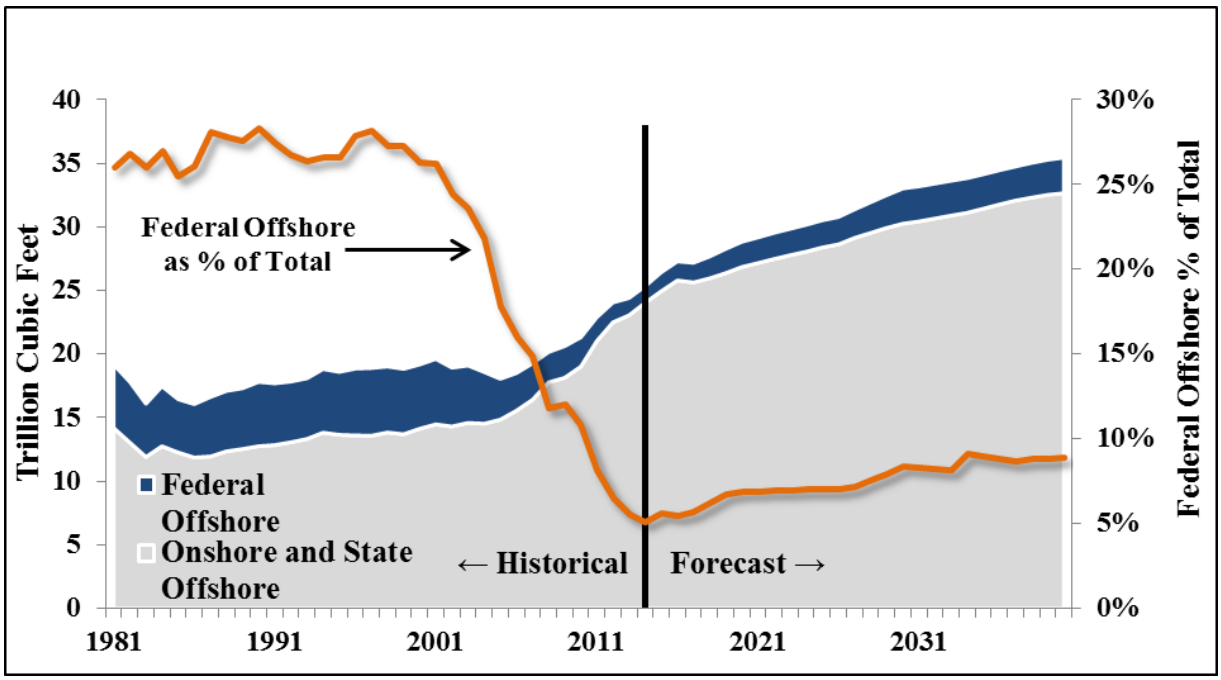
recognized in comments received in response to the Draft Proposed Program (DPP). These technological advances support the country's economic growth and help meet global energy needs.

**Figure 1-3: Historical and Forecasted U.S. Crude Oil Production by Region**




**Source**: EIA 2015b

**Figure 1-4: Historical and Forecasted U.S. Natural Gas Production by Region**




**Source**: EIA 2015b

#### *1.2.1.5 Employment and Public Revenues*

The domestic energy industry is an important component of the U.S. economy through its contribution to GDP, employment, and public revenues. Production of domestic oil and gas not only provides employment at higher-than-average wages to industry employees, but also provides work for many Americans in other industries that supply goods and services for exploration, development, production, and domestic transportation of oil and gas. The impact of the Federal offshore oil and gas industry on GDP and employment is discussed in Chapter 8. Chapter 8 also describes the revenues available to local, state, and Federal governments. In general, OCS leasing and production provides the following public revenues:

- billions of dollars a year in bonus bids, rentals, and royalties to the U.S. Treasury
- funding for the Historic Preservation Fund
- funding for the Land and Water Conservation Fund (LWCF)
- OCS Lands Act Section 8(g) revenues and other revenue sharing payments to states[10]
- indirectly, provides worker and industry tax payments to state and local governments.

## 1.3 PROGRAM DEVELOPMENT PROCESS

The development of an OCS Oil and Gas Leasing Proposed Program is one of several Section 18 steps in the process of preparing a new Program. This Proposed Program contains the second of three proposals for an OCS lease sale schedule for the 2017–2022 timeframe, after the DPP, which was published on January 29, 2015, and followed by the Proposed Final Program (PFP). The Proposed Program is part of a multi-step process to prepare the 2017–2022 Program to succeed the current 2012–2017 Program, which became effective on August 27, 2012, and expires on August 26, 2017.

The Program development process starts with the broadest consideration of areas available for leasing (all 26 OCS planning areas) and can be narrowed throughout the Program development and lease sale process. Once a defined area is proposed for leasing during the development of the Five-Year Program, it becomes known as a program area. Program areas are the portions of the original planning areas that remain in consideration for leasing during the program development process. For example, the 2017–2022 DPP Atlantic Program Area includes portions of the Mid-Atlantic and South Atlantic Planning Areas that are being considered for leasing in this Proposed Program.

In addition to the analyses and decision documents prepared pursuant to Section 18, BOEM has prepared the *2017–2022 OCS Oil and Gas Leasing Program Draft Programmatic Environmental Impact Statement* (Programmatic EIS) to evaluate the potential environmental and socioeconomic impacts associated with the Program and considers alternatives that may avoid or reduce potential impacts. The key steps in preparing a new Program under Section 18 of the OCS Lands Act and the Programmatic EIS

[10] Section 8(g) of the OCS Lands Act provides for the Federal Government to share with each coastal state hosting production 27 percent of revenues earned from OCS leases within 3 nm seaward of the state's submerged lands boundary. The shared revenues are referred to as "8(g) revenues." In 2006, the U.S. Congress passed the Gulf of Mexico Energy Security Act (GOMESA) promulgating that the states of Texas, Louisiana, Mississippi and Alabama receive 37.5 percent of all royalties from new oil and natural gas development in federal waters adjacent to the respective state.

under Section 102(2)(C) of the National Environmental Policy Act (NEPA) are shown in Figure 1-5, with a star identifying where BOEM is in the process of developing the 2017–2022 Program and associated NEPA analysis. In addition to the discussion on factor H in Section 2.2 in this document, a more detailed description of the NEPA process is contained in the Draft Programmatic EIS (http://www.boem.gov/Five-Year-Program-2017-2022/).

The analysis contained in the DPP decision document examined and compared all 26 of the planning areas in accordance with the Section 18 factors for consideration and balancing. However, for the Proposed Program, only those areas and Program Options that the Secretary decided were appropriate to include in her DPP decision are further analyzed in this document and the Draft Programmatic EIS. Subsequently, the OCS Program areas that the Secretary decides to include in the Proposed Program decision, and any potential subsets thereof, will be analyzed in the PFP decision document and in the Final Programmatic EIS. The Programmatic EIS will consider potential geographic exclusions and restrictions on lessee activities for the 2017–2022 Program as either alternatives or programmatic mitigations. The final decision on the Program may adopt any analyzed exclusions or mitigation measures, which are sufficiently identifiable at the programmatic stage as part of the Secretary's Section 18 balancing decision. Conversely, it could be determined that such exclusions and mitigation measures are more appropriately considered at subsequent stages, such as the pre-lease sale, exploration, or development and production stages.

### *1.3.1 Draft Proposed Program and Notice of Intent to Prepare a Programmatic Environmental Impact Statement*

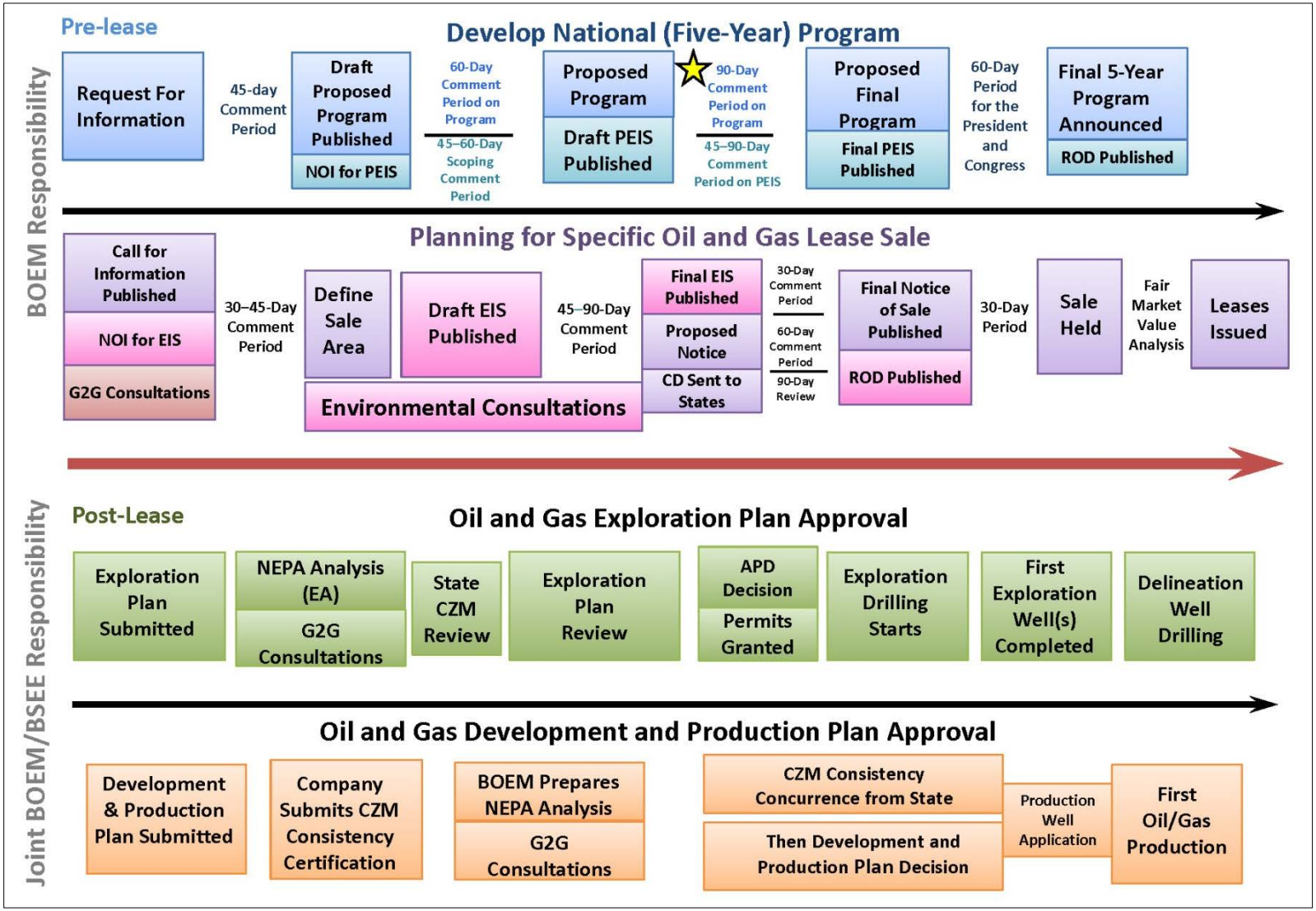
After considering all of the analyses associated with the Section 18 factors and principles (see Part II of the DPP), the Secretary selected Program Options as part of the DPP decision, which represent the initial proposal for the 2017–2022 Program (see Chapter 2). BOEM announced the availability of, and requested comments on, the DPP in the *Federal Register* on January 29, 2015 (80 FR 4941), distributed it to interested and affected parties for a 60-day comment period, and transmitted the DPP decision document to all 50 Governors and relevant Federal agencies.

BOEM published a Notice of Intent (NOI) to prepare the Programmatic EIS in the *Federal Register* on January 29, 2015 (80 FR 4939), initiating scoping for the NEPA document. See Chapter 3 for a more detailed discussion on public involvement and outreach for the Proposed Program and Programmatic EIS.

### *1.3.2 Proposed Program and Draft Programmatic EIS*

Preparation of the 2017–2022 Proposed Program was based on additional analyses of required Section 18 factors (see Chapter 2) and comments received by BOEM on the DPP and NOI to prepare the Draft Programmatic EIS. As such, the 2017–2022 Proposed Program is the second version of the Secretary's proposal for this Five-Year Program.

**Figure 1-5: OCS Oil and Gas Leasing Program Development Process**




**Key**: APD = Application for Permit to Drill; CD = Consistency Determination; CZM = Coastal Zone Management; EA = environmental assessment; EIS = environmental impact statement; G2G = government to government; NEPA = National Environmental Policy Act; NOI = Notice of Intent; PEIS = programmatic environmental impact statement; ROD = Record of Decision.

BOEM has announced the publication of this Proposed Program and associated request for comments in the *Federal Register* and submitted the Proposed Program to Congress, Governors, and potentially interested Federal agencies. In that *Federal Register* Notice, BOEM also requested input on the Proposed Program from other interested and affected parties during a 90-day comment period. BOEM will provide written responses to Governors and Federal agencies on their comments on the Proposed Program in conjunction with transmittal of the PFP and Final Programmatic EIS.

The Draft Programmatic EIS considers a reasonable range of alternatives to the DPP proposed lease sale schedule. The analyses in the Draft Programmatic EIS adopt a broad regional perspective; more detailed and geographically focused analyses are conducted after the Program is approved and leasing progresses from the planning stage to the lease sale, exploration, and development stages. The Programmatic EIS is the first of several NEPA analyses that will be conducted for the lease sale and oil and gas exploration and development activities that are subsequently considered, and may ultimately occur, as a result of implementing the Program. However, the Secretary may decide to adopt any geographic exclusions or restrictions on leasing activities that are sufficiently identifiable at this stage and obtain a proper balance between the potential for environmental damage, the potential for discovery of oil and gas, and the potential for adverse impact on the coastal zone. The NEPA assessments, including EISs and Environmental Assessments (EAs) associated with the various stages of OCS oil and gas development, are shown in Table 1-1.

**Table 1-1: Environmental (NEPA) Assessments Conducted for the OCS Oil and Gas Leasing Program**

| Program Level | Program Stage | NEPA Analysis | Geographic Scope | Focus and Scope |
|---|---|---|---|---|
| Planning | Program | Programmatic EIS | National | Identification of program areas and number, schedule of lease sales for the Program and programmatic level mitigation requirements |
| Lease sale | Lease sale | EIS or EA | Program area or OCS region | Identification of parcels to be leased, and lease-sale specific mitigation and monitoring measures |
| Project | Exploration | CER or EA | Lease block(s) | Identification of project mitigation and monitoring measures |
| | Production | CER, EA, or EIS | Portion of lease block | |
| | Decommissioning | EIS, EA, or CER | Specific facility within a lease block | |

**Note**: The level of NEPA analysis at the project level is determined by the complexity of the project, risk factors associated with the project, project location relative to existing oil and gas activities in the area, the technologies proposed for use, and other factors.
**Key**: CER = categorical exclusion review; EA = environmental assessment; EIS = environmental impact statement

### *1.3.3 Proposed Final Program and Final Programmatic EIS*

At the last phase of the Program analysis, BOEM will prepare a PFP based on additional analyses of Section 18 factors and comments BOEM receives on the Proposed Program. The PFP is the third and last version of the Secretary's proposal. Additionally, a Final Programmatic EIS will be developed. OCS areas identified for potential leasing in the Proposed Program will be analyzed in the Final Programmatic

EIS. BOEM will announce publication of the PFP in the *Federal Register* and submit it to the President and Congress, along with the Final Programmatic EIS and copies of all incoming comments received on the Proposed Program and responses to comments on the Proposed Program received from state and local governments and Federal agencies. In accordance with Section 18(c)(2), the Secretary will send the PFP to the President and Congress at least 60 days prior to approving the proposed leasing program.

### *1.3.4 Program Approval and Record of Decision*

Sixty days after the PFP is submitted to the President and Congress, the Secretary may approve the 2017–2022 Program. At the time of approval, the Secretary's decision is described in the Record of Decision (ROD) and a signed program decision memorandum is also made publicly available. The ROD is the final step in the Programmatic EIS process and, in general, identifies the selected alternative, presents the basis for the decision, and provides information on the methods to avoid, minimize, or mitigate environmental impacts. The ROD for the Programmatic EIS may adopt any geographic exclusions or restrictions on leasing activities that BOEM considers necessary for environmental protection and are sufficiently identifiable at that stage.

## 1.4 LANDSCAPE-SCALE APPROACH AND MITIGATION HIERARCHY FOR THE PREPARATION AND IMPLEMENTATION OF THE FIVE-YEAR OIL AND GAS LEASING PROGRAM

On October 31, 2013, the Secretary issued Secretarial Order No. 3330, entitled *Improving Mitigation Policies and Practices of the Department of the Interior* (the "Secretarial Order"). The Secretarial Order states:

> [T]he Department seeks to avoid potential environmental impacts from projects through steps such as advanced landscape-level planning that identifies areas suitable for development because of low or relatively low natural and cultural resource conflicts. Where impacts cannot be avoided altogether, the Department must work to ensure that projects minimize impacts to the extent practicable. Finally, for impacts that cannot be avoided or effectively minimized, the Department should seek ways to offset or compensate for those impacts to ensure the continued resilience and viability of our natural resources over time.

As contemplated by the Secretarial Order, the Department issued a report in April 2014 entitled *Strategy for Improving the Mitigation Policies and Practices of The Department of the Interior: A Report to the Secretary of the Interior from the Energy and Climate Change Task Force* (the "Report"). Both Order No. 3330 and the Report call for a Department-wide mitigation strategy that focuses on using a landscape-scale approach employing the full mitigation hierarchy of avoidance, minimization, and compensation to protect resources potentially impacted by activities engaged in under the Department's auspices.

On November 3, 2015, fully consistent with and supportive of the Department's mitigation strategy, the President issued a Memorandum directing Federal agencies responsible for public resources—including the Department—to apply the mitigation hierarchy at scales appropriate for the country's wide-ranging

natural and cultural resources, and to, at a minimum, set a no-net loss goal when permitting impacts to key resources we are entrusted to protect (*Presidential Memorandum: Mitigating Impacts on Natural Resources from Development and Encouraging Related Private Investment*, November 3, 2015). The Presidential Memorandum emphasizes the importance of protecting the environment while also providing efficient Federal permitting to American businesses and communities.

On the same day that the President issued his Memorandum on mitigation, the Department issued a new Departmental Policy that provides goals and guidance for implementing landscape-scale mitigation associated with the management of resources under the jurisdiction of the Department (Department Manual Release, *Landscape-Scale Mitigation Policy* [600 DM 6]). The Department's Mitigation Policy, which stems from the Secretarial Order and is consistent with the President's Memorandum, reaffirms the Department's authority and commitment to use landscape-level planning to implement the full hierarchy of mitigation, including compensatory mitigation when needed.

The planning process envisioned by Congress in the OCS Lands Act squares well with the Department's landscape-scale mitigation policy. The OCS Lands Act provides for a pyramidal, four-stage process to lease, and ultimately develop, offshore resources, proceeding from broad-based, landscape-level planning to an increasingly narrower focus as actual development grows more imminent. Moreover, the statute requires the Secretary, in preparing the Five-Year Program, to consider "economic, social, and environmental values of the renewable and nonrenewable resources contained in the outer Continental Shelf, and the potential impact of oil and gas exploration on other resource values of the outer Continental Shelf and the marine, coastal, and human environments" (43 U.S.C. §1344(a)(1)). Thus, the OCS Lands Act envisions a landscape-level planning process that takes into account environmental, social, and economic values and allows for the employment of the full hierarchy of mitigation as the process proceeds from development of the Five-Year Program to leasing and ultimately exploration and development. Taking into account, at the programmatic level, the value of OCS resources and impacts that could result from oil and gas activities on the OCS enables the Secretary to use a landscape-level analysis to determine areas most suitable for development. This landscape-level analysis also allows the Secretary to consider future impacts on valuable resources that could result from the exploration and development of an area.

The development of the 2017–2022 DPP followed this approach and looked across the entire OCS to identify areas suitable and not suitable for oil and gas development after considering economic, social, and environmental values of the renewable and nonrenewable OCS resources, and the potential impact of oil and gas exploration on other resource values of the OCS and the marine, coastal, and human environments. Particularly emphasizing avoidance and minimization of impacts at the early stage of the process and those areas with negligible hydrocarbon resources and/or industry interest at this time, the DPP decision eliminated numerous planning areas from potential leasing and minimized effects to certain areas through the Secretary's size, timing, and location decisions.

Following the approval of the 2017–2022 Program, BOEM will consider, and, where appropriate, employ additional mitigation (including the full hierarchy of avoidance, minimization, and compensation) in the later stages of the oil and gas development process under the OCS Lands Act.[11]

Appropriately scaled analyses at these later decisions for leasing, exploration, development, and production can best identify specific mitigation measures, including required compensatory mitigation measures. At all decision stages, coordination with state and Tribal governments, as well as other Federal agencies, occurs and will help inform appropriate mitigation, including avoidance, minimization, and needed compensatory mitigation.

Development and implementation of the 2017–2022 Program using this approach allows for the application of a landscape-scale strategy to oil and gas activities on the OCS that promotes the Department's Mitigation Policy and the President's Memorandum. This approach also allows BOEM to integrate the mitigation hierarchy into the entire leasing process (i.e., from the Five-Year Program stage, to the lease sale stage, to the development and production stage). The 2017–2022 Program's landscape-scale approach and the OCS Lands Act's integration of the use of the full mitigation hierarchy allows for the identification of the best combination of mitigation measures—including compensatory mitigation—to avoid, minimize, and compensate for potential impacts on resources throughout the entire leasing process. Such an approach considers reasonably foreseeable impacts and applies the mitigation hierarchy in the context of the needs, conditions, and trends of resources, at all relevant scales.

## 1.5 LEASE SALE PROCESS

Each lease sale that is scheduled in the approved 2017–2022 Program will be subject to an established prelease evaluation and decision process whereby interested and affected parties will have multiple opportunities to participate (see Figure 1-5). That process examines the proposed lease sale (or in some cases, multiple lease sales), starting with the area identified as available for leasing consideration in the Program, and considers reasonable alternative lease sale configurations, reductions, and/or restrictions within that area. No lease sale area can be offered that is not included in the area identified in the approved Program. The pre-lease process leads to the final decision on the terms and conditions of each OCS lease sale. In some cases, steps may occur in a different order or even be repeated, based on the particular needs of the lease sale and area. The process can take between 3 and 5 years to complete, and contains multiple steps and decision points, as described below:

1. **Call for Information and Nominations** – BOEM will request comments from the public on areas of special concern that should be analyzed. Potential bidders are invited to nominate areas of interest within program areas identified for leasing consideration in the Program and provide information on environmental and other aspects of the program area (the portion of a planning area that is being considered for leasing in the Program).
2. **Notice of Intent to Prepare an EIS** – BOEM will issue an NOI to alert the public that an EIS-level (or EA) NEPA document will be prepared. The NOI provides a description of the Proposed Action and possible alternatives to the Proposed Action, as well as a description of the

[11] BOEM is currently developing the appropriate framework to determine how to apply this landscape mitigation approach, including, but not limited to, compensation, into its decision making process. Additional information will be forthcoming as it becomes available.

scoping process, and any scheduled meetings for scoping of the NEPA document. Note that sometimes the NOI is published after the Area Identification (Area ID) step below.

3. **Area ID** – BOEM will identify the area of the Proposed Action to be analyzed in the NEPA document based on information gathered from the Call for Information and Nominations and the NOI (if preceding the Area ID). Decisions at this step will be made publicly available, particularly if there is a change to the area included in the Call for Information and Nominations and the NOI.
4. **NEPA document** – BOEM will prepare a draft EIS or an EA to evaluate the potential environmental impacts of a Proposed Action, alternatives to the Proposed Action, and the potential effectiveness of mitigation measures.
5. **Public Review and Comment** – For EAs, BOEM will notify the public to obtain their input to those issues that should be addressed in the EA; the specific time period is based on a number of factors and could vary from project-to-project. If BOEM chooses to solicit public comments on a Draft EA for a lease sale, it is available for comment for at least 30 days. For an EIS, the public is invited to be engaged in the scoping process and the Draft EIS is available for public review for at least 45 days.
6. **Government-to-Government Consultations** – BOEM consults with federally recognized tribes, and, in Alaska, additionally with Alaska Native Claims Settlement Act Corporations. These consultations are conducted throughout the stages of the OCS oil and gas leasing process.
7. **Environmental Consultations** – Consultations will occur with Federal agencies such as the U.S. Fish and Wildlife Service and National Marine Fisheries Service (NMFS). This also includes National Historic Preservation Act Section 106 consultations with State Historic Preservation offices.
8. **Final NEPA document** – BOEM will incorporate responses to public comments on the Draft EIS or EA, and update the analysis of environmental impacts.
9. **Proposed Notice of Sale (PNOS)** – BOEM will provide information to the states and the public on the proposed area to be offered and the proposed lease terms and conditions.
10. **Consistency Determination** – BOEM will provide coastal states a determination on whether the proposed lease sale is consistent, to the maximum extent practicable, with the enforceable policies of federally approved state Coastal Management Plans. Note that the State of Alaska does not currently have a Coastal Zone Management (CZM) Plan.
11. **Record of Decision (EIS-level) or Finding of No Significant Impact (EA-level)** – The final step for the NEPA process regarding the selected action, alternatives, environmentally preferable alternatives, and environmental mitigation measures, adopted or not, and considers the Governor's comments, consideration of the oil and gas resource potential in context with social, environmental, economic, and environmental values, impacts, and concerns, and the terms and conditions of the lease sale. The ROD is published a minimum of 30 days before the sale date.
12. **Letters to the Governors** – BOEM will send copies of the PNOS to Governors of affected states for their review as required under Section 19 of the OCS Lands Act.
13. **Final Notice of Sale (FNOS)** – BOEM will publish a FNOS a minimum of 30 days before the sale is held. The FNOS includes the date, time and location of the bid opening, blocks offered,

and terms and conditions of the sale. BOEM may also include a copy of the Final NEPA document.

14. **Lease Sale** – BOEM will open sealed bids submitted by qualified bidders and read them publicly on the day of the sale. Bids are checked for technical and legal adequacy to determine the high bid, which is then subject to further evaluation regarding the United States receiving fair market value (FMV) and adequate competition before a lease may be issued.
15. **Lease Issuance** – BOEM will issue a lease following completion of the FMV analysis and review by the Department of Justice, in consultation with the Federal Trade Commission regarding antitrust review of lease sales. The Department of Justice, in consultation with the Federal Trade Commission, has 30 days to conduct antitrust review of the lease sale, but may agree to a shorter review period.

## 1.6 EXPLORATION AND DEVELOPMENT PROCESS

After BOEM issues a lease, a lessee typically begins a process of exploration for oil and gas accumulations. An Exploration Plan is submitted to BOEM for analysis and possible approval (see Figure 1-5). In some cases, these potential resources may already be identified through analysis of existing data and information. In other cases, a lessee may need to utilize information collected through a much broader exploration program to identify potential resources in areas where exploration data coverage is less dense or non-existent. The general process for oil and gas exploration on a lease typically begins by conducting geophysical seismic surveys early in an exploration cycle to obtain information about subsurface geologic formations and potential oil and gas traps. Such activity on a lease is conducted pursuant to the lease and/or plan requirements and does not require a separate permit, as is the case for pre-lease survey activity. Seismic survey techniques and technologies are continuously becoming more sophisticated. Generally, areas with mature oil and gas development, such as in the GOM, have more recent, and therefore more sophisticated (e.g., three-dimensional [3-D] seismic surveys), seismic data available, while older, less sophisticated seismic data (e.g., two-dimensional [2-D] seismic surveys) is often all that is available to delineate frontier areas. As activity increases in frontier areas, new seismic data will be collected and more detailed information will become available.

High-resolution geophysical surveys on a lease are performed prior to exploration plan submittal to identify natural and man-made hazards, areas of potential benthic habitat such as hard bottoms and reefs, and significant cultural resources such as historic shipwrecks. The next phase of exploration involves drilling an exploration well that targets the interpreted oil or gas trap in the subsurface to determine if an oil and/or gas resource exists. If a resource is discovered in quantities appearing to be economically favorable, one or more follow-up delineation wells may be drilled to help define the amount of resource or the extent of the reservoir.

Delineation and production wells are sometimes collectively termed development wells. If a lessee wishes to drill a development well, a Development and Production Plan must be submitted to BOEM for analysis and possible approval (see Figure 1-5). Assuming that hydrocarbons are discovered and successfully delineated, a production facility may be installed at the site. The number of wells per facility varies according to the type of production facility used, the prospect site, and the drilling and production strategy deployed. Oil and gas are brought to market via a system of pipelines and processing facilities or through production into a floating system.

Both exploration plans and development and production plans are subject to focused, site-specific environmental analyses under NEPA and the requirement for an operator to certify consistency concurrence of the proposed activities with the state's CZM program, as appropriate.

For more information about the exploration and development process, see BOEM's web pages: http://www.boem.gov/Status-of-Gulf-of-Mexico-Plans/ and http://www.boem.gov/akplans. For more information about BOEM's oil and gas resource evaluation program, see BOEM's web page: http://www.boem.gov/Resource-Evaluation-Program/.

# Chapter 2 Section 18 Factors for Consideration and Balancing

## 2.1 BOEM's Approach to Analyzing Program Areas

Section 18 of the OCS Lands Act contains four subsections, each of which sets forth specific principles and factors that guide Program formulation and which, together, provide the foundation for BOEM's analysis that is used in the development of reasonable Program Options for a schedule of proposed lease sales. The Secretary may select from these Program Options "indicating, as precisely as possible, the size, timing, and location of leasing activity which [the Secretary] determines will best meet national energy needs for the five-year period following its approval…" (43 U.S.C. §1344(a)). A brief overview of those Section 18 requirements is presented in this chapter, which also includes judicial guidance provided in court decisions on prior Programs (see Section 2.7). This Proposed Program decision document contains analyses of the Program Options chosen by the Secretary in the DPP decision, as well as supplemental Program Options, for further analysis pursuant to the principles and factors articulated by Section 18 of the OCS Lands Act, including, but not limited to, the eight factors listed in Section 18(a)(2) of the OCS Lands Act (see Section 2.2). Collectively, the Program Options chosen in the DPP decision and the supplemental Program Options are referred to in this Proposed Program as the Proposed Program Options. These Proposed Program Options are also considered in the Draft Programmatic EIS.

The analyses underlying the 2017–2022 Program use the best available information. Previous studies and analyses are augmented by the latest documents, reports, and studies available, along with pertinent information provided in comments to the DPP. Additionally, BOEM reviews and reinterprets existing oil and gas resource data as necessary. The DPP lease sale schedule provided the initial Proposed Action to be analyzed in the Proposed Program and Draft Programmatic EIS. The Draft Programmatic EIS is being published in conjunction with this Proposed Program decision document.

## 2.2 Section 18(a): Factors for Determining Size, Timing, and Location of Leasing

As stated above, Section 18(a) outlines several principles and factors that guide Program formulation. One such example is the list of eight factors contained in Section 18(a)(2) of the OCS Lands Act that the Secretary must consider when determining the size, timing, and location of oil and gas activities among the different areas of the OCS. While some of these factors lend themselves to quantification for facilitating the comparison among Program Areas, others do not and need to be considered qualitatively. Each of the eight factors provided in Section 18(a)(2)(A) through (H) is listed as follows:

### *A) Geographical, Geological, and Ecological Characteristics*

The main sources of information on geographical, geological, and ecological characteristics of the OCS program areas considered in preparing the Proposed Program analysis are the 2017–2022 Programmatic EIS, other recently completed Federal agency NEPA documents prepared for leasing and operational activities, BOEM oil and gas resource assessments and associated regional geologic and reserves reports,

the 1994 National Research Council report concerning information for Alaska OCS decisions (NRC 1994), scientific study results (as reported in BOEM's Environmental Studies Program Information System [ESPIS]), published and gray literature, expert knowledge, and information submitted or cited by commenters. Such information can be found in various places in this decision document (e.g., geological characteristics in Chapter 5 and geographical and ecological characteristics in Chapter 7). The latter also are outlined fully in the Programmatic EIS.

### *B) Equitable Sharing of Developmental Benefits and Environmental Risks*

Chapter 8 analyzes the equitable sharing of developmental benefits and environmental risks associated with oil and gas leasing. The chapter provides a discussion of the developmental benefits that accrue in regions near existing and potential OCS oil and gas production and the benefits that are distributed widely throughout the United States. The onshore areas adjacent to the regions possessing substantial oil and gas resources tend to both receive most of the benefits from, and be subject to the associated environmental risks of, developing those resources. Developmental benefits analyzed include increased wages, additional jobs, increased tax collection, revenue sharing where applicable, and proximity of supply and consumers of energy.

The Draft Programmatic EIS identifies and discloses the potential impacts associated with the Proposed Program Options and provides information on the severity of potential impacts. Environmental risks include the potential for activities stemming from the Proposed Program to adversely affect (1) the quality of the human environment (e.g., water quality, air quality, accidental or catastrophic oil spill events); (2) species and habitats, including those that are commercially, culturally, or recreationally valuable (e.g., commercial fisheries, coastal tourism, subsistence harvest); (3) species and habitats that are protected by Federal environmental laws and regulations; (4) cultural and archaeological resources; (5) access to subsistence resources; or (6) overall marine productivity that may affect or diminish ecosystem services (see Section 7.2). By discussing the impacts that affect both regional and national interests, Chapter 8 provides the Secretary with information on the sharing of developmental benefits and environmental risks. For example, new or expanded OCS oil and gas exploration and development in Alaska would result in increased job opportunities and higher wages for employees in Alaska and elsewhere; however, additional environmental risks would also occur in these areas due to expanded operations. The chapter also includes a discussion on the developmental benefits and environmental risks that would be anticipated if the No Sale Option were chosen in any of the Program areas.

### *C) Location with Respect to Regional and National Energy Markets and Needs*

The analyses in Chapter 6 focus on recent developments in energy markets, including recent low oil and gas prices.[12] The analyses include the U.S. Department of Energy's (DOE) projections of national and regional production and consumption according to the EIA's *Annual Energy Outlook 2015* (EIA 2015); the potential contribution of OCS oil and gas production in meeting the United States' needs; regional energy markets and the location of OCS planning areas; and alternatives to OCS production.

[12] Section 1.2 also addresses energy needs but with respect to the overriding purpose of the Five-Year Program "to best meet national energy needs …." As noted above, the focus of Chapter 6 is on providing information to allow the Secretary to meet the requirements of Section 18(a)(2)(C).

Chapter 4 and Appendix C of the 2017–2022 Draft Programmatic EIS describe the socioeconomic environment (population, employment, income, and environmental justice) for each OCS region and nearby onshore areas, including the existing oil and natural gas infrastructure and its relationship to new leasing. Recent OCS oil and gas lease sale EISs and other NEPA documents also provide relevant information relating to regional distribution and processing of OCS oil and natural gas.

### *D) Location with Respect to Other Uses of the Sea and Seabed*

Section 6.6 discusses competing uses of the OCS. This section includes information received from Federal, state, and local government agencies; environmental organizations; and regional fishery management bodies (see Appendix A); as well as information provided by BOEM's Marine Minerals and Renewable Energy Programs. Section 6.6 contains references to additional information and analyses on other uses of the OCS that are presented in Chapter 3, Chapter 4, and Appendices B and C of the Draft Programmatic EIS.

### *E) Interest of Potential Oil and Gas Producers*

Section 9.2 describes industry interest as indicated in response to the DPP. Appendix A summarizes all substantive comments received, including those from oil and natural gas companies and associations in the exploration and production sector of the energy industries.

### *F) Laws, Goals, and Policies of Affected States Identified by Governors*

Section 9.1 includes summaries of the relevant laws, goals, and policies—including federally approved CZM programs and policies—that state governments identified when responding to BOEM's request for comments. As required by Section 18(c)(1), BOEM sent letters to the Governors of all 50 states requesting their suggestions and asking them to identify any relevant state laws, goals, and policies for the Secretary's consideration. Appendix A summarizes all substantive comments received on the DPP, including those from Governors and state government agencies.

### *G) Relative Environmental Sensitivity and Marine Productivity*

Section 7.2 contains an analysis of the environmental sensitivity and marine productivity for the Program Areas. "Sensitivity" is not a well-defined term in ecology or environmental science. In Section 7.2, as in previous Programs, BOEM defines the term "sensitivity" as sensitivity to potential impacts from oil and gas exploration and development as measured by indicators of vulnerability to impact.

An estimate of OCS marine productivity is also included in this analysis. Productivity is defined as the rate of biomass production per unit of time. In the marine environment, primary production conducted via photosynthesis determines the total amount of biomass available to higher trophic levels. However, the relationship between primary and secondary and/or higher production is not straightforward or uniform across marine ecosystems (Pomeroy 1991). Higher level productivity is difficult to estimate, especially across geographically large and ecologically diverse areas, such as the OCS (BOEMRE 2011). Furthermore, measurements for the areas that remain in the Program were produced using satellite-based measurements of chlorophyll, available light, and photosynthetic efficiency (BOEMRE 2011). These rates are on an areal basis so direct comparisons among program areas of different sizes can be made.

### *H) Environmental and Predictive Information*

The 2017–2022 Programmatic EIS describes the environmental setting and potential impacts on environmental and socioeconomic resources, focusing on moderate to major impacts that could occur in each program area. Relevant environmental and predictive information is presented concerning potential environmental impacts from the proposed DPP lease sale schedule and Supplemental Options analyzed in the Proposed Program (referred to in the Programmatic EIS as the Proposed Action) and alternatives.

Because it is a Programmatic EIS, the broadest and most extensive analysis of the program areas is discussed to support the balancing of OCS Lands Act considerations, including social, environmental, and economic concerns. It provides a broad overview of the types of relationships between resources and impact-producing factors that could result in impacts on those resources. Resources discussed in the Programmatic EIS include water quality, air quality, biological resources, the acoustic environment, and socioeconomic and sociocultural resources. Impact-producing factors analyzed in the Programmatic EIS include marine noise, oil spills, air emissions, construction and presence of oil and gas production structures, and others. The nature and severity of these impacts are discussed in the Programmatic EIS. The Draft Programmatic EIS and appendices that have been made available to the Secretary to help inform the Proposed Program decision are available at www.boemoceaninfo.com.

The detailed environmental impact analyses contained in the Programmatic EIS have been conducted in accordance with NEPA, as well as the environmental portions of relevant Section 18 factors that are briefly discussed in this Proposed Program decision document, including the following:

- Section 18(1), consideration of environmental values of renewable and nonrenewable OCS resources and the impact of oil and gas exploration on other resource values of the OCS and the marine, coastal, and human environments
- Section 18(2)(A), existing information concerning the geographical, geological, and ecological characteristics of such regions
- Section 18(2)(H), relevant environmental and predictive information for different areas of the OCS

Therefore, the Proposed Program references the Draft Programmatic EIS, as appropriate, so readers can easily find pertinent, detailed environmental information and impact analyses that address each of the environmentally relevant Section 18 factors.

Section 18 factors associated with environmental concerns that are addressed in detail in this Proposed Program decision document include Section 18(2)(B), an equitable sharing of developmental benefits and environmental risks among the various regions (see Chapter 8 and the Programmatic EIS); and Section 18(2)(G), the relative environmental sensitivity and marine productivity of different areas of the OCS (Section 7.2). The Draft Programmatic EIS and Proposed Program decision document are published in conjunction and are part of the materials required for review prior to any decision making. Therefore, the Draft Programmatic EIS and Proposed Program decision document together present a robust picture of the environmental, cultural, economic, and resource considerations necessary to aid the Secretary in balancing environmental concerns with energy needs, and to inform the decision on the proposed 2017–2022 lease sale schedule with regard to the size, timing, and location of leases.

## 2.3 SECTION 18(A)(3): BALANCING THE POTENTIAL FOR ENVIRONMENTAL DAMAGE, DISCOVERY OF OIL AND GAS, AND ADVERSE IMPACT ON THE COASTAL ZONE

Another of the Section 18(a) guiding principles is found in Section 18(a)(3), which requires the Secretary, when making decisions on the size, timing, and location of OCS leasing, to strike a balance among the potential for environmental damage, the discovery of oil and gas, and adverse impacts on the coastal zone. The Secretary's balancing effort must be informed by her analysis of the Section 18(a)(2) factors. Pursuant to the balancing requirement, Part II of this Proposed Program decision document presents a comparative analysis of the Proposed Program Options.

An element of the analysis is an estimation of societal net benefits for each program area, derived by calculating the value of production anticipated from the Proposed Program Options minus the cost to industry and the environmental and social costs of developing those resources. The analysis also considers the impacts of the most likely energy substitutes that would exist in the absence of sales in any or all of the program areas. BOEM refers to the results of this analysis as the incremental net benefits (see Section 5.3). See also the descriptions of the various types of "value" in Section 2.6.

The comparative analysis also considers the program areas according to quantified information relating to environmental sensitivity and marine productivity (see Section 7.2) and relating to the interest of potential oil and natural gas producers (see Section 9.2). Other Section 18(a)(2) factors, including geographical, geological, and ecological characteristics, and laws, goals, and policies of affected states, do not lend themselves to quantification and are therefore treated qualitatively. The comparative analysis also examines additional qualitative information pertaining to the findings and purposes of the OCS Lands Act, the comments and recommendations of interested and affected parties, and other information relevant to striking a proper balance under Section 18(a)(3).

The OCS Lands Act does not specify what the balance should be or how the factors should be weighed to achieve that balance, leaving it to the Secretary's discretion to reach a reasonable determination under the existing circumstances.

## 2.4 SECTION 18(A)(4): ASSURANCE OF FAIR MARKET VALUE

Section 18(a)(4) of the OCS Lands Act requires receipt of FMV from OCS oil and gas leases. BOEM's two-phase post-sale bid evaluation process, used since 1983, meets the FMV requirement for the issuance of individual leases. Historically, this process has considered geologic and auction market factors in phase one and economic factors in phase two. In addition to the assurance of FMV in the Five-Year Program development and implementation process, BOEM continues to assess market and resource conditions as each lease sale approaches, and designs the lease sale fiscal terms to achieve FMV. Additional information on, and analysis of, FMV is contained in Chapter 10, which also considers the uncertainties surrounding OCS oil and gas leasing, and how these uncertainties can impact the value of OCS acreage.

## 2.5 SECTION 18(A): ENERGY NEEDS

As stated in Section 18(a) of the OCS Lands Act, the purpose of the OCS oil and gas leasing program is to help meet the future energy needs of the United States. Section 1.2 presents an analysis of anticipated energy needs from the perspective of meeting the goals of the OCS Lands Act, which recognizes the importance of oil and gas exploration, development, and production, not only to provide fuel to consumers of all types, but also to support job creation, improve the GDP, the national balance of trade, national energy security, and as an integral component to national economic and energy policies in general.[13]

## 2.6 SECTION 18(A)(1): ECONOMIC, SOCIAL, AND ENVIRONMENTAL VALUES

Section 18(a)(1) of the OCS Lands Act requires that the Secretary manage the OCS "in a manner which considers economic, social, and environmental values of the renewable and nonrenewable resources contained in the outer Continental Shelf…." The Proposed Program analyses presented in Part II of this document are conducted to ensure that economic, social, and environmental values associated with exploration, development, and production of OCS resources are incorporated as important aspects of the Program's development. The OCS Lands Act also requires the Secretary to consider potential impacts that oil and gas activities could have on other resource values of the OCS and on the marine, coastal, and human environments. The purpose of the analyses performed for the Proposed Program is to assist the Secretary with these requirements (including the balancing requirement described in Section 2.3), in consideration with the other analyses.

The Programmatic EIS analysis is described in Section 2.2 under Section 18 factor H. The Programmatic EIS describes the environmental setting and potential impacts on environmental and socioeconomic resources from the DPP schedule of lease sales and alternatives to that schedule.

### *2.6.1 Economic Value*

Economic value is realized from decades of oil and natural gas activity and production that result from leases awarded during the implementation of the Program. Several metrics are used to calculate economic value, such as net economic value (NEV) of the extracted oil and natural gas resources; employment, wages, and income from oil and natural gas activity;[14] government receipts of cash bonuses, rentals, royalties, and taxes; and consumer surplus related to potentially lower domestic oil and natural gas prices resulting from OCS production. Economic values are discussed primarily in Net Benefits (Section 5.3), Equitable Sharing Considerations (Chapter 8), and Assurance of Fair Market Value (Chapter 10).

[13] Chapter 6 addresses similar energy issues but focuses on information the Secretary must consider pursuant to Section 18(a)(2)(C), discussed in Section 2.2.

[14] Consistent with standard practices in cost-benefit analysis, the net benefits analysis in Chapter 5 (Valuation of Program Areas) treats employment, wages, and income as costs necessary to obtain the oil and natural gas that provide economic value. However, in general, these results of OCS development are widely viewed as benefits to society, and they are treated in that context in Chapter 8 (Equitable Sharing Considerations).

### 2.6.2 Social Value

Social value is realized when OCS resources are combined with inputs or processes to generate improvements in the lives of people or benefits to society. When OCS resources are used to maximize social value, the Program is being efficiently managed. Social value can be negatively impacted (a social welfare loss) when OCS resources are not developed in the interest of conservation[15] or when Program activities result in adverse consequences to society, such as could occur from a significant increase in air pollution from offshore production or from a highly damaging event like a large offshore oil spill. At the same time, energy substitutes for forgone OCS oil and gas production can also cause social welfare losses, resulting from such things as spills of imported oil or air pollution from increased onshore production. Social values consist of both economic and environmental effects and values (including cultural and community values) and reflect the components of all the substantive requirements analyses prepared in support of this Proposed Program. Social values are especially relevant in Part II, analysis of the Proposed Program Options identified by the Secretary.

### 2.6.3 Environmental Value

Environmental value is the worth society places on the intrinsic natural capital in the OCS's renewable and non-renewable resources. Natural capital, the essential goods and services that nature provides, includes marine productivity, quality of aesthetic resources, human-ecological connectivity, and air and water quality. The analyses presented herein discuss environmental sensitivity and marine productivity (Section 7.2), and the important effect of relevant environmental impacts on environmental value (see the Programmatic EIS for additional analysis). Section 18(a)(2)(G) calls for the assessment of the relative environmental sensitivity and marine productivity of the OCS. BOEM sponsored the development of a new method for performing this assessment for the 2017–2022 Program, the results of which were first presented in the DPP document. See Sections 2.2 (G) and 7.2 in this document for methodological explanations. Feedback from internal and external reviews of this new approach was incorporated into the analysis for this Proposed Program. Comments received on the Proposed Program analyses will be considered for incorporation in the PFP analyses.

## 2.7 JUDICIAL GUIDANCE

The 2017–2022 Program will be the ninth program prepared by the Department. Pursuant to Section 23(c)(1) of the OCS Lands Act, all challenges to the Program are heard in the U.S. Court of Appeals for the District of Columbia Circuit. The 1980–1985, 1982–1987, 1987–1992, 2007–2012, and 2012–2017 Programs prepared and approved under Section 18 were challenged in court. No lawsuits were filed with respect to the approved 1992–1997, 1997–2002, or 2002–2007 Programs.

The 2017–2022 Program is being prepared in accordance with guidance provided in those court decisions addressing past programs. A brief description of the findings of each decision and how they have guided preparation of the programs over time follows.

- *California v. Watt*, 688 F.2d 1290 (D.C. Cir. 1981) (*California I*) — In this case, the State of California challenged the 1980–1985 Program. This Program was the first that followed the

[15] In this context, conservation refers to the responsible development of oil and gas resources by preventing waste and maximizing recovery of economically producible reservoirs (MMS 2007).

passage of the OCS Lands Act Amendments of 1978, which added the Section 18 requirement for a leasing program. The court stated that the Secretary must consider all eight factors and not defer required factors to later stages because more information might be available. It accepted the use of a cost-benefit-type analysis and recognized that certain analyses could be qualitative. The court found that the three balancing factors in Section 18(a)(3) were not inherently equal and the Secretary had discretion in weighting them, as long as the decision was not arbitrary. The case was remanded to consider those of the eight factors not previously considered, better quantify environmental costs, and present a coherent explanation on how NEV is determined and the value of deferring leasing. However, as a new program for 1982–1987 was already in preparation, the 1980–1985 Program was not revised.

- *California v. Watt*, 712 F.2d 584 (D.C. Cir. 1983) (*California II*) — In this case, the court held that the 1982–1987 Program met the requirements found lacking in the 1980–1985 Program. The court upheld the methodology and assumptions used for the net social value (NSV) analysis. The court reiterated the "pyramidic" nature of the entire leasing process and upheld the first use of area-wide leasing because exact tracts (blocks) do not need to be identified at the Program stage. It found that receipt of FMV does not mean "maximization of revenues" and validated the post-sale bid evaluation methodology. The court also stated that once the determination has been made to not consider an area for leasing, that area does not need to be analyzed further.

- *Natural Resources Defense Council, et al. v. Hodel*, 865 F.2d 288 (D.C. Cir. 1988) (*NRDC*)— In this case, the court remanded the 1987–1992 Program for better NEPA coverage of cumulative impacts of simultaneous development in different planning areas. The court validated the use of administratively established planning areas as the basis for comparing "oil- and gas-bearing physiographic regions," a term used, but not defined, in the OCS Lands Act. As in the previous cases, the court upheld the cost-benefit methodology and assumptions used.

- *Center for Biological Diversity, et al. v. Department of the Interior*, 563 F.3d 466 (D.C. Cir. 2009) — In this case, the court remanded the 2007–2012 Program for failure to consider the relative environmental sensitivity and marine productivity of "different areas of the outer Continental Shelf," not just the shoreline, and required the Secretary to rebalance under Section 18(a)(3) using the revised analysis along with the other seven factors. The court also found that the OCS Lands Act does not require consideration of the impact of consuming OCS oil and gas and denied the NEPA claims presented in this case, holding the claims not ripe because an agency's NEPA obligations mature only once it reaches a critical stage of a decision, which will result in irreversible and irretrievable commitments of resources to an action that will affect the environment and, that in the case of the Five-Year Leasing Program, the point of irreversible and irretrievable commitment of resources and the concomitant obligation to fully comply with NEPA do not mature until leases are issued. Regarding consumption effects, the court stated that "Interior need not consider the impacts of the *consumption* of oil and gas after it has been extracted from the OCS. OCSLA therefore concerns the local environmental impact of leasing activities in the OCS and does not authorize—much less require—Interior to consider the environmental impact of post-exploration activities such as consuming fossil fuels…."[16]

- *Center for Sustainable Economy (CSE) v. Jewell*, 779 F.3d 588 (D.C. Cir. 2015) — The court found that CSE's NEPA challenges were unripe, because the Department makes no irreversible commitment of resources at the Five-Year Program stage, and upheld the Department's chosen methods of cost-benefit analysis as reasonable and consistent with the statute.

[16] As explained in Chapter 6 and the related Draft Economic Analysis Methodology paper (BOEM 2016), OCS oil and gas helps to meet the market's demand for energy (as well as some other products).

# Chapter 3 Outreach and Coordination

Outreach and coordination between BOEM; other Federal agencies; state, local, and tribal governments; non-governmental organizations; and the public is a crucial part of the program development process. BOEM's outreach and consultation efforts strive to encourage open and continued communication between these groups to share ideas and concerns, and to ensure that accurate and timely information is exchanged.

## 3.1 PROGRAM OUTREACH AND COORDINATION

Section 18 of the OCS Lands Act specifies a multi-step process of consultation and analysis that must be completed before the Secretary may approve a new Five-Year Program. This process requires the Secretary to consider, among other factors, comments and concerns of local governments and tribes, public input, and competing uses of the OCS. Additionally, the OCS Lands Act requires the consideration of the laws, goals, and policies of affected states that have been specifically identified in comments received from Governors, and the interest of potential oil and gas producers in the development of oil and gas resources as indicated by exploration or nomination (i.e., industry interest). Laws, goals, and policies of affected states that were identified by Governors' comments are discussed in Section 9.1 and industry interest is discussed in Section 9.2.

The program development process requires multiple opportunities for stakeholders and the general public to provide comments, with three comment opportunities under the OCS Lands Act process and two under the NEPA process.

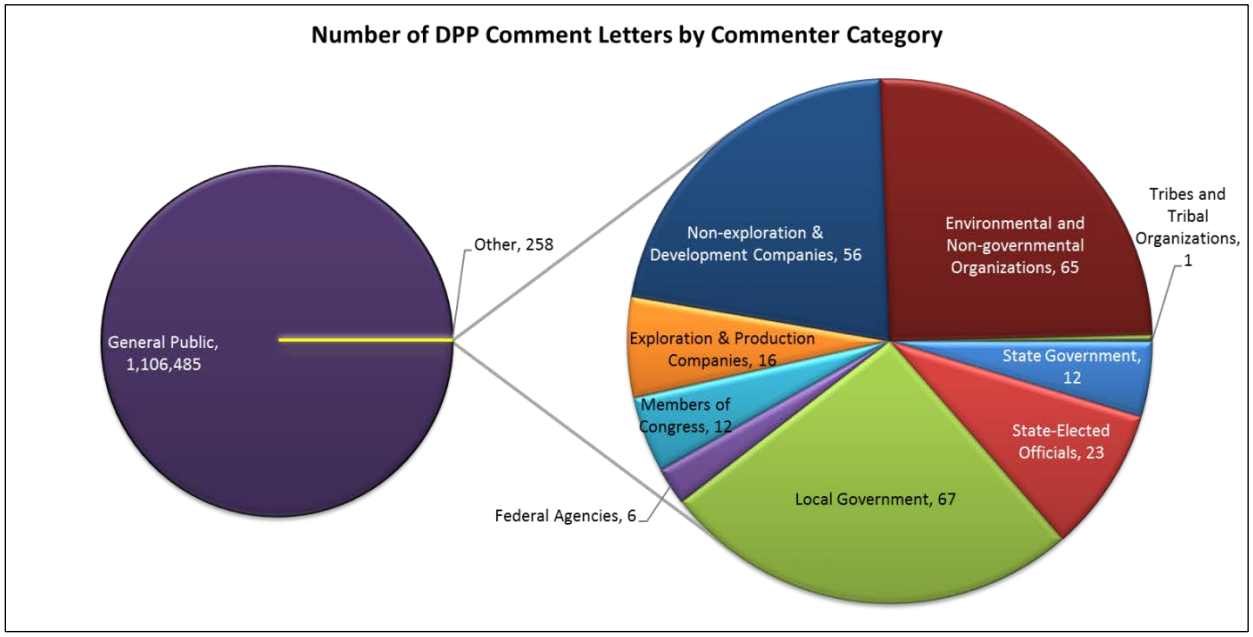
### *3.1.1 Request for Information and Comments*

On June 16, 2014, BOEM published in the *Federal Register* a Request for Information and Comments (RFI), which is the first step in the preparation of a new OCS Oil and Gas Leasing Program (79 FR 34349). BOEM also sent letters to all Governors and potentially interested Federal agencies requesting their input. The initial comment deadline of July 31, 2014, was extended to August 15, 2014, after BOEM received requests from several states for additional time to respond (79 FR 44861). BOEM received a total of 500,130 comments in response to the RFI (see Appendix A of the 2017–2022 DPP for a summary of comments received on the RFI).

The 2017–2022 DPP public comment period was initiated with the publication of the DPP on January 29, 2015, with a 60-day comment period ending on March 30, 2015 (80 FR 4939). The scoping comment period for the Programmatic EIS was concurrent with the DPP public comment period. Approximately 2,619 letters and 26 form letters were received during the scoping comment period for the Programmatic EIS. Additionally, BOEM received approximately 1,083,500 public comments from various stakeholders and partners on the DPP, including 35 different form letters and at least 250 unique letters (see Figure 3-1). Of the comments received on the DPP, slightly more than half stated support for Atlantic area leasing, and slightly less than half stated opposition to Arctic, Atlantic, and/or Pacific area

leasing. Appendix A provides an overview of comments and summaries of the substantive comments received on the DPP.

**Figure 3-1: Number of DPP Comment Letters Received**




### *3.1.2 Public Meetings for the Programmatic EIS*

In addition to the procedural requirements under Section 18, the NEPA process requires public input at the scoping stage of Programmatic EIS development and after the publication of the Draft Programmatic EIS. BOEM collected comments relevant to the Programmatic EIS and program development at 23 public scoping meetings (see Table 3-1 and Figure 3-2), from the Federal commenting website www.regulations.gov (docket numbers BOEM-2014-0096 and BOEM-2014-0085-0001), and through the U.S. mail. The public scoping meetings were jointly attended by both BOEM Program and NEPA staff, who facilitated discussions with the public on both planning processes. The Draft Programmatic EIS also includes a robust public comment process, including a responsibility to respond to substantive comments on the Draft Programmatic EIS within the Final Programmatic EIS.

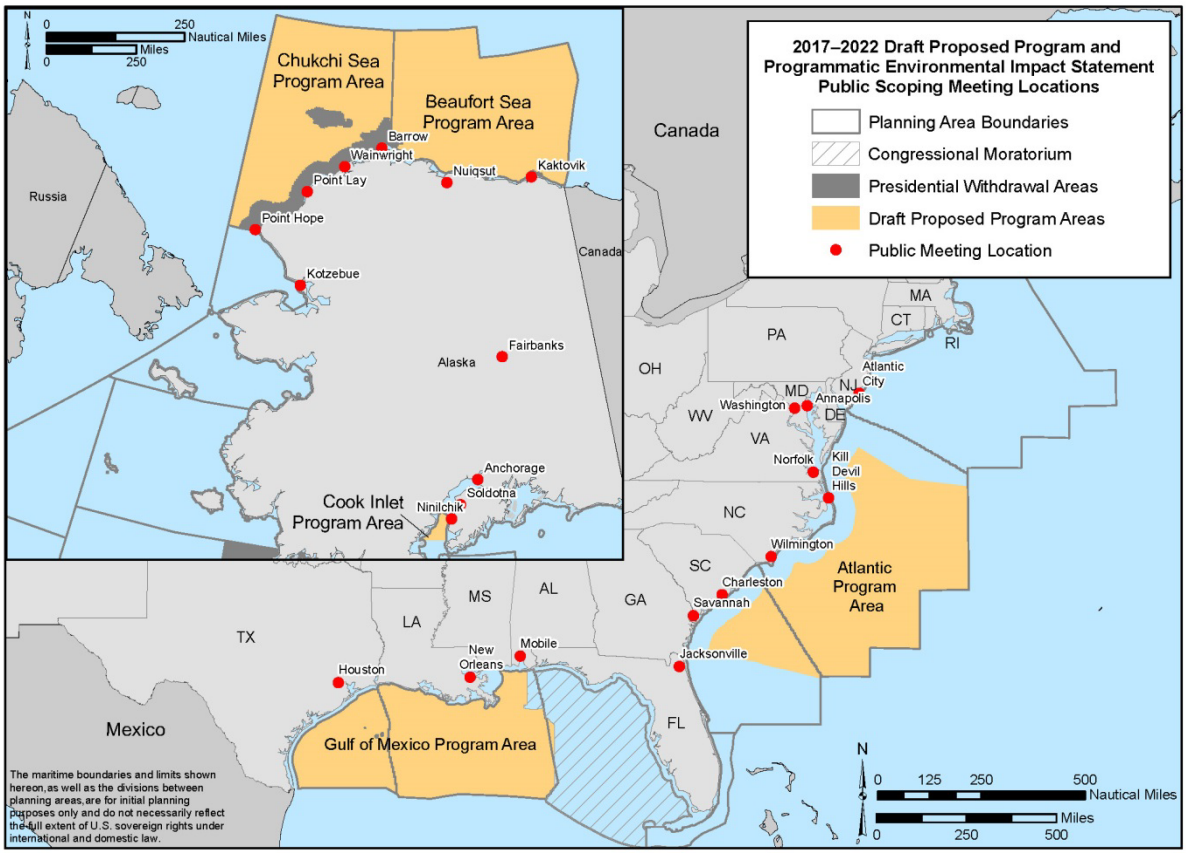
**Table 3-1: Public Scoping Meetings for the 2017–2022 Draft Programmatic EIS**

| Location | Date | Approximate Number of Attendees |
|---|---|---|
| Washington, DC | February 9, 2015 | 75 |
| Fairbanks, AK | February 9, 2015 | 30 |
| Norfolk, VA | February 11, 2015 | 170 |
| Ninilchik, AK | February 11, 2015 | 4 |
| Soldotna, AK | February 12, 2015 | 3 |
| Nuiqsut, AK | February 16, 2015 | 5 |
| Barrow, AK | February 17, 2015 | 25 |
| Wilmington, NC | February 17, 2015 | 400 |
| Kaktovik, AK | February 18, 2015 | 20 |
| Wainwright, AK | February 19, 2015 | 15 |
| Jacksonville, FL | February 19, 2015 | 45 |
| Houston, TX | February 23, 2015 | 44 |
| Kotzebue, AK | February 23, 2015 | 4 |
| Point Lay, AK | February 24, 2015 | 10 |
| New Orleans, LA | February 25, 2015 | 16 |
| Mobile, AL | February 26, 2015 | 2 |
| Anchorage, AK | March 2, 2015 | 84 |
| Annapolis, MD | March 9, 2015 | 50 |
| Charleston, SC | March 11, 2015 | 221 |
| Kill Devil Hills, NC | March 16, 2015 | 671 |
| Atlantic City, NJ | March 18, 2015 | 63 |
| Savannah, GA | March 24, 2015 | 130 |
| **Total Attendees** | | **2,087** |

**Note**: A scoping meeting was scheduled for Point Hope, Alaska, but was cancelled due to poor weather conditions. However, BOEM was able to communicate with village officials by telephone.

**Key**: AK = Alaska; AL = Alabama; DC = District of Columbia; FL = Florida; GA = Georgia; LA = Louisiana; MD = Maryland; NC = North Carolina; NJ = New Jersey; SC = South Carolina; TX = Texas; VA = Virginia

**Figure 3-2: Location of Draft Programmatic EIS Scoping Meetings**




## 3.2 UPCOMING OUTREACH AND COORDINATION

### *3.2.1 Proposed Program and Draft Programmatic EIS*

Publication of the Proposed Program and Draft Programmatic EIS initiates another public comment period and series of public meetings that will be held in the potentially affected regions. The primary purpose of these meetings is to provide the public with an opportunity to engage with BOEM about the Programmatic EIS analyses; however, Five-Year Program development representatives will also be present to address any questions. On March 18, 2016, a Request for Comments was published in the *Federal Register* with a 90-day comment period for the Proposed Program ending on June 16, 2016. The Draft Programmatic EIS has a 45-day comment period, starting on March 18, 2016 and ending on May 2, 2016. Comments received help inform the development of, and ultimately the decision on, the size, timing, and location of lease sales in the third, and final, analytical stage of program development, which is the PFP stage, and also help inform the Final Programmatic EIS.

### *3.2.2 Proposed Final Program and Final Programmatic EIS*

After the Proposed Program and Draft Programmatic EIS comment periods have expired, work will commence on the PFP and Final Programmatic EIS analyses. The PFP and Final Programmatic EIS will analyze the Proposed Program decision on the proposed lease sale schedule in addition to any other Program Options that the Secretary deems ripe for inclusion for analysis at the Five-Year Program stage

(see Section 1.3.3 for further information). Sixty days after the Secretary delivers the PFP to the President and Congress, she may approve the Program.

## 3.3 BOEM Outreach Efforts For Atlantic G&G Permitting

Pre-lease G&G data acquisition is another OCS activity related to the oil and gas leasing program as a whole. Pre-lease G&G activity and the lease sale program are on separate development paths, and commencement of one is not dependent on the completion of the other. See Chapter 5 for a description of G&G data acquisition on the OCS.

Some data suggest that portions of the Mid-Atlantic and South Atlantic Planning Areas may contain significant oil and gas resource potential; however, current G&G information regarding that potential is based on data collected in the 1970s and 1980s. Tremendous advances in instrumentation and technology for the acquisition and analysis of G&G data have since been made.

In recognition of these advances in G&G data acquisition technology and of the need to better understand the scope of existing resources and potential conflicts, BOEM's July 2014 ROD for the *Atlantic OCS Geological and Geophysical (G&G) Activities, Mid-Atlantic and South Atlantic Planning Areas, Final Programmatic Environmental Impact Statement* (herein referred to as the G&G PEIS; BOEM 2014) for Atlantic activities established a path forward for appropriate G&G survey activities off the Mid-Atlantic and South Atlantic coast. That decision establishes safeguards governing the potential G&G activities that are necessary to update the region's offshore oil and gas resources appraisal.

The ROD for the G&G PEIS used the best available science available at the time to establish the highest practicable level of mitigation measures and safeguards consistent with allowing survey activity, to reduce or eliminate environmental impacts, including impacts on marine life. This work builds upon the groundwork laid in the 2012–2017 PFP that discussed the need for the G&G PEIS and ultimately the potential for updated G&G data and information, and is consistent with BOEM's frontier area strategy to increase BOEM's understanding of resource potential and develop a suite of environmental studies for the purpose of establishing a baseline. Several proposed G&G permits are currently under consideration for conducting surveys in the Atlantic (also see Section 4.3). While the G&G permit application and approval process is separate and outside the scope of the program development process, if approved and conducted, these surveys will provide critical new information to inform potential future leasing decisions. Additional information on the permitting process is available at http://www.boem.gov/Atlantic-G-and-G-Permitting/.

# Chapter 4 Background, Leasing History, and Status of OCS Program Areas

This chapter contains the background and history of the program areas, and discusses the Proposed Program Options deemed suitable for further analysis for potential oil and gas leasing with respect to size, timing, and location by the Secretary in the DPP decision, as well as three supplemental Program Options. The Proposed Program analyses are based on the schedule of 14 potential lease sales in five program areas as described in the DPP decision. In the DPP, ten region-wide sales were proposed in the GOM Program Area; one sale each in the Chukchi Sea, Beaufort Sea, and Cook Inlet Program Areas offshore Alaska; and one sale in the Atlantic Program Area. No lease sales were proposed for the Pacific region.

Three supplemental Program Options, two in the GOM and one offshore Alaska, are also analyzed in this document. Traditionally, including in the 2012–2017 Program, BOEM has scheduled separate, generally alternating, annual sales in the Western and Central GOM Planning Areas and periodic sales in the portion of the Eastern GOM, all in areas unleased and not under moratoria or otherwise restricted. This Proposed Program analyzes a Program Option consisting of region-wide sales in a combined program area of Western, Central, and Eastern GOM unleased acreage not subject to moratoria or otherwise restricted. An analysis of a modified version of the traditional approach was included in the Proposed Program to facilitate the Secretary's determination of the approach that best considers the factors and balances the potentials laid out in Section 18 of the OCS Lands Act. The analysis of the modified traditional approach was based on holding 10 separate, alternating, annual sales in the Western and combined Central and Eastern GOM Program Areas of all unleased land not under moratoria or otherwise restricted. Any individual sale could be scaled back during the lease sale process to conform more closely to the traditional separate planning area model should circumstances warrant. Further, the analyses for PFP will consider, as a option, the traditional, separate planning area model, which includes five sales in the Western GOM and five in the combined Central/Eastern GOM not subject to moratoria or otherwise unavailable.

The two other supplemental Program Options analyzed were: (1) Advancing the Beaufort Sea Lease Sale to 2019 Option; and (2) Baldwin County 15-mile No-Leasing Buffer Option, as requested by the Governor of Alabama. These Proposed Program Options are described in detail below.

All Proposed Program Options are analyzed in the Draft Programmatic EIS. Under the Council on Environmental Quality's NEPA implementing regulations, a reasonable range of alternatives must be analyzed in the Programmatic EIS. Therefore, the Draft Programmatic EIS analyzes additional alternatives that are addressed herein qualitatively below (see Chapter 11). These additional Programmatic EIS alternatives, which include protections for what are called "environmentally important areas," are analyzed in this Proposed Program document in a qualitative manner, under Section 18, to provide the Secretary with information, along with the information presented in the Programmatic EIS, to serve as a foundation to inform future analysis and related leasing decisions concerning these environmentally important areas.

## 4.1 ALASKA PROGRAM AREAS HISTORY

Existing Federal leases are present only in the Beaufort Sea and Chukchi Sea Planning Areas; the only Federal production is occurring in a joint Federal/state unit in the Beaufort Sea Planning Area. Outside of the Beaufort Sea and Cook Inlet, there is little, if any, existing oil and gas infrastructure and activity offshore in Alaska. All Alaska areas are considered to be frontier areas due to the low level of Federal oil and gas production. Three Alaska program areas (Beaufort Sea, Chukchi Sea, and Cook Inlet) are analyzed in this Proposed Program document.

### *4.1.1 Beaufort Sea*

Ten lease sales have been held in this area since 1979. BOEM published a Call for Information and Nominations in July 2014, but only received one nomination, thereby raising concerns about the competitiveness of any such lease sale at that time. On October 16, 2015, the Secretary cancelled Lease Sale 242 in the Beaufort Sea, which was scheduled for the first half of 2017 in the 2012–2017 Program, due to lack of industry interest and current market conditions.

The Barrow and Kaktovik whaling areas were withdrawn from leasing consideration for an indefinite period by the President under Section 12 of the OCS Lands Act on January 27, 2015. Deferrals have long existed around Barrow and Kaktovik at the request of stakeholders, including the North Slope Borough and the Native Village of Kaktovik, respectively.

As of March 1, 2016, there are 77 existing leases in this area. Thirty-four exploratory wells have been drilled. The most recently drilled well (2012) was plugged and abandoned without being drilled to total depth. BOEM currently is reviewing a development and production plan to build a gravel island to drill wells for producing from a discovery in this planning area. There is production from a joint Federal/state unit. The State of Alaska holds area-wide sales in the adjacent state waters annually in the fall, and there is active production from state acreage adjacent to existing OCS leases.

The State of Alaska and others, in public comments on the RFI and DPP, have prioritized ensuring adequate oil production to extend the operation of the Trans-Alaska Pipeline System (TAPS). TAPS is currently operating at approximately one-quarter of its capacity and requires new discoveries to continue operations. Both the Beaufort Sea and the Chukchi Sea OCS areas have the potential to provide such oil discoveries.

### *4.1.2 Chukchi Sea*

Three lease sales have been held in this area since 1988. Five exploratory wells were drilled prior to 1992 on leases issued in earlier sales; all have been plugged and abandoned. Although an uneconomic gas discovery was made in 1990 in the Burger prospect, the well was also plugged and abandoned. One exploration well was drilled in 2012, but was plugged and abandoned without being drilled to total depth. In 2015, one exploration well was drilled to total depth and has been plugged and abandoned. Lease Sale 193, the most recent in this area, was held in February 2008, and was the largest sale in the history of Alaska OCS leasing, generating more than $2.6 billion in revenues. As of March 1, 2016, there are 434 existing leases, all issued in Sale 193 and scheduled to expire by the end of 2020. The Chukchi Sea

Planning Area has the greatest estimated hydrocarbon resource potential in Alaska, and could provide the volume of hydrocarbons necessary to extend TAPS.

On September 28, 2015, Shell announced that although indications of oil and gas were found in the one well drilled during the open-water season in 2015, it was not sufficient to warrant further exploration in that prospect. The company also stated it would not operate in the Arctic for the foreseeable future (Royal Dutch Shell 2015). In addition, Statoil announced on November 17, 2015, that it would not be conducting operations for exploration and development of oil and gas resources in the Chukchi Sea, stating that the leases in this area were no longer competitive when compared to the company's other global mineral holdings (E&E News 2015). On February 11, 2016, Statoil relinquished 16 leases in the Chukchi Sea that it was a 100 percent interest owner. Discussions are underway to transfer Statoil's interest to ConocoPhillips in the 50 leases that Statoil holds a partial ownership interest.

In September 2013, BOEM issued a Call for Information and Nominations for Lease Sale 237, which was scheduled for 2016 in the current 2012–2017 Program, but no specific nominations were submitted by industry. On October 16, 2015, the Secretary cancelled Lease Sale 237 due to lack of industry interest and current market conditions. On January 27, 2015, President Obama, pursuant to Section 12 of the OCS Lands Act, withdrew a 25-mile coastal buffer, a subsistence use area, and the Hanna Shoal region lying within the contours of the 40-meter isobaths of the Chukchi Sea Planning Area from oil and gas leasing for an indefinite period.

### *4.1.3 Cook Inlet*

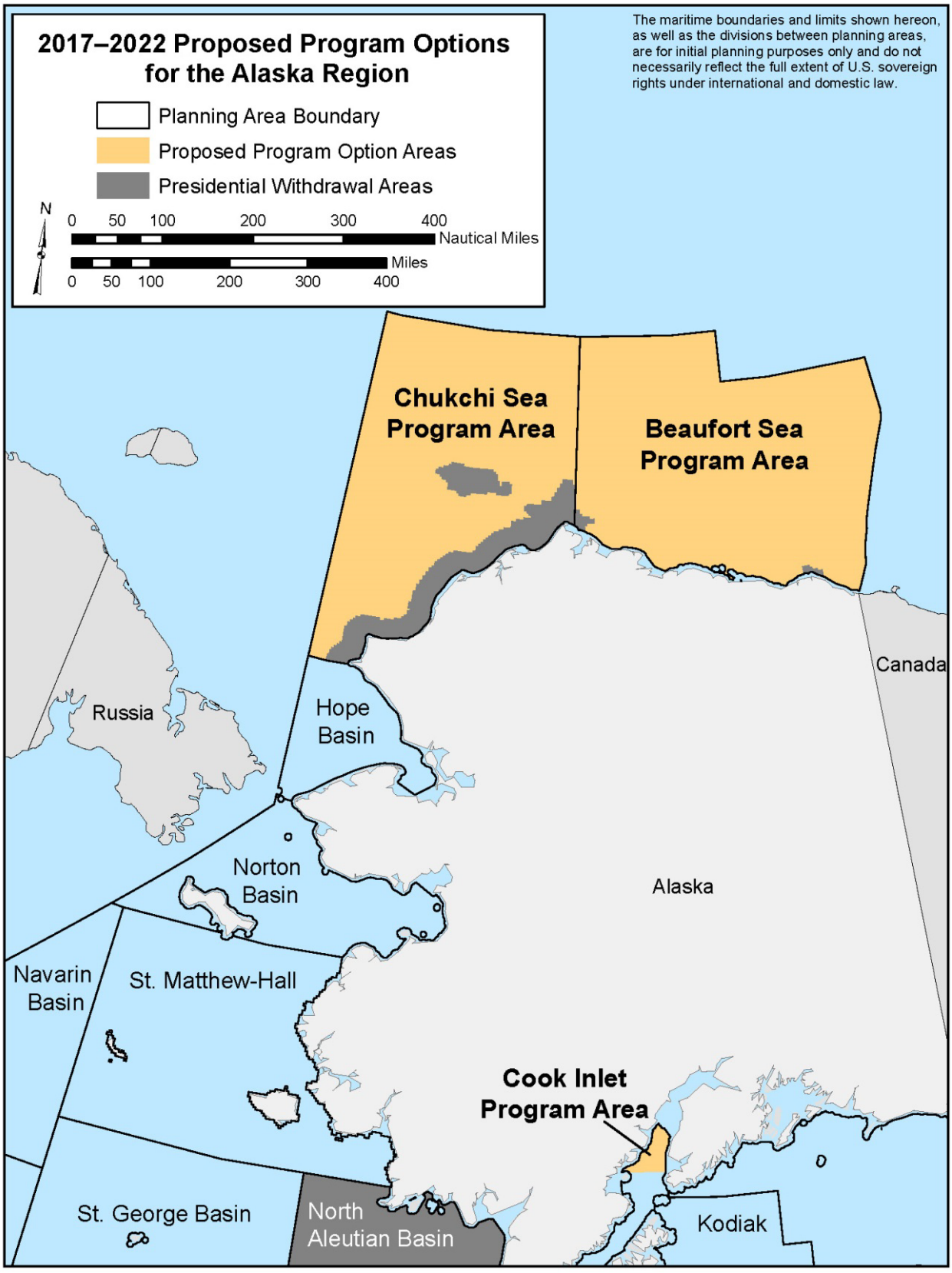
There have been five lease sales in this area since 1977. The most recent sale was held in 2004, with no bids received. Fourteen exploratory wells have been drilled, with no commercial discoveries. There are no existing OCS leases in this area. Lease Sale 244 is scheduled in the current 2012–2017 Program and BOEM has begun the pre-lease sale process to hold the sale in 2017. Information gathered, analyses conducted, and decisions made for this sale pursuant to the pre-lease sale and NEPA processes can be expected to provide input for the next steps in preparation of this Program and any potential sale in the Cook Inlet Program Area.

The upper Cook Inlet is a mature basin with extensive exploration and development in state waters over the past 40 years. The State of Alaska schedules annual area-wide sales in state waters, the most recent of which was held in May 2015. Annual production from non-OCS leased acreage during fiscal year (FY) 2014 totaled approximately 5.9 million barrels of oil (bbl) and 95 billion cubic feet of natural gas. Existing infrastructure in the upper portion of Cook Inlet includes 16 offshore platforms in state waters, associated oil and gas pipelines, and onshore processing and support facilities.

### *4.1.4 Alaska Region Proposed Program Options*

Three Proposed Program Options were analyzed in this Proposed Program: (1) the Targeted Leasing Option; (2) Advancing the Beaufort Sea Lease Sale to 2019 Option; and (3) the No Sale Option. The Beaufort Sea, Chukchi Sea, and Cook Inlet Program Areas are depicted in Figure 4-1.

**Figure 4-1: 2017–2022 Draft Proposed Program Alaska Program Areas**



#### *4.1.4.1 Targeted Leasing Option*

These Proposed Program Options continue the targeted leasing strategy set forth in the 2012-2017 Program by identifying one potential sale each in the Beaufort Sea (2020), Cook Inlet (2021), and Chukchi Sea (2022) Program Areas. In the Targeted Leasing Option, the potential sales in the three Alaska program areas are scheduled to be late in the five-year period to provide additional opportunity to obtain and evaluate information regarding environmental issues, subsistence use needs, infrastructure capabilities, and results from any exploration activity associated with existing leases.

As developed for the 2012–2017 Program, BOEM will continue to use scientific information and stakeholder and partner feedback to proactively determine, in advance of any potential lease sale, which specific areas offer the greatest resource potential while minimizing potential conflicts associated with the environment, subsistence activities, and multiple use concerns. Therefore, lease sales will be tailored to offer areas that have significant resource potential while appropriately weighing environmental protection, subsistence use needs, and other considerations.

This Proposed Program presents the analysis for a potential Beaufort Sea Lease Sale 255 in 2020, a potential Chukchi Sea Lease Sale 262 in 2022, and a potential Cook Inlet Lease Sale 258 in 2021, all in areas not under Presidential Withdrawal or otherwise restricted from leasing (see Figure 4-1).

#### *4.1.4.2 Advancing the Beaufort Sea Lease Sale to 2019 Option*

This Proposed Program presents a supplemental Program Option to move the potential Beaufort Sea Lease Sale 255 from 2020 to 2019 (see Figure 4-1). The Governor of Alaska requested that the Beaufort Sea lease sale be moved earlier in the Program to 2018 in a comment letter in response to the DPP; however, that timeframe would not allow BOEM to complete the lease sale process. The lease sale process could be completed for a lease sale in 2019, so BOEM included a lease sale in this timeframe as a Proposed Program Option for analysis.

#### *4.1.4.3 No Sale Option*

This Proposed Program presents the analysis for no sale being held in any of the Alaska Region program areas during 2017–2022.

## 4.2 GULF OF MEXICO PROGRAM AREA HISTORY

The GOM Region is comprised of the Western, Central, and Eastern GOM Planning Areas. The Western and Central GOM Planning Areas are the most mature and active of all 26 OCS planning areas. The GOM's Western and Central GOM Planning Areas, consisting of the OCS offshore Alabama, Mississippi, Louisiana, and Texas, remain the primary offshore source of oil and gas for the United States, generating about 97 percent of all OCS oil and gas production. The majority of the Eastern GOM Planning Area and a small portion of the Central GOM Planning Area are not available for leasing consideration during the time period of this Program pursuant to the Gulf of Mexico Energy Security Act of 2006 (GOMESA). There are existing leases in the portion of the Eastern GOM that is not available for leasing consideration that predate the GOMESA restriction.

The geology of the GOM basin and the complexity and abundance of its salt structures provides the setting that makes the GOM one of the richest oil and natural gas regions in the world. The greatest undiscovered resource potential in the U.S. OCS is forecast to exist in the deep and ultra-deep waters of the GOM.

There have been more than 100 lease sales since 1953 in the GOM Region and there are additional existing leases that lie within the area removed from leasing consideration pursuant to GOMESA. There is production from leases in the Western and Central GOM Planning Areas, but as of March 2016, no production has occurred from leases in the entire Eastern GOM Planning Area. See Chapter 5 for a display of play maps and discussion of anticipated production by program area.

Internationally, the U.S.-Mexico Transboundary Hydrocarbons Agreement signed in December 2013 establishes a framework for U.S. offshore oil and gas companies and Mexico's Petroleos Mexicanos to jointly develop transboundary reservoirs. Mexico made constitutional amendments in December 2013, followed by secondary legislation in August 2014 that opened oil and natural gas markets to foreign investments, including investments that are active in the GOM. The first leases in the area covered by the Agreement were issued from Western GOM Lease Sale 238 held in August 2014. The opening of Mexican waters could provide for long-term expansion of U.S.-Mexico energy trade and opportunities for U.S. companies, but also could result in a short- or longer-term shift in investment focus to the Mexican waters from the U.S. OCS.

### *4.2.1 Western Gulf of Mexico*

As of March 1, 2016, there are approximately 875 existing leases in the Western GOM. More than 7,800 wells have been drilled. The most recent sale, Sale 246, was held on August 19, 2015, resulted in 33 leases being awarded with bonuses totaling almost $23 million. One sale remains on the current schedule in 2016 (Sale 248). The State of Texas administers a robust oil and gas program in state waters adjacent to this area.

### *4.2.2 Central Gulf of Mexico*

As of March 1, 2016, there are approximately 3,428 existing leases in the Central GOM. More than 43,400 wells have been drilled. The most recent sale, Sale 235, was held on March 18, 2015 and resulted in 161 leases being awarded, with bonuses totaling $533 million. Two sales remain on the current 2012-2017 Program schedule, one each in 2016 and 2017 (Sales 241 and 247, respectively). The States of Louisiana and Alabama administer robust oil and gas programs in state waters adjacent to this area. There are no leases in Mississippi state waters.

### *4.2.3 Eastern Gulf of Mexico*

As of March 1, 2016, there are 48 existing leases in this area. Thirteen sales have been held in this planning area as it has been configured over the years and 105 wells drilled, with significant discoveries of natural gas. However, there has been no production from the wells in the entire planning area. The majority of this planning area is unavailable for leasing consideration through June 30, 2022, under GOMESA's Congressional moratorium. Sale 224 in March 2008 resulted in leases being awarded on 36 OCS blocks with bonuses totaling $64.7 million in the small area available for leasing consideration.

The most recent sale held in the same small area was Sale 225 in March 2014, and no bids were received. One sale (Sale 226) remains on the current 2012–2017 Program schedule for 2016.

### *4.2.4 Gulf of Mexico Region Proposed Program Options*

Proposed Program Options analyzed in both this Proposed Program decision document and the Programmatic EIS for the GOM include: (1) the Region-wide Leasing Option; (2) the Modified Traditional Leasing Option; (3) the Baldwin County Buffer Option[17]; and (4) the No Sale Option. The GOM Program Area is shown in Figure 4-2.

#### *4.2.4.1 Region-Wide Leasing Option*

This Proposed Program decision document presents the analysis for a lease sale schedule that consists of 10 region-wide sales in the GOM: one sale each in 2017 and 2022, and two sales each in 2018, 2019, 2020, and 2021. Under this Proposed Program Option, the entire GOM Region that is unleased and not under moratoria or otherwise excluded from leasing would be offered for each sale.

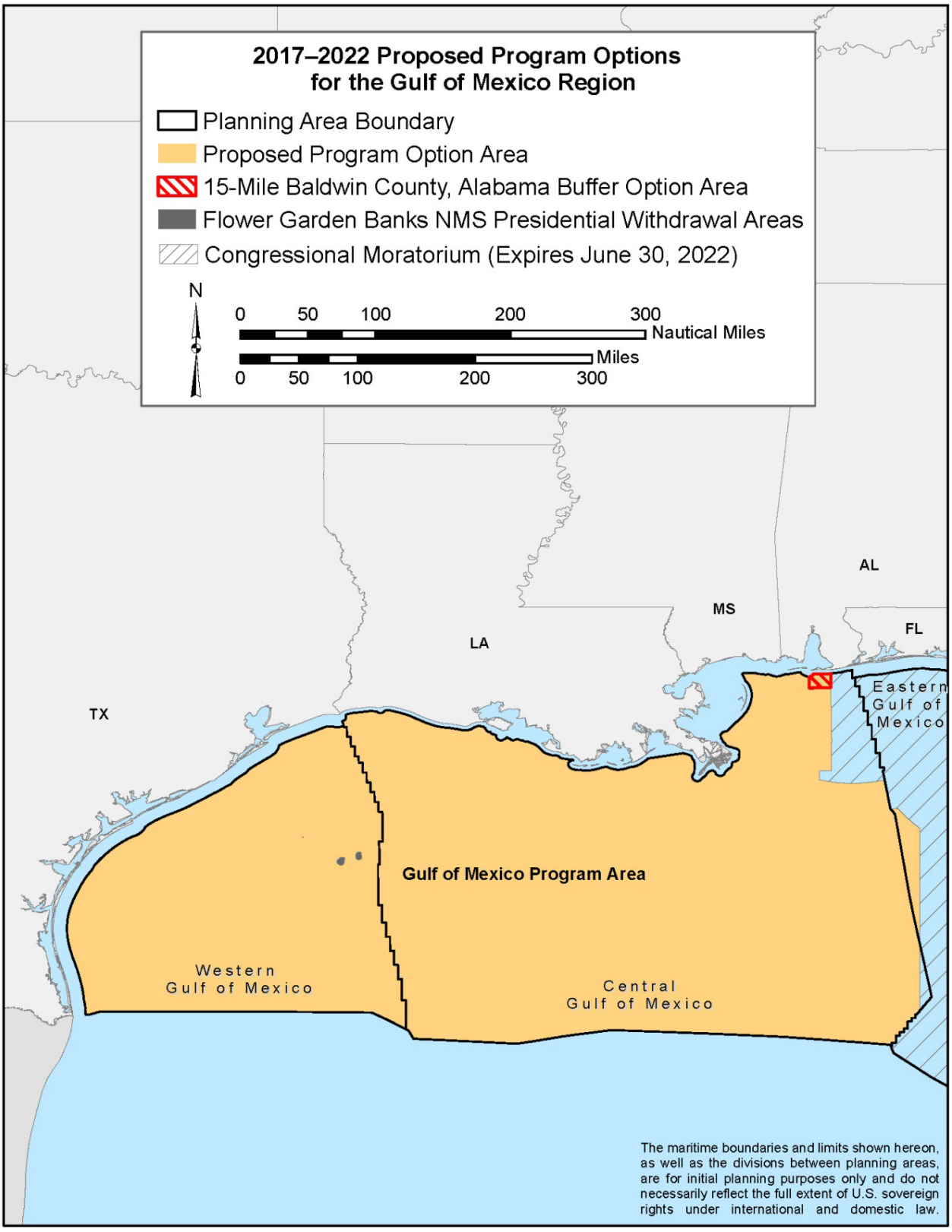
In the past, BOEM has scheduled separate, generally alternating, annual sales in the Western and Central GOM Planning Areas and periodic sales in the portion of the Eastern GOM not under moratoria. The DPP decision schedules region-wide sales comprised of the Western, Central, and Eastern GOM unleased acreage not subject to moratoria.

BOEM is proposing this change to provide greater flexibility to industry, including the ability to respond to the significant recent energy reforms in Mexico that have the potential to meaningfully change how exploration and development decisions are made in the GOM. Given that sales cannot be added to an approved Program, consideration should be given to providing flexibility at the Five-Year Program stage to respond to emerging activities offshore Mexico.

In scheduling sales by offering the entire available GOM acreage, BOEM is providing more frequent opportunities to bid on rejected, relinquished, or expired OCS lease blocks, as well as facilitating better planning to explore resources that may straddle the U.S.-Mexico boundary. Furthermore, any individual sale could be scaled back during the pre-lease sale process to conform more closely to the traditional separate planning area model should circumstances warrant. Additional advantages of implementing this Proposed Program Option would be the potential to prepare one multi-sale EIS with supplemental EISs for each lease sale and perform combined Endangered Species Act (ESA) consultation (e.g., one biological opinion), which could result in cost savings and a shorter timeline to complete the processes.

[17] An analysis of the Baldwin County Buffer Program Option is included in this Proposed Program decision document but was not analyzed as a separate NEPA alternative in the Programmatic EIS because it would not analytically differ from the Proposed Action.

**Figure 4-2: 2017–2022 Draft Proposed Program Gulf of Mexico Program Area**



#### 4.2.4.1 Modified Traditional Leasing Option

In addition, this Proposed Program presents the analysis for an approach in the GOM similar to the 2012-2017 Program. This analysis is based on holding 10 separate, alternating, annual sales in the Western and combined Central and Eastern GOM Planning Areas not under moratorium. Any individual sale could be scaled back during the lease sale process to conform more closely to the traditional separate planning area model should circumstances warrant. Further, the analyses for the PFP will consider, as a option, the traditional, separate planning area model, which includes five sales in the Western GOM and Five in the combined Central/Eastern GOM not subject to moratoria or otherwise unavailable. The lease sale schedule analyzed for this supplemental Program Option is shown in Table 4-1.

**Table 4-1: Proposed Sales by Year for the Modified Traditional Leasing Option**

| Year | GOM Planning Area |
|---|---|
| 2017 | Western GOM |
| 2018 | Central and Eastern GOM |
| 2018 | Western GOM |
| 2019 | Central and Eastern GOM |
| 2019 | Western GOM |
| 2020 | Central and Eastern GOM |
| 2020 | Western GOM |
| 2021 | Central and Eastern GOM |
| 2021 | Western GOM |
| 2022 | Central and Eastern GOM |

#### 4.2.4.2 Baldwin County Buffer Option

This Proposed Program presents the analysis for a 15-mile, no-leasing buffer offshore Baldwin County, Alabama (herein referred to as the Baldwin County Buffer Option), as requested in the comment letter from the OCS Governors Coalition. This Proposed Program Option could be combined with the Region-wide Leasing Option or the Modified Traditional Leasing Option. See Figure 4-2.

#### 4.2.4.3 No Sale Option

Under the No Sale Option, no oil and gas lease sales would be held for the GOM Region in 2017–2022.

## 4.3 ATLANTIC REGION HISTORY

There have been 10 lease sales throughout this region, the most recent of which was held in 1983. There have been no existing leases since the mid-1990s and no production from the OCS.

In 2009, as directed by Congress, BOEM (then the Minerals Management Service [MMS]) conducted a Programmatic EIS to evaluate potential significant environmental effects of multiple G&G activities in the Atlantic OCS. On January 21, 2009, an NOI was published for the G&G PEIS (74 FR 3636). In December 2010, USDOI announced a revised OCS leasing program that excluded the Mid-Atlantic and South Atlantic Planning Areas from the 2012–2017 Programmatic EIS (USDOI 2010). The Final G&G PEIS ROD was published in the *Federal Register* on July 23, 2014 (79 FR 42815). Using the best science available at the time, the ROD established the highest practicable level of mitigation and

safeguards to reduce or eliminate impacts on marine life while setting a path forward for appropriate G&G survey activities.

Among the mitigation measures for seismic activity is a time-area closure extending 29 nm from the coastline, from Delaware Bay to south of Cape Canaveral, Florida, generally from November through April to protect the North Atlantic right whale. It also includes a time-area closure to protect nesting sea turtles offshore Brevard County, Florida. See Chapter 5 for a discussion on oil and gas resource potential and G&G activities.

As of March 1, 2016, one permit has been approved, eight are pending, and three have been withdrawn. The one permit to conduct multi-client Airborne Gravity Gradient and Magnetic operations on the Atlantic OCS was approved by BOEM in July 2015, but the permit expired in mid-January without any activity having been conducted. Updated information on approved, pending, denied, or withdrawn permit applications is available at http://www.boem.gov/Currently-submitted-Atlantic-OCS-Region-Permits/. BOEM continues to work with the associated coastal states and NMFS on the processing of these permits.

The Mid-Atlantic and South Atlantic Planning Areas have also been previously identified by the Department of Defense (DOD) and the National Aeronautics and Space Administration (NASA) as areas important for mission activities, such as DOD training and testing and NASA launches. The USDOI respects these missions of protecting the United States and furthering our activities in space and will continue to work closely with DOD and NASA to understand and identify potential measures to address any conflicts in these areas. See Section 6.6 for further discussion of DOD and NASA activities on the OCS.

The 50-mile coastal buffer that was part of the DPP decision was included for the potential Atlantic sale in part to minimize possible conflicts with DOD activities. The buffer was also included to respond to the Governor of Virginia's comments to minimize multiple-use conflicts, such as with renewable energy activities, commercial and recreational fishing, critical habitat use by marine mammals and sea turtles, the existence of hard bottom environments, and other environmental concerns.

### *4.3.1 Atlantic Program Area History*

Two exploratory wells were drilled in the southern portion of the Atlantic Program Area, with no commercial discoveries, and there are no existing leases in the Atlantic Program Area. This portion of the OCS was subject to presidential withdrawal from June 1998 to July 2008 and to annual Congressional restrictions from FY 1999 through FY 2008. A special interest sale for an area offshore Virginia was scheduled for 2011 in the 2007–2012 Program; however, the sale was cancelled by the Secretary in May 2010, and a Notice of Cancellation was published in the *Federal Register* on July 28, 2010 (75 FR 44276). This area was analyzed in the G&G PEIS, and G&G permits for the area are under review.

### *4.3.2 Atlantic Region Proposed Program Options*

Two Proposed Program Options—a Lease Sale Option and the No Sale Option—have been analyzed for the Atlantic Program Area. Figure 4-3 shows the Atlantic Program Area, which includes a 50-statute mile coastal buffer.

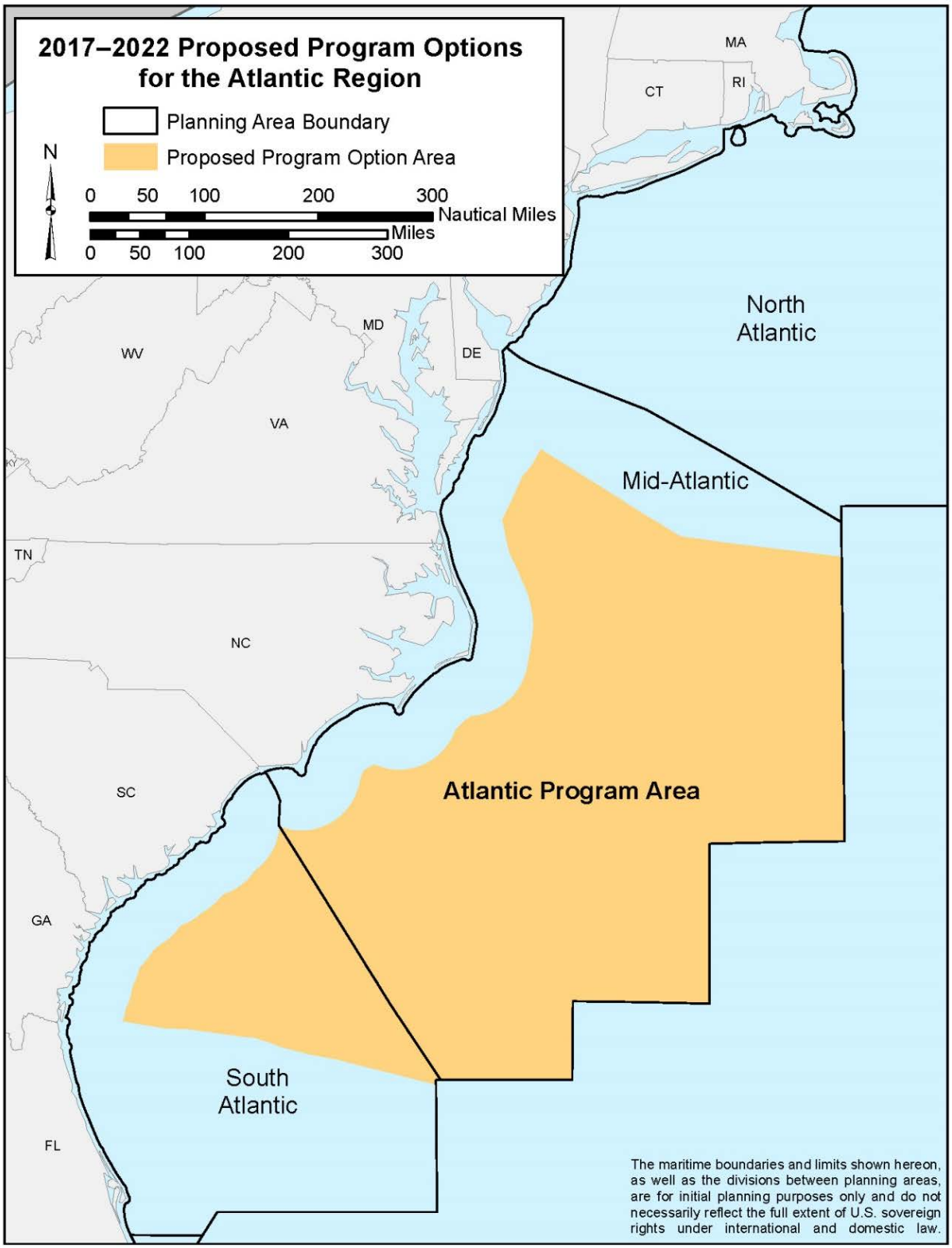
#### *4.3.2.1 Targeted Lease Sale Option*

This Proposed Program decision document presents the analysis for one lease sale in the Atlantic Program Area, scheduled for 2021. Consistent with the focused and balanced leasing approach adopted in the current Program and this Proposed Program for the Arctic, the DPP identified one sale scheduled late in the Program, at least 50 miles offshore the coasts of Virginia, North Carolina, South Carolina, and Georgia.

#### *4.3.2.2 No Sale Option*

This Proposed Program presents the analysis for no lease sales held in the Atlantic Program Area during 2017–2022.

**Figure 4-3: 2017–2022 Draft Proposed Program Atlantic Program Area**



## 4.4 SUMMARY OF PROPOSED PROGRAM OPTIONS ANALYZED

Table 4-2 reflects the lease sale schedule selected by the Secretary in the 2017–2022 DPP decision. The selection result in a schedule of 14 potential lease sales: 10 lease sales in the GOM; one lease sale each in the Beaufort Sea, Chukchi Sea, and Cook Inlet Program Areas, offshore Alaska; and one lease sale in the Atlantic Program Area. No lease sales are proposed for the Pacific.

**Table 4-2: 2017–2022 DPP Lease Sale Schedule**

| | Year | Program Area | Sale Number |
|---|---|---|---|
| 1. | 2017 | Gulf of Mexico | 249 |
| 2. | 2018 | Gulf of Mexico | 250 |
| 3. | 2018 | Gulf of Mexico | 251 |
| 4. | 2019 | Gulf of Mexico | 252 |
| 5. | 2019 | Gulf of Mexico | 253 |
| 6. | 2020 | Gulf of Mexico | 254 |
| 7. | 2020 | Beaufort Sea | 255 |
| 8. | 2020 | Gulf of Mexico | 256 |
| 9. | 2021 | Gulf of Mexico | 257 |
| 10. | 2021 | Cook Inlet | 258 |
| 11. | 2021 | Gulf of Mexico | 259 |
| 12. | 2021 | Atlantic | 260 |
| 13. | 2022 | Gulf of Mexico | 261 |
| 14. | 2022 | Chukchi Sea | 262 |

In certain regions, such as the GOM, which are known to contain significant oil and gas resources and already have well-developed infrastructure, the proposed schedule is designed to make substantial areas available for exploration and development. In other regions, such as Alaska and the Atlantic, the proposed schedule takes a more cautious approach, scheduling lease sales later in the Program to allow time to conduct additional research and data collection regarding the resource values in those areas and reflecting that necessary infrastructure needs to be developed. In total, this strategy makes available for leasing areas containing about 75 percent of the estimated undiscovered technically recoverable oil and gas resources estimated on the OCS (based on the *Assessment of Undiscovered Technically Recoverable Oil and Gas Resources of the Nation's Outer Continental Shelf, 2016* [BOEM 2016])).

In addition to the lease sale schedule contained in the DPP decision, three supplemental Program Options were also slated for analysis (see Table 4-3). These supplemental Program Options are: (1) Advancing the Beaufort Sea Lease Sale to 2019 Option; (2) the Modified Traditional Leasing Option for the GOM; and (3) the Baldwin County Buffer Option for the GOM. Collectively, the Program Options presented in the DPP decision, and the supplemental Program Options, are referred to in this document as Proposed Program Options.

**Table 4-3: Proposed Program Options Analyzed in this Proposed Program Decision Document**

| **Options** | **Beaufort Sea Program Area** | **Chukchi Sea Program Area** | **Cook Inlet Program Area** | **GOM Program Area** | **Atlantic Program Area** |
|---|---|---|---|---|---|
| DPP Decision Program Options | Targeted Leasing Option | Targeted Leasing Option | Targeted Leasing Option | Region-wide Leasing Option | One Sale in 2021 Targeted Leasing Option |
| | No Sale Option | No Sale Option | No Sale Option | No Sale Option | No Sale Option |
| Supplemental Program Options | Advancing the Beaufort Sea Lease Sale to 2019 Option | None | None | Modified Traditional Leasing Option | None |
| | | | | Baldwin County Buffer Option | |

# PART II: ANALYSIS OF OCS PROGRAM AREAS

# Chapter 5 Valuation of Program Areas

The following chapters will analyze the Proposed Program Options according to the various factors articulated in Section 18(a) of OCS Lands Act.

This chapter explains the calculation of net benefits for Proposed Program Options in a strategic manner: (1) estimates of oil and gas resources and anticipated production; (2) estimates of environmental and social cost; (3) domestic economic surplus; and (4) net benefits. Together, this information on the valuation of program areas considers economic, environmental, and social value, as required in Section 18(a)(1), and provides valuable information for the Secretary to consider in the balancing under Section 18(a)(3). As the court stated concerning Section 18(a)(3) in *California I*, "[i]t is reasonable to conclude that within the section's "proper balance" there is some notion of "costs" and "benefits," recognizing that "costs" in this context must be a term of uncertain content to the extent it is meant to stand for environmental and social costs." The court upheld this methodology in *California II* and in *NRDC* stating in the latter case that the court has endorsed the Secretary's interpretation of this section to instruct a cost-benefit analysis that begins with a calculation of each planning area's NSV. NSV is " net economic value" (the market value of expected resources less the cost of production and transportation) minus "social costs" (environmental and social costs). The analysis described in this chapter builds on this concept of social value and presents a more complete accounting of costs and benefits to society from the production of oil and natural gas.

## 5.1 Estimating Hydrocarbon Resources

Oil and gas resource assessments are critical components of energy policy analysis and provide important information about the relative potential of U.S. offshore areas as sources of oil and natural gas. In particular, they provide the Secretary with information on the geological characteristics of OCS regions as required by Section 18(a)(2)(A) of the OCS Lands Act. For the DPP analysis, BOEM considered the amount of undiscovered economically recoverable oil and gas resources (UERR) available on unleased blocks in each of the OCS planning areas as part of the valuation and ranking process. The following Proposed Program analyses focus on the subset of UERR anticipated to be leased, discovered, and produced under a specific leasing proposal. BOEM's approach to resource assessment is designed to account for the uncertainty inherent in predicting production from undiscovered resources.

In general, uncertainty in estimates of undiscovered oil and natural gas are greatest for frontier areas that have had little or no past exploratory effort. For areas that have been extensively explored and are in a mature development stage, many of the developmental risks have been reduced and the degree of uncertainty reflected in the range of possible outcomes has been narrowed.

Where possible, BOEM considers recent geophysical, geological, and technological information to estimate the potential presence and amount of technically recoverable oil and gas resources on the OCS. BOEM also considers economic parameters, such as exploration and development costs and oil and gas prices, to estimate the economically recoverable resources on the OCS. Current BOEM oil and gas resource estimates come from the *Assessment of Undiscovered Technically Recoverable Oil and Gas*

*Resources of the Nation's Outer Continental Shelf, 2016* (referred to as the 2016 National Assessment) (BOEM 2016a). The 2016 National Assessment forms the basis for the anticipated production used in the economic analysis provided in this chapter.

## 5.2 INTRODUCTION TO HYDROCARBON RESOURCES ON THE OCS

Each of the OCS regions comprises geologic characteristics and petroleum system elements that provide an opportunity for the existence of oil and gas resources. Oil and gas are thermally generated as organic matter in sedimentary strata that undergo changes in composition with increasing burial depth and temperature. Once generated and expelled from these source rocks, the hydrocarbons then migrate laterally and vertically into porous reservoirs that are associated with an impermeable trap or reservoir seal. A reservoir is a subsurface, porous, permeable rock body in which oil or gas or both may have accumulated. Natural gas can also be biologically (microbially) generated as a direct consequence of bacterial activity. Most biogenic gas is generated in burial depths of less than 3,000 feet.

These petroleum system elements are not ubiquitous across the entire OCS; instead, the assessment of hydrocarbon resources requires that geologic plays be delineated, which incorporates local geologic conditions. A geologic play is a group of geologically related known or potential hydrocarbon accumulations that share a common history of hydrocarbon generation, accumulation, and entrapment in a reservoir. Two types of geologic plays are defined for this resource assessment:

- **established play**: geologic play in which hydrocarbons have been discovered and a petroleum system has been proven to exist; and
- **conceptual play**: geologic play in which hydrocarbons have not been detected, but for which G&G data, integrated with regional geologic knowledge, suggest that hydrocarbon accumulations may exist.

Geologic plays consist of oil and gas pools, where a pool is defined as a discovered or undiscovered accumulation of hydrocarbons. In many instances, a prospect (undiscovered case) or a field (if discovered) will comprise one or more pools. A prospect or field is an area consisting of a single reservoir or multiple reservoirs all grouped on, or related to, a shared geologic structural feature and/or stratigraphic trap.

Figures 5-1 through 5-4 show the geologic plays analyzed for the 2016 National Assessment of oil and gas resources on the OCS. Most plays are defined on the basis of reservoir-rock stratigraphy and are delineated by the extent of the reservoir rocks; however, a few plays are defined on the basis of structural characteristics of prospective traps. Plays may overlap spatially because they exist at different rock levels (depths) and, in many cases, are stacked on top of each other. Therefore, the figures showing geologic plays do not always represent the full extent of an individual geologic play.

**Figure 5-1: Geologic Plays in the Beaufort Sea and Chukchi Sea Program Areas**

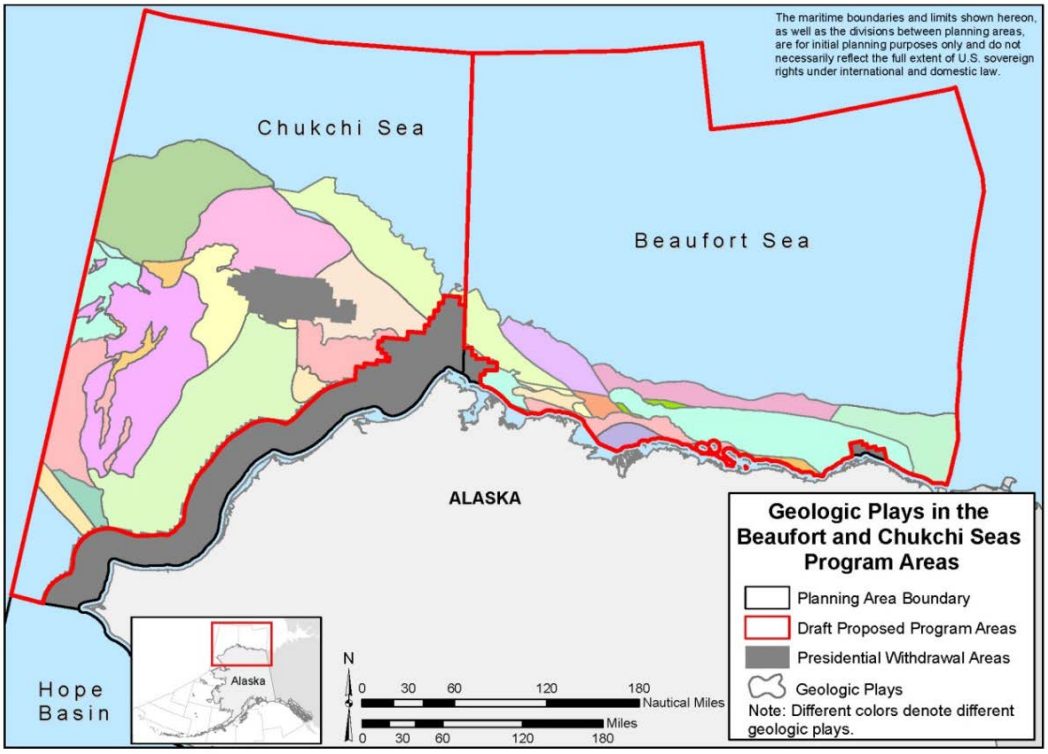



**Figure 5-2: Geologic Plays in the Cook Inlet Program Area**

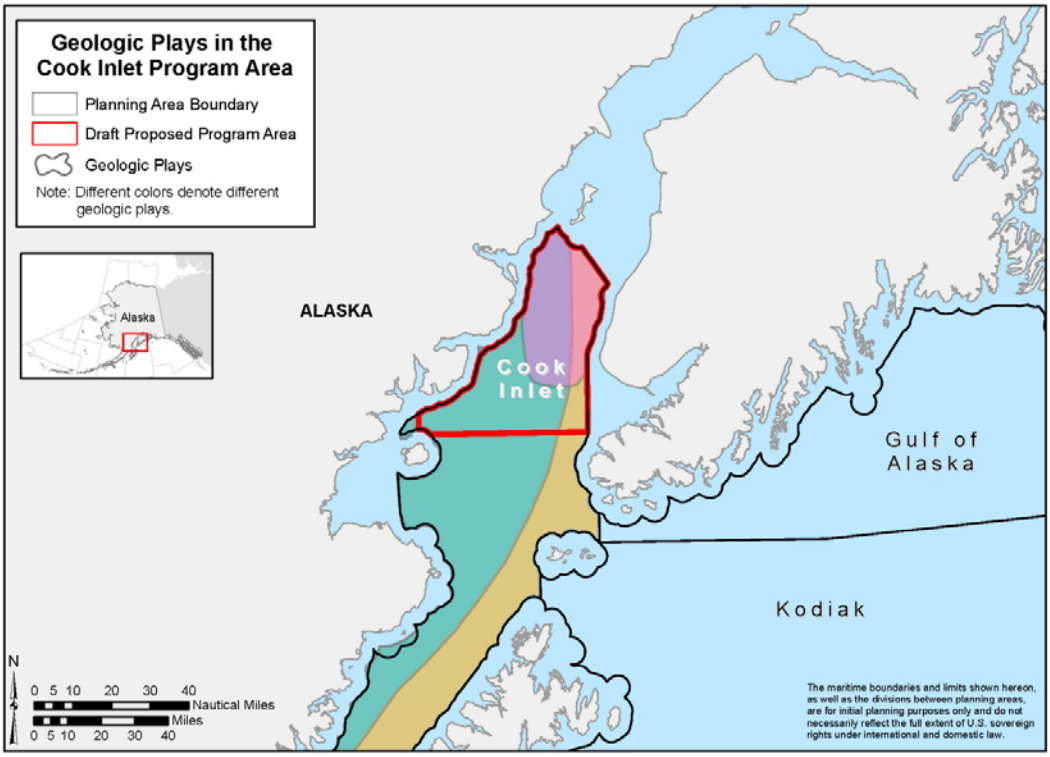


**Figure 5-3: Geologic Plays in the Gulf of Mexico Program Area**

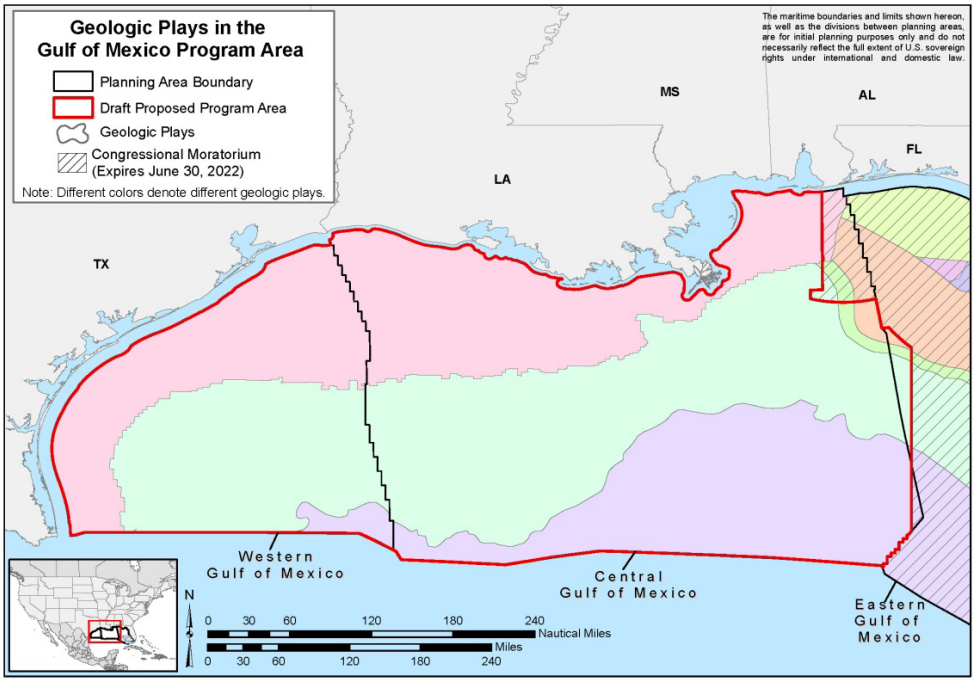
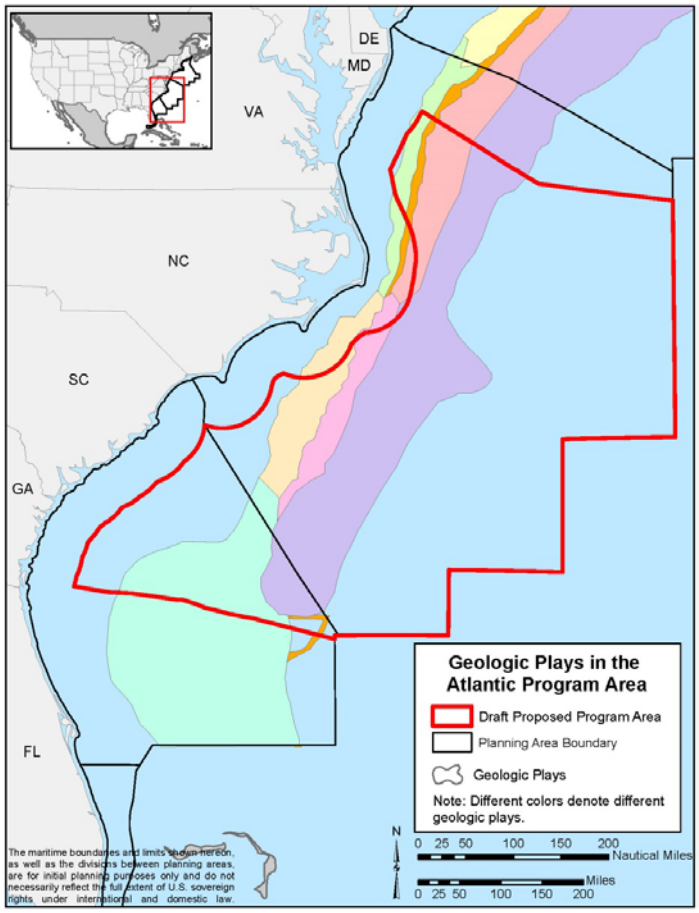



**Figure 5-4: Geologic Plays in the Atlantic Program Area**



### 5.2.1 Resource Commodities Assessed

BOEM assesses crude oil, natural gas liquids (condensate), and natural gas that exist in conventional reservoirs and are producible with conventional recovery techniques. Crude oil and condensate are reported jointly as billion barrels of oil (BBO); natural gas is reported in aggregate as trillion cubic feet (Tcf) of gas. Oil-equivalent gas is a volume of gas expressed in terms of its energy equivalence to oil (i.e., 5,620 cubic feet of gas per barrel of oil). The combined volume of oil and oil-equivalent gas resources is referred to as barrel of oil equivalent (BOE) and is reported in billion barrels of oil equivalent.

The technically and economically recoverable resources forecasted by BOEM do not include potentially large quantities of hydrocarbon resources that could be recovered by enhanced recovery techniques. Furthermore, these assessments do not consider gas in geopressured brines, methane hydrates, or oil and natural gas that may be present in insufficient quantities or quality (low-permeability, "tight" reservoirs) to be produced by conventional recovery techniques.

### 5.2.2 Sources of Data and Information

Estimating undiscovered oil and gas resources on the OCS is a complex process and requires the incorporation of a variety of geological, geophysical, economic, and engineering data. The petroleum geologic characteristics (i.e., volumes and qualities of source rocks, reservoir rocks, and traps) of plays are defined using play-specific information from wells, seismic-reflection profiles, and/or analogous information from geologically similar reservoirs in other parts of the world. In areas where oil and gas production from a play is mature (such as established plays in the GOM), data and information typically are derived from producing reservoirs and fields within the play. In these cases, volumetric estimates of discovered oil and gas pools within the play are used to develop probability distributions for the size and number of undiscovered pools and fields in assessment areas.

Due to sparse data directly associated with BOEM conceptual plays in the Alaska and Atlantic OCS Regions, analog-based parameters are developed using professional judgment to cover the range of uncertainties associated with these plays. The analog development process includes extensive research into the geologic, geochemical, and lithological characteristics of productive oil/gas discoveries in analogous plays. Specific information analyzed within analog plays includes the style of oil and/or gas trap, reservoir depositional environment and lithology, reservoir age, and analysis of existing drilling and well bore information. Conceptual play models are developed using regional geophysical and geologic data.

### 5.2.3 Geophysical Data Collection (Seismic Surveys)

Geophysical (seismic) surveying is a method of mapping below the seafloor using sound waves. The sound waves are generated using acoustic energy from air guns that release bursts of compressed air, which are reflected back from rock layers below the seafloor and recorded. Geophysicists use these data to identify areas favorable for the accumulation of hydrocarbons.

Geophysical data provide important information for oil and gas resource assessments. Two-dimensional seismic surveys often are designed to cover thousands of square miles or entire geologic basins as a

means to assess large areas for potential hydrocarbon prospectivity. In contrast, 3-D surveys can focus on several hundred OCS blocks and provide much better resolution to evaluate hydrocarbon potential in structurally complex areas (often below salt) that are difficult to image with 2-D seismic data.

BOEM maintains an inventory of industry seismic data that includes more than 250,000 OCS blocks of 3-D coverage and 2.6 million line-miles of 2-D coverage. The distribution of seismic data over OCS regions is generally coincident with the maturity of existing oil and gas development in the regions. For example, more than 99 percent of the 3-D seismic data on the OCS are located in the GOM, while only approximately 70 percent of the 2-D seismic data are located in the GOM.

The acquisition and processing of marine seismic data is a complex process that often requires a significant time and cost investment. For a proposed 2-D survey with a large areal extent in a frontier area, the cycle time from the permit stage to the point of actual interpretation is measured in terms of years.

### *5.2.4 Uncertainty in Resource Assessment*

When considering estimates of hydrocarbon resources for decision making, one must keep in mind that resource estimates are just that—estimates. All methods of assessing potential quantities of technically and economically recoverable resources are efforts in quantifying a value that will not be reliably known until the resource is nearly depleted. Thus, there is considerable uncertainty intrinsic to any estimate, and resource estimates should be used as general indicators and not predictors of absolute volumes. Some of the uncertainty is regarding the presence and quality of petroleum source rocks, reservoir rocks, seal rocks, and traps; the timing of hydrocarbon generation, migration, and entrapment; and the location, number, and size of accumulations. The value and uncertainty regarding these petroleum geologic factors can be expressed qualitatively (e.g., "There is a high probability that the quality of petroleum source rocks is good."). However, to develop volumetric resource estimates, the value and uncertainty regarding these factors must be expressed quantitatively. Each of these factors, and the volumetric resource estimate derived from them, is expressed as a range of values, with each value having a corresponding probability.

### *5.2.5 Resource Assessment Methodology and Output*

The general methodology that BOEM utilizes to assess undiscovered oil and natural gas resources on the OCS is a multi-step process using existing data, professional judgment, and probability distributions in conjunction with the Geologic Resource Assessment Program (GRASP) model. GRASP is a geologic play-based model that compiles oil and gas play data to generate the most likely cumulative probability distribution of undiscovered resources for each geologic play.

The execution of the GRASP model is comprised of the following steps to assess oil and gas resources on the OCS:

1. Compile play data.
2. Generate a cumulative probability distribution of pool sizes from probabilistic distributions of reservoir parameters distribution.
3. Generate a number of pools probability distribution.
4. Determine the probabilities for individual oil, natural gas, and mixed pool types.

5. Establish individual pool sizes and compare to the ranked sizes of discovered pools.
6. Generate play potential resources.

Volumetric estimates of undiscovered technically recoverable resources (UTRR) and UERR are based on the geologic and petroleum engineering information developed through petroleum geological analysis and quantified through play analysis. These estimates are developed in two stages. First, UTRR are assessed for each play, where UTRR are defined as oil and gas that may be produced from the subsurface using conventional extraction techniques without any consideration of economic viability.

The UTRR estimates from the 2011 National Assessment (BOEM 2011) and 2014 Atlantic Assessment update (BOEM 2014a) formed the basis of the DPP analysis. This Proposed Program analysis considers UTRR estimates from the 2016 National Assessment (BOEM 2016a). This assessment is available at: http://www.boem.gov/Resource-Assessment/.

Following assessment of the UTRR, economic and petroleum engineering factors are included for each assessment area to estimate the portion of the UTRR that is economically recoverable over a broad range of commodity prices. UERR are defined as the portion of the UTRR that are economically recoverable under specified economic and technologic conditions, including prevailing prices and costs. The economic portion of the assessment incorporates a wide range of oil and gas price points[18] and uses a relationship between the cost of exploration and development and commodity prices. Estimates of UERR are derived for each designated oil-gas price pair by:

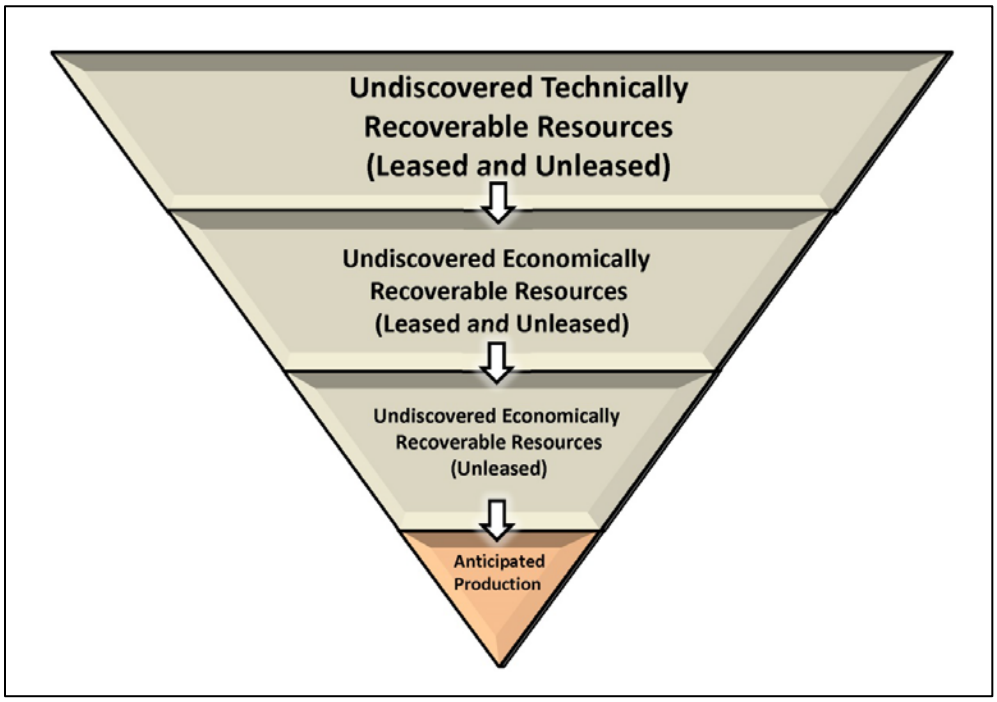
- subjecting the distributions to multiple computer iterations simulating the development of the hydrocarbon accumulations associated with the areas; and
- performing a discounted cash-flow analysis to determine the area's resources using specified economic parameters.

### *5.2.6 Proposed Program and Anticipated Production*

The DPP analysis required an assessment of the UERR that are expected to be available for lease (i.e., currently unleased) as of July 2017. This Proposed Program builds on comments from Governors and others and analyses from the DPP to analyze the Proposed Program Options. The DPP analysis used all of the unleased UERR available in each planning area as its resource base, but the Proposed Program analysis moves to the subset of UERR anticipated to be leased, discovered, and produced under a specific leasing proposal. Figure 5-5 shows this winnowing process. The anticipated production estimates are focused on the program areas included in the Proposed Program Options (as described in Chapter 4) rather than on full planning areas; therefore, they represent the portion of the UERR that is anticipated to be leased, discovered, and produced as a result of the implementation of each of the Proposed Program Options. In addition to estimates of anticipated production, BOEM develops exploration and development (E&D) scenarios, which represent the quantification of the timing and scale of the anticipated exploration, development, and production activities.[19] For the GOM, these scenarios represent multiple proposed lease sales, whereas they represent only a single sale each for program areas in the Alaska and Atlantic Regions, as proposed in the DPP.

[18] Because oil and gas typically are produced together, BOEM estimates UERR at specific combinations of oil and gas prices, or "price pairs."
[19] For the purpose of this document, the term E&D scenario includes any related production profiles.

**Figure 5-5: Conceptual Workflow Showing Transition from UTRR to Anticipated Production**




**Note**: For the DPP, only the unleased UERR was considered for analysis. For the Proposed Program and PFP, only anticipated production (orange area) is considered for analysis.

BOEM estimates anticipated production for each program area using historical producing leases and field production data to reflect only what is expected to be produced from the leases sold in this Five Year Program. BOEM does not assume that every lease produces; instead, the method used is consistent with the reality that only a subset of all leases are drilled, resources discovered, and ultimately produced, due to the geologic and economic risk inherent in finding oil and gas. BOEM generates the E&D scenarios for purposes of analysis and they represent best professional judgment based on a variety of factors, including estimates of recoverable resources in unleased blocks, historical oil and gas activities, and information from industry and trade groups. For both mature and frontier areas, these scenarios of future development and activity are generated for analytical purposes only and do not constitute official forecasts.

The availability of historical data for developing E&D scenarios varies greatly between mature and frontier areas. The GOM, for example, is a mature region where oil and gas leasing and development have been occurring for nearly 70 years. Therefore, most E&D scenarios for the GOM Program Area are the result of assessing historical patterns of activity that have become established for the GOM Region.

In contrast to the abundant oil and gas development on the GOM OCS, there has been no development activity on most other program areas of the OCS. In the Alaska OCS, the only Federal production extends from the Northstar Field in the Beaufort Sea, a single Federal-state development in Alaska state waters. Accordingly, the E&D scenarios for the Arctic rely on information available based on Arctic operations worldwide.

Oil and natural gas prices can change greatly during development of a Five-Year Program and will also fluctuate during implementation of the 2017–2022 Program. Not even the keenest industry observers can

reliably predict when or how much prices will change, only that they will change. Therefore, this analysis is conducted using three representative price cases and corresponding sets of resource estimates.[20] The product-price pairs used for this analysis are shown in Table 5-1. The activity scenarios based on these flat-price cases allow the Secretary to fairly easily identify the extent to which a Program Option's anticipated benefits and costs, or impacts, might vary under widely different price environments. These price cases are not meant to imply or represent price expectations, forecasts, or even upward and lower bounds of possible prices. These price cases were selected to encompass a reasonable range of activity levels given possible oil and gas prices over the life of the 2017–2022 Program.[21] EIA and other forecasters do not expect the low oil prices of 2015 and early 2016 to persist over the long term, but even if they do, the low price case was selected to allow the Secretary to evaluate the likely effects of Program Options throughout a sustained period of lower prices. The three price scenarios are discussed in more detail in the *Draft Economic Analysis Methodology for the OCS Oil and Gas Leasing Program for 2017-2022* (BOEM 2016b; herein referred to as the Draft Economic Analysis Methodology paper), which also includes a discussion on how the price scenarios were determined.

**Table 5-1: Price Cases for the Proposed Program**

| Price Case | Oil Prices | Natural Gas Prices |
|---|---|---|
| Low Case | $40/bbl | $2.14/mcf |
| Mid-Case | $100/bbl | $5.34/mcf |
| High Case | $160/bbl | $8.54/mcf |

**Key**: bbl = barrels of oil; mcf = thousand cubic feet

Table 5-2 shows the anticipated production generated from the E&D scenarios. Unlike the DPP, wherein BOEM ranked planning areas based on a consistent measure (i.e., the full complement of UERR in each planning area), the anticipated production estimates used for the Proposed Program are not directly comparable between regions due to differences in assumptions, methodology, and levels of historical activity in each area. For the Proposed Program analysis, the anticipated production represents a subset of the UERR that reflects what is anticipated to be leased, developed, and produced as a result of leasing in each program area.

[20] For each scenario, anticipated production and related activities are bound by the UERR for the designated price pairs and industry activity levels suitable for the appropriate case.

[21] For example, BOEM considered using a low price case of $30 per barrel of oil; however, that would yield results identical, or very similar, to those of the No Sale Option for program areas outside the GOM. Therefore, a $30 low price case would provide the Secretary with little meaningful additional information for several area-specific options. BOEM adopted the $40 price case not because it represented the lowest plausible price but because it would allow analysis of activities for every program area under a low-price environment.

**Table 5-2: Anticipated Production by Program Area**

| Program Area | Oil (Million barrels) | | | Gas (Bcf) | | | BOE (Million Barrels) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Low Price Case | Mid-Price Case | High Price Case | Low Price Case | Mid-Price Case | High Price Case | Low Price Case | Mid-Price Case | High Price Case |
| Beaufort Sea | -* | 2,295 | 3,673 | -* | 4,029 | 6,447 | -* | 3,012 | 4,820 |
| Chukchi Sea | -* | 1,746 | 2,799 | -* | 1,865 | 2,991 | -* | 2,077 | 3,331 |
| Cook Inlet | 84 | 209 | 335 | 37 | 93 | 149 | 90 | 226 | 362 |
| GOM | 2,105 | 3,531 | 5,593 | 5,470 | 12,011 | 22,122 | 3,079 | 5,668 | 9,529 |
| Atlantic | 335 | 493 | 739 | 3,444 | 4,923 | 7,509 | 948 | 1,369 | 2,075 |
| **TOTAL** | **2,524** | **8,274** | **13,139** | **8,951** | **22,922** | **39,218** | **4,117** | **12,353** | **20,117** |

**Note**: The low price case is $40/bbl and $2.14/mcf. The mid-price case is $100/bbl and $5.34/mcf. The high price case is $160/bbl and $8.54/mcf. All price scenarios represent a constant, inflation-adjusted price throughout the life of the 2017–2022 Program.
**Key**: bbl=barrels of oil, Bcf = billion cubic feet; BOE=barrel of oil equivalent, mcf=thousand cubic feet
* At the low price case, there is insufficient economic oil and gas to support a single platform, so these scenarios were evaluated for exploration only, without subsequent development.

## 5.3 NET BENEFITS ANALYSIS

The net benefits analysis examines the benefits to society from the production of oil and natural gas expected as a result of the Proposed Program and the environmental and social costs associated with the anticipated exploration, development, and production activities. Net benefit estimates are provided as a tool to assist the Secretary in balancing the considerations required by the OCS Lands Act in Section 18(a)(3); it is only one of many factors that the Secretary will consider. This analysis recognizes that, without a Five-Year Program, substitute sources of energy would be required, and therefore, accounts for the net benefits associated with those produced, substitute resources. The result of the analysis is an estimate of the incremental net benefits associated with the Proposed Program; that is, the net benefits of the Proposed Program less the net benefits of the most likely energy substitutes in the absence of a new Program.

At the Proposed Program stage, the net benefits analysis evaluates the Proposed Program Options. This analysis is distinct from the DPP analysis, which was intended to support an initial decision and, accordingly, provided the Secretary with a quantitative relative ranking of planning areas based on aggregate resource potential and NSV associated with finding and extracting those resources.[22] That analysis assumed the ultimate recovery of all UERR.

This Proposed Program analysis goes beyond that initial ranking of planning areas and instead conducts a benefit-cost analysis for each of the program areas included in the Proposed Program, considering only anticipated production from the set of leases projected to be sold in a program area. Further, the net benefits of the Proposed Program are adjusted to reflect the net benefits associated with substitute or

[22] The intent of the DPP analyses was to provide the Secretary with information with which to make her initial decision. Analyses in the DPP assumed the availability of all planning areas. Therefore, the entire OCS was analyzed and planning areas were ranked according to value.

replacement energy resources in the absence of a new Program if the No Sale Option were selected in any program area. The No Sale Option in all of the program areas corresponds to the No Action Alternative analyzed in the Programmatic EIS. For purposes of analysis, the benefits of the No Sale Option do not include any leasing in the relevant program areas in future programs. Under this No Sale Option, domestic oil and natural gas supply would be reduced and oil and gas prices would tend to rise.

The benefits and costs derived from previously leased resources are not included in this analysis. While society continues to receive the benefits and associated costs from previously leased OCS resources, policies relating to their treatment are not subject to this Proposed Program decision. The net benefits analysis includes information designed to help with decisions about the size, timing, and location of future lease sales on the OCS under consideration in this Proposed Program by providing a quantitative evaluation of economic, social, and environmental factors as required in Section 18(a)(1). Moreover, the net benefits analysis is only one way in which the Secretary considers the Section 18 factors in providing quantitative information for the balancing required in Section 18(a)(3).

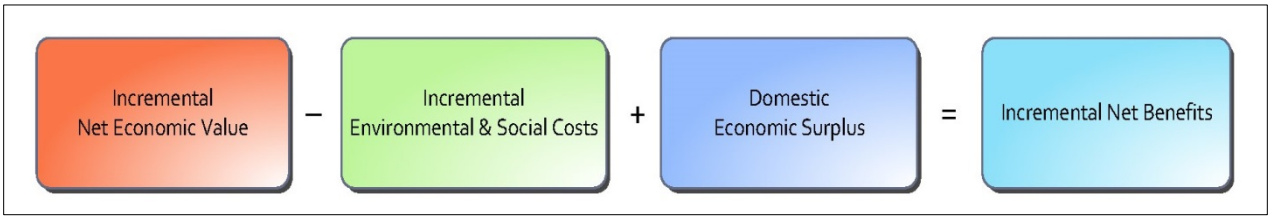
The net benefits analysis is conducted at three sets of price scenarios ($40, $100, and $160 per barrel for oil and corresponding gas prices of $2.14, $5.34, and $8.54 per thousand cubic feet) and anticipated production of oil and gas is represented at these different price levels. These price cases represent scenarios where flat prices remain constant through the life of the program. The price cases are designed to provide program area-specific information to the Secretary on the value of OCS resources under three different sets of energy market conditions. Historical oil price volatility shows that unanticipated market and political events, new technologies, weather, geopolitical unrest, economic changes, or other factors can cause energy price paths to deviate considerably from even the most respected forecasts. Moreover, use of a trend forecast or fluctuating prices in the analysis would make it difficult to separate the effects on the measures of net benefits of assumed price changes, and their timing, from the resource and cost differences in program areas. For these reasons, the Proposed Program analysis includes resource and net benefit estimates evaluated at each of the three price scenarios shown in Table 5-1. As stated above, these price cases do not represent strict upper and lower bounds. BOEM recognizes that prices outside those presented in the analysis could occur through the life of the 2017–2022 Program. Prices below those in the low price scenario would likely lead to less anticipated production in each region and fewer total net benefits.[23] Alternatively, prices above those in the high price scenario could lead to greater anticipated production than estimated in the high price case, which would generate larger net benefits. More information on the price scenarios is included in the Draft Economic Analysis Methodology paper.

The net benefits analysis is comprised of three components, depicted in Figure 5-6, each with its own intermediate calculations. The first component of the incremental net benefits is the calculation of incremental NEV. NEV is the gross revenue of the Program less the private costs of exploration, development, production, and transportation of the forecasted production (see Section 5.3.1). The second component is the calculation of incremental environmental and social costs. Environmental and social costs are the external costs that companies do not generally pay for, but still are imposed on society by the exploration, development, production, and transportation of resources from the OCS, as described in Section 5.3.2. The third component is the calculation of economic surplus. Economic surplus is the net

[23] Note that under the current low price scenario, there is no anticipated production in the Chukchi Sea and Beaufort Sea Program Areas and only exploration activity is expected to occur. With lower prices, the anticipated production in other program areas could similarly fall to zero and benefits as well as expected environmental costs would accordingly decline.

change in producer and consumer surplus from the decrease in prices caused by additional OCS production. To derive incremental net benefits, the costs are subtracted from the Program benefits, as described in Section 5.3.3.

**Figure 5-6: Net Benefits Analysis Calculation**




The first two components are calculated as an incremental benefit or cost, respectively, because they include the benefits or costs that would occur in the absence of the OCS Program (or alternatively, are forgone in the presence of an OCS Program). BOEM adjusted the Program NEV to reflect the forgone opportunity of producing potentially valuable substitute domestic energy resources to obtain the incremental NEV (i.e., the benefits of the No Sale Option). Additionally, BOEM adjusted the Program environmental and social cost to account for the environmental and social costs of substitute energy sources anticipated to result from the No Sale Option (i.e., the costs of the No Sale Option). As discussed in Section 5.3.2, the resulting incremental environmental and social costs are actually an added benefit of the Program, since the anticipated environmental and social costs of energy substitutes are larger than those associated with the Program.

The third component includes consideration of the No Sale Option, because it is the welfare benefit to consumers from slightly lower-priced energy resources, which accompany OCS production (over the No Sale Option), less the reduced revenue to domestic producers under the same prices. Each of these components is described in more detail in this section and in the Draft Economic Analysis Methodology paper.

### *5.3.1 Incremental Net Economic Value*

The incremental NEV is the difference between the OCS Program NEV and the NEV associated with the likely substitutes under the No Sale Option. Both are described below along with the results for the incremental NEV by program area. Note that all values are discounted using a social discount rate of 3 percent, consistent with guidance from the U.S. Office of Management and Budget Circular A-4 on the social rate of time preference. More detailed tables with intermediate calculations are provided in the Draft Economic Analysis Methodology.

#### *5.3.1.1 OCS Program Net Economic Value*

NEV is the value to society derived from developing hydrocarbon resources in the OCS. The NEV equals the discounted gross revenues from the produced oil and natural gas minus the private costs required to realize the economic value of the resources. These costs include the discounted costs of exploring, developing, producing, and transporting the oil and natural gas to the market. The NEV can be considered as the present value of the expected economic rent for the anticipated production. A portion of the NEV goes to the U.S. Government as lessor and steward for the public, in the form of bonus bids,

rents, royalties, and taxes. The lessees, as private firms, retain the remainder of NEV as economic profits that may be distributed to shareholders around the country.[24] The economic value is estimated using the three sets of flat price cases and the accompanying production assumptions.

#### *5.3.1.2 No Sale Option Net Economic Value*

In the absence of an OCS program, a certain amount of production from onshore oil, gas, coal, imports, and other resources would be needed to meet U.S. demand otherwise met by OCS oil and gas anticipated to result from the Proposed Program decision. This substitution from OCS production to other sources of energy is calculated using the Market Simulation model (*MarketSim*), as described in *Consumer Surplus and Energy Substitutes for OCS Oil and Gas Production: The 2015 Revised Market Simulation Model (MarketSim)* (BOEM 2015a).

Rather than attempt to calculate the NEV from the increased production in onshore natural gas, oil, and other domestic production in the absence of an OCS program, BOEM instead employs a simplifying assumption that the NEV of offshore production is equivalent to that of the energy substitutes. BOEM realizes this is likely an overestimate of the NEV of these sources because they are replacements for offshore production and only extracted because of non-price decision making (i.e., the decision not to offer OCS acreage is a policy decision not directly influenced by profitability), and thus would be less valuable than production resulting purely from market conditions.

#### *5.3.1.3 Incremental Net Economic Value*

Based on *MarketSim* runs for the Program scenario (in contrast with the No Sale Option), BOEM estimates that approximately 35 percent of forgone energy substitutes would be replaced with domestic sources of energy. To account for the NEV of these domestic sources, BOEM reduced the NEV estimate from the DPP decision by 35 percent. The other 65 percent of OCS production would be replaced either by imports or forgone as a result of reduced demand in the face of higher oil and gas prices. The remaining value is the incremental NEV. Table 5-3 shows the incremental NEV for each program area.

It is worth noting that while the NEV analysis treats the private expenditures on exploration, development, production, and transportation as costs, this spending can actually be considered a benefit in a broader macroeconomic context. For example, the use of labor and capital to search for and extract oil and gas resources still contributes to the national income. Also, this spending generates regional economic impacts and multiplier effects that arise from the creation of jobs, investment in infrastructure, and other activities. A discussion of additional benefits of OCS production is included in the Draft Economic Analysis Methodology paper (BOEM 2016b) and is further discussed in Chapter 6, Program Area Location Considerations, and Chapter 8, Equitable Sharing Considerations.

[24] Appendix B discusses the factor applied to the NEV to account for profits going to foreign shareholders. This adjustment to NEV means that what remains, and what is taken into account in the Proposed Program analysis, is only the domestic value.

**Table 5-3: Incremental NEV by Proposed Program Area**

| Program Area | Incremental Net Economic Value ($billions) | | |
|---|---|---|---|
| | Low price case | Mid-price case | High price case |
| Beaufort Sea | * | 18.66 | 81.16 |
| Chukchi Sea | * | 34.61 | 96.92 |
| Cook Inlet | 0.15 | 4.35 | 12.01 |
| GOM | 2.07 | 44.68 | 155.72 |
| Atlantic | 0.20 | 9.10 | 29.39 |

**Notes**: The low price case is $40/bbl and $2.14/mcf. The mid-price case is $100/bbl and $5.34/mcf. The high price case is $160/bbl and $8.54/mcf. All values are discounted at a real discount rate of 3 percent. All price scenarios represent a constant, inflation-adjusted price throughout the life of the 2017–2022 Program.
* Under the forecasted E&D scenarios, only exploration activities are anticipated for Beaufort and Chukchi Seas in the low price case scenario. As a result, NEV would be negative for these areas. At this price, there are only negligible UERR. Companies may still engage in exploration activities in these areas with the expectation that prices will rise in the future.
**Key**: bbl=barrels of oil, Bcf = billion cubic feet; BOE=barrel of oil equivalent, mcf=thousand cubic feet

### *5.3.2 Incremental Environmental and Social Costs*

Beyond the private costs used to calculate the incremental NEV, society incurs broader environmental and social costs from the activities and facilities associated with OCS oil and natural gas exploration and development. This can include, but is not limited to, impacts on air quality, commercial fisheries, and recreation.

#### *5.3.2.1 OCS Program Environmental and Social Costs*

BOEM uses the in-house Offshore Environmental Cost Model (OECM) to calculate the environmental and social costs associated with OCS oil and gas activity. The OECM was initially developed in 2001, revised substantially in 2012, and then underwent minor revisions in 2014.[25] It is designed to model the impact of typical activities associated with OCS production and oil spills (other than possible catastrophic oil spills, which are analyzed separately) occurring on the OCS. The model uses economic inputs, resource estimates, and E&D scenarios as the bases for its calculations. Costs are calculated for six categories: (1) recreation; (2) air quality; (3) property values; (4) subsistence harvests; (5) commercial fishing; and (6) ecological impacts.

Recreation and air quality impacts are two of the largest monetized components of the OECM, and the results of monetizing can be initially surprising. For example, an oil spill in the GOM could threaten recreational activities, but a spill of equal magnitude in the Arctic might not have the same effect on recreation because fewer people participate in these activities in the Arctic. In that case, the OECM would show a greater reduction in social welfare for the GOM than for the Arctic, even though the Arctic estimate would include other costs such as damages to subsistence harvests. The OECM's monetization of subsistence harvest impacts is limited to Alaska planning areas because of the relative importance and availability of data on harvests in that region (BOEM 2012). While some subsistence activity takes place

[25] A discussion of the OECM is included in the Draft Economic Analysis Methodology paper (BOEM 2016b). See also BOEM 2015a, BOEM 2015b, and BOEM 2015c.

in other regions, data of the type needed for the OECM are not available.[26] Regional differences are further recognized in OECM's air quality model that evaluates the onshore damages caused by dispersed criteria pollutants emitted offshore. Because the U.S. Atlantic coast is more developed and populous, air emissions create larger monetized environmental impacts on human health, agriculture, and material damage than in the Arctic. These differences are especially noticeable when comparing the environmental and social costs per BOE between the regions. For example, the three Alaska program areas have environmental and social costs of less than 10 cents per BOE, whereas costs in the Western and Central GOM are 90 and 70 cents per BOE, respectively. Additional information on the OECM environmental and social cost components and calculations is included in the Draft Economic Analysis Methodology paper (BOEM 2016b).

While the model captures a wide range of environmental and social costs, it is not designed to represent impacts on unique resources or from catastrophic oil spills. Impacts on unique resources, such as endangered species, are discussed in Section 7.2 and analyzed in more detail in the Programmatic EIS. Further, these impacts will be subject to mitigation measures at later stages in the permitting process.

The OECM is also not designed to represent impacts from catastrophic oil spill events. The OECM only considers a range of oil spills up to 100,000 barrels. Given the unpredictable nature of catastrophic oil spills, including the many factors that determine their severity, efforts to quantify their unexpected costs are less meaningful and more uncertain than the other measures considered in the net benefits analysis. In addition to the difficulty in calculating the cost of the potential impacts of a catastrophic spill, there are similar difficulties in calculating the risk. For these reasons, the risks and impacts of catastrophic oil spills are not considered in the net benefits analysis. An analysis of the costs and impacts of an unlikely, but possible, catastrophic oil spill is included in the Draft Economic Analysis Methodology paper (BOEM 2016b) and in the Programmatic EIS. Additional information is also available in a supporting paper to the DPP: *Economic Inventory of Environmental and Social Resources Potentially Impacted by a Catastrophic Discharge Event within OCS Regions* (BOEM 2014b).

#### *5.3.2.2 No Sale Option Environmental and Social Costs*

Environmental and social costs arise from OCS activity, but similar environmental and social costs also exist in the absence of a new OCS Program with added production from replacement fuel sources that the economy will demand. Regardless of whether a new Five-Year Program is approved, the United States still demands substantial energy resources. The choice of the No Sale Option in any or all of the program areas means no new leasing would take place in those area(s) for at least 5 years during the duration of the program, and that domestic oil and natural gas supply would be reduced. This supply reduction would cause only a small increase in hydrocarbon prices, so there would be very little decrease in the quantity of oil and natural gas demanded. Instead, increased imports and domestic onshore production as well as fuel switching would meet continued domestic demand for oil and natural gas products. Program areas without current production already rely on energy market substitutes (e.g., imports, domestic onshore production) and incur their environmental and social costs, but these substitutes could be lessened with OCS production in the region.

[26] BOEM continues to review subsistence information and can modify the OECM if appropriate data become available. Some information on subsistence harvests in the other regions is discussed in the *Economic Inventory of Environmental and Social Resources Potentially Impacted by a Catastrophic Discharge Event within OCS Regions* (BOEM 2014b).

With oil from the new Program not available, increased onshore production of oil, gas, and other energy sources such as coal would generate new air emissions. Also, replacement imports of oil cause corresponding increases in air emissions and oil spill risks from increased tanker operations along the U.S. coastal areas receiving the oil. Moreover, these added oil imports, along with additional onshore gas production, generate air emissions closer to population centers than those occurring as a result of OCS oil and gas production. These discharges, consistent with air quality dispersion modeling, create a greater influence on human health than do air emissions often generated many miles offshore.

To estimate these substitute energy sources, BOEM uses *MarketSim* to determine the substitutions for offshore oil and natural gas development if one or more areas are excluded from the Program. Overall, the model indicates that if the 2017–2022 Program is not approved, OCS production of oil and natural gas would be reduced over the next 50–60 years between approximately 4,117 and 20,117 million BOE.[27] On average, approximately 35 percent would be replaced by domestic substitutes (28 percent with increased onshore oil and gas production, 3 percent with fuel switching to coal, 2 percent other sources [e.g., biofuels], 1 percent from electricity from sources other than oil and natural gas [e.g., nuclear, hydroelectric], 1 percent from increased activity on existing offshore leases). Of the remaining 65 percent, 58 percent of this would be replaced with additional imports; the remaining 7 percent would be replaced with a reduction in domestic quantity of energy demanded. Table 3 in the Draft Economic Analysis Methodology paper (BOEM 2016b) shows the detailed selection of energy substitutes by price case and separated for oil and natural gas.

The OECM calculates the No Sale Option environmental and social costs based on the area in which they are expected to occur. However, for evaluating costs and benefits of different Proposed Program Options to the United States as a whole, in Table 3 of the Draft Economic Analysis Methodology paper, BOEM has attributed them to the program area for which the energy substitutes would be required if the No Sale Option were selected. Since the net benefits analysis is a national analysis, this approach allows for a transparent assessment of the national tradeoffs in decisions regarding timing, size, and location of sales.[28] Additional information on this approach is included in the Draft Economic Analysis Methodology paper (BOEM 2016b). Further, estimates of these No Sale Option costs in and adjacent to the areas where they are likely to occur are provided in Chapter 8.

#### *5.3.2.3 Incremental Environmental and Social Costs*

Similar to the reduction in the NEV estimates in the absence of a new Program, BOEM considers the environmental and social costs of the energy substitutes when calculating the incremental net benefits. Incremental environmental and social costs are the environmental and social costs from the anticipated activities generated from leases in this Program less the environmental and social costs from the most likely energy market substitutions replacing OCS production in the event that no Program is approved. Only the incremental environmental and social costs are included in the calculation, as some level of environmental and social costs would occur regardless of whether the Program was approved or not.

[27] This represents the range for the estimated production of oil and gas from the 2017–2022 Program using the low and high price scenarios. Program oil and gas production estimates are 4,117; 12,353; and 20,117 million BOE for the low, mid-, and high price case scenarios, respectively.

[28] This approach was upheld by the District of Columbia (D.C.) Circuit Court in *Center for Sustainable Economy* v. *Jewell* 779 F .3d 588 (D.C. Cir. 2015). The court noted the national perspective of the net benefits analysis and distribution of the No Sale Option costs to the program area in the absence of leasing are both reasonable and consistent with Section 18(a) of the OCS Lands Act.

Table 5-4 shows the incremental external costs BOEM estimates for each program area. Since the environmental and social costs of relying on the substitute sources of energy exceed those from producing the program area resources, the costs are negative (that is, external costs under the Program are less than under the No Sale Option). As discussed above, the impacts of the additional onshore production and imports lead to additional air emissions near population centers, which can result in greater human health impacts than OCS emissions far offshore. Further, additional imports create increased near-shore oil spill risk. These costs, which are attributable to the lack of a Program, are avoided with the OCS Program, and BOEM calculates these negative costs as benefits in the final calculation of the incremental net benefits. For example, at the mid-price case in the GOM Program Area, nearly $7.5 billion in environmental and social costs are avoided with the OCS Program rather than the No Sale Option.

**Table 5-4: Incremental Environmental and Social Costs by Program Area**

| Program Area | Incremental Environmental and Social Costs ($ billions) | | |
|---|---|---|---|
| | Low | Mid | High |
| Beaufort Sea | * | -4.09 | -7.02 |
| Chukchi Sea | * | -3.11 | -4.93 |
| Cook Inlet | -0.23 | -0.45 | -0.71 |
| GOM | -5.20 | -7.48 | -12.94 |
| Atlantic | -1.59 | -1.89 | -2.91 |

**Note**: The low price case is $40/bbl and $2.14/mcf. The mid-price case is $100/bbl and $5.34/mcf. The high price case is $160/bbl and $8.54/mcf. All values are discounted at a real discount rate of 3 percent. All price scenarios represent a constant, inflation-adjusted price throughout the life of the Program.
***** Under the forecasted E&D scenarios, only exploration activities are anticipated for Beaufort and Chukchi Seas in the low price case scenario. Environmental costs are small under these circumstances but appear as zero due to rounding.

The cost estimate omits several conceivable effects, including, for both the Proposed Program and the No Sale Options, greenhouse gas emissions related to production and impacts associated with final consumption. An expanded discussion of some of these impacts not included in the environmental and social cost calculation is provided in the Section 1.5.2 of the Draft Economic Analysis Methodology paper (BOEM 2016b).

### *5.3.3 Domestic Economic Surplus*

In addition to the inclusion of incremental environmental and social costs, the net benefits analysis is expanded for the Proposed Program and PFP to include domestic economic surplus. In calculating the total net benefits, BOEM adds the supply-side benefits (NEV minus net environmental and social costs) to the demand-side benefits (domestic economic surplus). Domestic economic surplus is the welfare change to producers and consumers from a change in energy prices. If energy prices decline, U.S.

consumers receive a benefit from paying lower prices measured as consumer surplus, whereas U.S. producers lose welfare from receiving lower prices measured as a loss in producer surplus.[29]

New OCS oil and natural gas production increases the supply of oil and natural gas, which lowers the price consumers pay and the price producers receive. The Five-Year Program analysis focuses on gains and losses within the U.S, so only the domestic portion of this welfare change is included in the net benefits analysis. While consumers benefit from lower prices due to the Program, whether from oil or gas sourced domestically versus internationally, the total gain in consumer surplus is partially offset by a loss in domestic producer surplus.

To estimate the change in economic surplus, BOEM uses *MarketSim* to calculate the price changes in energy markets as a result of new OCS production. For example, over the first 50 years of production, the average annual price change in 2017 dollars was $0.51 per barrel for oil and $0.06 per million cubic feet (mcf) of natural gas. Though these are small changes, applied to all domestic consumption of imports, these result in large economic surplus gains. The estimates for these welfare changes as a result of the Program are provided in Table 5-5. The full calculation of consumer surplus gains and producer surplus losses is provided in the Draft Economic Analysis Methodology paper (BOEM 2016b), along with the display of the full economic surplus calculation.

**Table 5-5: Domestic Economic Surplus by Proposed Program Area**

| Program Area | Domestic Economic Surplus ($ billions) | | |
|---|---|---|---|
| | Low | Mid | High |
| Beaufort Sea | * | 2.73 | 5.93 |
| Chukchi Sea | * | 3.93 | 5.30 |
| Cook Inlet | 0.29 | 0.84 | 1.12 |
| GOM | 6.94 | 17.76 | 29.06 |
| Atlantic | 1.53 | 3.40 | 4.59 |

**Notes**: The low price case is $40/bbl and $2.14/mcf. The mid-price case is $100/bbl and $5.34/mcf. The high price case is $160/bbl and $8.54/mcf. All values are discounted at a real discount rate of 3 percent. All price scenarios represent a constant, inflation-adjusted price throughout the life of the program.
**Key:** * = With only exploration activities anticipated for the Beaufort and Chukchi Seas in the low price case scenario, there is no anticipated production. As a result, there are no price changes and the estimated economic surplus is zero.

### *5.3.4 Incremental Net Benefits*

The sum of the supply (incremental NEV less incremental environmental and social costs) and demand (incremental economic surplus) benefits constitutes the total incremental net benefits associated with the program area resources anticipated to be leased and produced. The estimated incremental net benefits of resources in the Proposed Program areas form one of the bases for developing Proposed Program

[29] In theory, consumer surplus is the difference between the price actually charged for a service or product and the highest price consumers would be willing to pay for a service or product. Similarly, producer surplus is the difference between the actual price that producers receive and the minimum price they would be willing to accept.

Options. The estimates for incremental net benefits per program area at each of the three sets of price cases are shown in Table 5-6.

**Table 5-6: Incremental Net Benefits by Proposed Program Area**

| Program Area | Incremental Net Benefits ($ billions) | | |
|---|---|---|---|
| | Low | Mid | High |
| Beaufort Sea | * | 25.48 | 94.11 |
| Chukchi Sea | * | 41.65 | 107.14 |
| Cook Inlet | 0.66 | 5.64 | 13.84 |
| GOM | 14.20 | 69.94 | 197.72 |
| Atlantic | 3.33 | 14.39 | 36.89 |

**Notes**: The low price case is $40/bbl and $2.14/mcf. The mid-price case is $100/bbl and $5.34/mcf. The high price case is $160/bbl and $8.54/mcf. All values are discounted at a real discount rate of 3 percent. All price scenarios represent a constant, inflation-adjusted price throughout the life of the program.
**Key: * =** Under the forecasted E&D scenarios, only exploration activities are anticipated for the Beaufort and Chukchi Seas in the low price case scenario. At this price, there are only negligible UERR. Companies may still engage in exploration activities in these areas with the expectation that prices will rise in the future.

Table 5-6 shows the results of the incremental net benefits analysis for the Proposed Program Options. For example, at the mid-price case in the Cook Inlet Program Area, approximately $5.6 billion (2017 dollars) in economic value is anticipated as a result of the Program.

Table 5-7 shows the estimate of incremental net benefits for the Supplemental Options in each program area. In most instances, BOEM has determined that the estimate of net benefits will not meaningfully differ from the Proposed Program decision. However, each Proposed Program Option is shown here for clarity. Each program area has a No Sale Option where no new leasing would occur in the program area. The net benefits analysis is calculated with the No Sale Option as the baseline. With this assumption, the net benefits of the No Sale Option are zero in each program area. As discussed, the net benefits for the sale Proposed Program Options are calculated as incremental because they are the costs and benefits of the OCS leasing less the costs and benefits implicit in the No Sale Option. They represent the incremental benefits of the program over the baseline. For example, at the mid-price case in the Beaufort Sea Program Area, the net benefits are an estimated $49.13 billion. Without a lease sale in the same program area, the net benefits at the mid-price case are an estimated $23.65 billion. The difference between the two, approximately $25.5 billion, represents the value of the program area above the No Sale Option. While the incremental net benefits results are summarized in Table 5-6, the intermediate steps with the No Sale Option, as well as other Proposed Program Options, are displayed in Table 5-7.

For the Beaufort Sea lease sale, BOEM has determined that there would be no meaningful difference in the level of national benefits if the sale were held in 2020 or 2019. For the GOM, although there could be impacts in the pace of leasing, BOEM does not think that the Region-wide and Modified Traditional Leasing Options would provide meaningfully different net benefits. Activities such as the eventual exploration or production in these regions will be based on other factors (e.g., prices, rig availability, company operating budget) rather than on the number of lease sales. As part of the Modified Traditional Leasing Option, Table 5-7 provides an estimate of net benefits that would result from the Central and

**Table 5-7: Incremental Net Benefits for Proposed Program Options**

| Program Area | Program Option | Net Benefits ($ billions) | | |
|---|---|---|---|---|
| | | Low | Mid | High |
| Beaufort Sea | Targeted Lease Sale Option (Beaufort Sea Lease Sale in 2020) | -0.55 | 49.13 | 170.43 |
| | Beaufort Sea Lease Sale 255 in 2019 | -0.55 | 49.13 | 170.43 |
| | Beaufort Sea No Sale Option | 0.00 | 23.65 | 76.32 |
| | *Incremental Beaufort Sale Value* | *-0.55* | *25.48* | *94.11* |
| Chukchi Sea | Chukchi Sea Lease Sale in 2022 | -0.20 | 78.63 | 186.70 |
| | Chukchi Sea No Sale Option | 0.00 | 36.99 | 79.55 |
| | *Incremental Chukchi Sea Sale Value* | *-0.20* | *41.65* | *107.15* |
| Cook Inlet | Cook Inlet Lease Sale in 2021 | 2.31 | 12.08 | 26.17 |
| | Cook Inlet No Sale Option | 1.66 | 6.44 | 12.33 |
| | *Incremental Cook Inlet Sale Value* | *0.65* | *5.64* | *13.84* |
| GOM | Region-wide Leasing Option | 56.95 | 189.41 | 441.32 |
| | Modified Traditional Leasing Option: Western GOM Lease Sales | 12.57 | 25.21 | 57.27 |
| | Modified Traditional Leasing Option: Central and Eastern GOM Lease Sales | 44.37 | 164.20 | 384.06 |
| | Baldwin County, Alabama, 15-mile No-Leasing Buffer Option | 56.95 | 189.41 | 441.32 |
| | GOM No Sale Option | 42.74 | 119.47 | 243.60 |
| | *Incremental GOM Sale Value* | *14.21* | *69.94* | *197.72* |
| Atlantic | Lease Sale Option | 11.48 | 35.35 | 75.26 |
| | Atlantic No Sale Option | 8.15 | 20.96 | 38.38 |
| | *Incremental Atlantic Sale Value* | *3.32* | *14.39* | *36.88* |
| All Program Areas | Lease Sale Option in all Program Areas | 69.98 | 364.59 | 899.89 |
| | No Sale Option in all Program Areas | 52.55 | 207.50 | 450.19 |
| | *Incremental All Program Areas Sale Value* | *17.43* | *157.10* | *449.70* |

**Notes**: The low price-case is $40/bbl and $2.14/mcf. The mid-price case is $100/bbl and $5.34/mcf. The high price case is $160/bbl and $8.54/mcf. All values are discounted at a real discount rate of 3 percent. All price scenarios represent a constant, inflation-adjusted price throughout the life of the program. Under the forecasted E&D scenarios, only exploration activities are anticipated for the Beaufort and Chukchi Seas in the low-price case scenario. At this price, there are only negligible UERR. Companies may still engage in exploration activities in these areas with the expectation that prices will rise in the future. The results of the net benefits analysis are additive. That is to determine the impact the total net benefits of different combinations of program areas, simply add the desired areas together.

Eastern portion of the GOM Program Area and from the Western portion of the GOM Program Area if separate sales were held and the areas were treated separately.

The third Proposed Program Option in the GOM Program Area to exclude acreage off Baldwin County, Alabama, would similarly not have meaningfully different net benefits. Given the amount of acreage offered throughout the GOM, this small exclusion area would not meaningfully affect production or activity levels.

# Chapter 6 Program Area Location Considerations

## 6.1 INTRODUCTION

Chapter 6 includes discussion of several different Section 18(a)(2) factors that the Secretary must consider when determining the timing and location of lease sales. Specifically, this chapter will focus on those factors having to do with regional and national energy markets, the policies and laws of affected states, and industry interest.

## 6.2 NATIONAL ENERGY MARKETS

The following sections discuss national energy needs and the location of OCS program areas relative to the needs of national energy markets, a factor the Secretary must consider under Section 18(a)(2)(C). U.S. energy needs are considered in the presence of a persistent, though recently shrinking, gap between domestic production and consumption; low oil and natural gas prices; continuing concerns over the United States' negative balance of payments in world trade; and increasing domestic onshore production. To assist the Secretary in her decisions on the size, timing, and location of OCS lease sales, this chapter includes an analysis on the markets for crude oil, natural gas, and refined petroleum products[30].

### *6.2.1 Recent Developments in Oil Markets*

In the past few years, the United States has experienced a rapid increase in oil and natural gas production from shale and tight formations. This game-changing development has resulted in a significant decline in U.S. dependence on imported petroleum (EIA 2015a). Recent U.S. production growth has centered largely in a few onshore regions and has been driven by advances in the application of horizontal drilling and hydraulic fracturing technologies.

The U.S. dependence on imported petroleum is declining because both net and gross imports of crude oil have been declining, but net imports are expect to remain above zero and begin a slow upward trend in a few years. The recent removal of export restrictions will affect net imports, but a recent EIA-sponsored study (EIA 2015a) showed only a very low rate of decline in net exports through 2025, the last year of projections. An additional factor that could affect net imports is the adjustment of the domestic industry to current low prices. If the prices remain lower than anticipated, it could provide both downward pressure on domestic production and upward pressure on demand, leading to higher imports. Conversely, U.S. exports of refined petroleum products began to exceed imports in 2011, and the United States is expected to continue to be a net exporter of petroleum products for the foreseeable future.

[30] Petroleum products are the output of refineries and are made from crude oil (e.g., gasoline, diesel fuel, jet fuel, kerosene). The OCS Lands Act focuses on crude oil and natural gas; therefore, petroleum, or "refined" products are included in this analysis primarily because they represent the form in which end users consume oil that, in its crude form, is used only by refineries.

Improved drilling efficiencies, along with concessions from service providers and suppliers, are yielding significant improvements in break-even costs for drilling wells onshore,[31] and the lower costs are helping the United States avoid steep production declines normally associated with a sharp drop in oil and gas prices. While daily oil and natural gas production from domestic unconventional plays is declining slightly in response to much lower prices, companies continue to drill new wells, or complete previously drilled wells, largely compensating for lower production levels from existing wells. The recent low oil and natural gas prices have dampened industry interest in the conventional and more expensive offshore acreage and plays. The drilling productivity improvements for drilling into onshore unconventional formations have not extended to offshore drilling. While the offshore industry requires long-term planning, companies have been increasingly unwilling in the current low-price environment to make the huge up-front investments in leasing, exploration, and development required for production that sometimes will not begin for years into the future.

### *6.2.2 Relevant Developments in Domestic Petroleum Markets*

Onshore tight oil has returned the United States to the position it once held as the top oil and petroleum liquids producer in the world. As mentioned above, the recent abundance of domestic oil production has provided a number of benefits and driven major changes in supply and consumption patterns in domestic crude oil markets. One major change in supply and consumption is that the vast majority of the oil produced from tight formations is light, sweet crude, in contrast to the heavier sour crudes that generally come from both other domestic production, including offshore, and imported sources. In fact, roughly 90 percent of the nearly 3 million-barrel-per-day growth in U.S. production from 2011 to 2014 consists of light, sweet grades, which is a higher-quality crude than the medium-to-heavy sour crude traditionally found on the OCS (EIA 2015b). This phenomenon has reduced the overall need for imported oil, but the overall numbers mask a dramatic change in the composition of remaining imports. Figure 6-1 shows the extent to which huge quantities of domestic light crude oil (sold at discounted prices) have replaced light crude imports to the extent that markets are able to substitute domestic light (tight) crude for imported crude. Net imports of medium-to-heavy oil have declined only slightly since 2010 (EIA 2014a). While it is possible that a combination of increased onshore production and reduced domestic consumption will allow the trend toward lower imports to continue, the Reference Case (and Low Oil and Gas Resource Case) in EIA's *Annual Energy Outlook 2015* (EIA 2015c) projects a change toward higher imports beginning in the next decade as projected domestic production levels peak in 2020.[32]

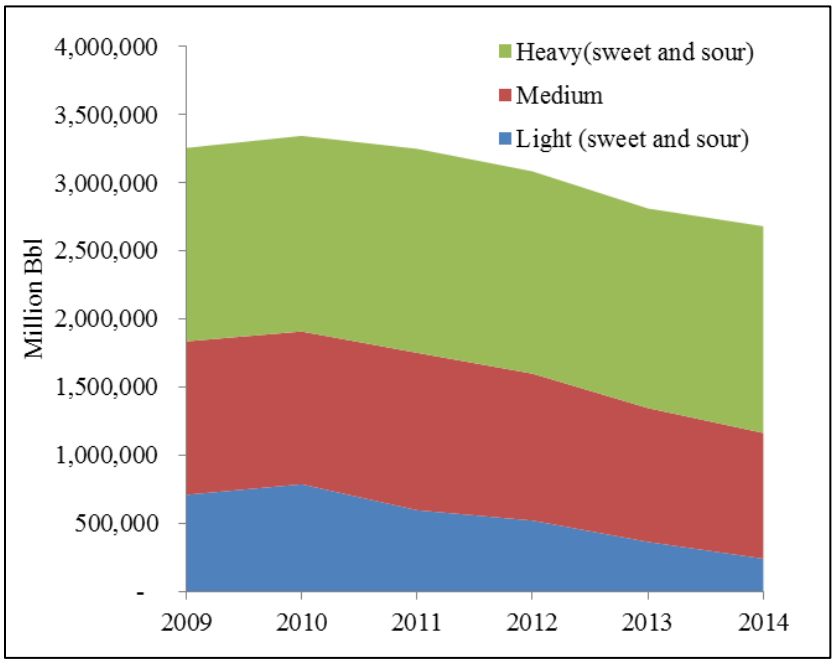
Petroleum refineries are the primary market for crude oil, which generally is not consumed in its raw state. Refineries use crude oil as feedstock to create an array of petroleum products shipped to various markets around the country and the world. Refineries are complex facilities designed to use specific grades of crude oil as inputs and to produce specific mixes of petroleum products as outputs. The least expensive crude combinations from different sources are blended to produce the most profitable

[31] EIA's *Drilling Productivity Report* analyzes drilling efficiency using the average number of wells a rig can drill over a period of time as well as a measure of how productive each new well is expected to be for the onshore plays with unconventional formations. This monthly report is available at http://www.eia.gov/petroleum/drilling/.

[32] Markets for crude oil and refined petroleum products should not be confused. While the U.S. has been a net exporter of petroleum products since 2011, EIA projections do not show the U.S. ever becoming a net exporter of crude oil in any of its four cases (EIA 2015c). The focus of the OCS Lands Act is on crude oil and natural gas; therefore, the focus of this discussion of oil markets and refineries generally is on the demand for, and availability of, crude oil as an input, and it does not include extensive information on refined products.

combination of refined products at the lowest price, given refinery design. The United States' refinery and transportation infrastructure was constructed and evolved over time primarily to handle the heavy, sour crude from traditional producing areas and entry ports for imports, rather than the light, sweet crude from the recently developed tight oil plays. Prior to the unexpected, huge increases in production of light, better-quality crude oil beginning in 2008, many domestic refineries spent tens of billions of dollars retooling their facilities to be able to process less expensive, imported heavy, sour crude oil they assumed would serve as the primary inputs of the future. The U.S. pipeline network was similarly designed to transport medium-to-heavy crude from traditional production areas or ports to refineries and then to carry the refined products to markets, whether domestic or foreign. U.S refinery feedstock needs, transportation bottlenecks, and the decades-old ban on exporting crude oil[33] also combined to push the price of domestic crude, especially the lighter sweet crude, below world prices for equivalent grades of crude.

**Figure 6-1: U.S. Crude Oil Net Imports by Grade**




**Source**: EIA 2015d, EIA 2015e, EIA 2015f

As would be expected, with the abundance of light, sweet crude from onshore tight oil, energy markets have made adjustments. It is extremely expensive to retool a facility to process different grades of crude, so U.S. refineries have adopted short-term strategies of blending light crude with (often imported) heavy crude to accommodate the new supply and create an efficient mix of feedstock. This may help account for the increases in imports from Canada (which provides bitumen and upgraded synthetic crude from the oil sands in Alberta), despite an overall decrease in imports over the past several years (EIA 2014a).

[33] Prior to mid-December 2015, by which time this analysis had been incorporated into the Proposed Program document and was in the review process, domestic crude oil exports were strictly limited by multiple laws; there were only a few Presidential exemptions consistent with the requirements of the Energy Policy and Conservation Act of 1975 (BIS 2013). Since then, Congress enacted a repeal of the crude oil export ban (Bloomberg 2015).

Pipelines are the least expensive and perhaps safest means to transport crude oil, even if the grade is so heavy that special heating units and/or blending is required to make the oil adequately flow. The U.S. pipeline network was designed to transport oil from traditional producing areas to the appropriate refineries. With the recent boom in tight oil production, pipeline bottlenecks emerged; market responses have eliminated or reduced some of those bottlenecks. Industry ships oil in specially designed rail cars and even trucks, sometimes using two or three modes of transportation in succession to transport crude oil to its destination (e.g., truck from production site to nearest rail line to nearest pipeline). Although railways and trucks offer greater short-term flexibility than pipelines, the costs of shipping by rail can be two or three times higher than pipeline shipping costs and truck transportation is even more expensive than rail.

The sheer volume of new oil production from tight formations, the long distances between production sites and refineries designed for the higher-grade crudes, and the decades long prohibition on exports of crude oil have resulted in producers selling at discounted prices. This discount can be seen in the "spread" between prices for the two major "benchmark crudes," Brent and West Texas Intermediate (WTI),[34] which changed direction and increased dramatically in early 2011 (EIA 2013a). WTI is a light, sweet crude that historically sold for a slightly higher price than Brent crude, which comes from the Atlantic basins such as the North Sea. As the tight oil boom accelerated, landlocked WTI began to sell at a discount to Brent because the existing transportation systems could not accommodate the combination of increased quantity and production locations, creating a bottleneck. For the same reasons, the price of the much more mobile Brent crude has been more responsive to world events. As markets have adjusted (e.g., refineries adjusting to plentiful light crude, rail and truck routes being added or used more heavily, and a few pipelines reversing direction[35]), this discount has come down from a high of greater than $25 per barrel to less than $5 per barrel (see Figure 6-2) (Duesterberg 2014)[36]. Prices for crude oil imported from Canada have also been affected by lower U.S. oil prices.[37] This loss to producers in terms of product price has benefitted refining companies. Refineries have taken advantage of the spread between domestic prices and world prices, giving them an important feedstock advantage over foreign competitors, partially offsetting the higher operating costs driven by adapting to the light sweet crude from new domestic sources. Domestic refineries also have access to inexpensive natural gas to run their operations. These cost advantages are presumably the major factor that allowed the United States to become a net exporter of petroleum products in 2011. However, as mentioned above, markets adjust, and this cost advantage due to discounted oil prices continues to narrow.

Traditional production techniques, including those used on the OCS, generally recover 35 to 40 percent of the resources in a field (Zitha et al. 2011). Onshore, technologies used for tight oil typically lead to

[34] Because prices differ for numerous types and locations of crude oil, and are in constant flux, it is helpful to state the current price of any given crude in relation to the current price of a well-known, widely available "benchmark" crude. Two benchmark crudes commonly used to represent "the price of oil," whether for traders or outside observers, are Brent and WTI.

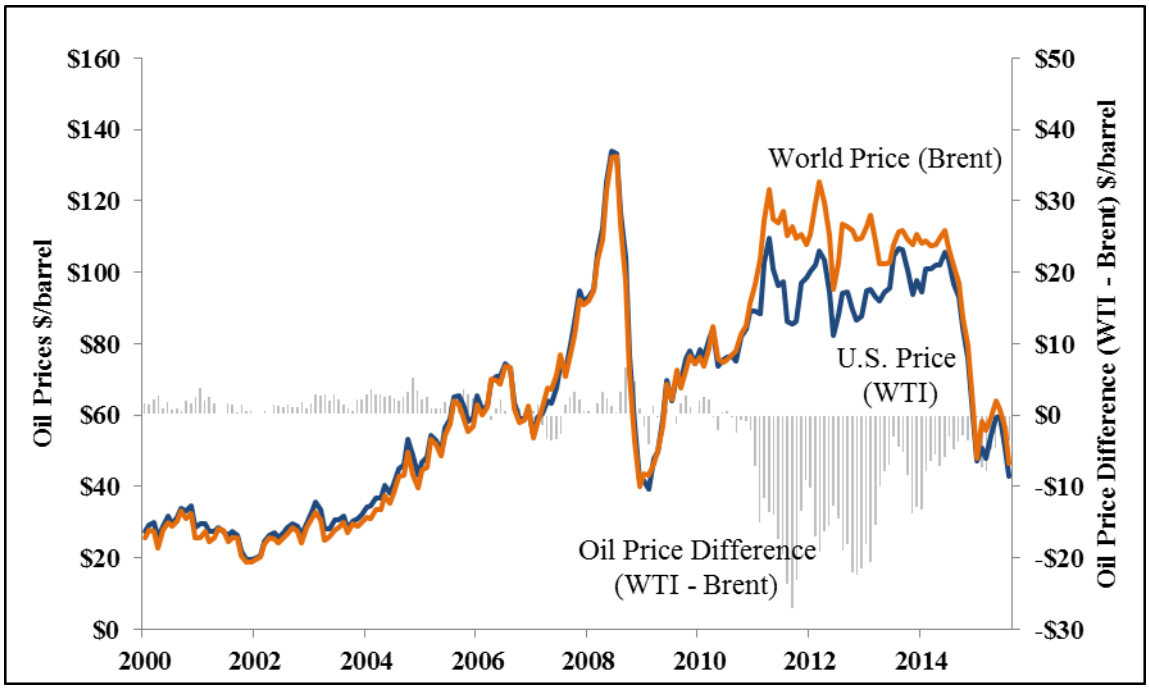
[35] For example, the Seaway Pipeline was constructed to carry crude oil from southern Texas to the oil storage hub in Cushing, Oklahoma, where the unforeseen boom in tight oil production later caused a regional glut and downward pressure on prices for WTI and other crudes from landlocked production sites. The regional imbalance of supply and demand led to underutilization of the pipeline, and its direction of flow was reversed so that it could carry crude from Cushing to Gulf coast refineries, where there was a greater need (reflected in higher prices) (Bloomberg 2011, Reuters 2012).

[36] When restrictions on the export of crude oil were removed in mid-December, while this document was under review, the price spread fell to less than a dollar per barrel. (It has fluctuated but remained low.) BOEM will make any necessary updates in the analyses for the PFP decision, when more data will be available.

[37] Virtually all of Canada's oil exports are bound for U.S. refineries.

recovery rates between 5 and 20 percent (Schaefer 2011). Fracking only results in production of the easiest 5 to 20 percent of a field's oil resources, and a well's peak production is reached soon after production begins.[38] Improved drilling efficiency and well design and other strategies like re-fracking are likely to further lower production costs and increase recovery percentages over the long run.

**Figure 6-2: World and U.S. Domestic Oil Prices (Brent vs. WTI), 2000–August 2015**




**Key**: WTI=West Texas Intermediate
**Source**: EIA 2015g, EIA 2015h

Another effect of the oil production revolution from tight formations has been potentially greater responsiveness of domestic supply to changes in price. Production from tight oil formations can be brought online quickly and serves as a price-responsive source of supply; oil can be marketed almost as fast as wells can be can be drilled. In most tight-oil plays, lessees know where the hydrocarbons are, and exploration is not necessary. The short time required to drill and complete tight oil wells, and the fact that planned or existing projects can be ramped up relatively quickly, makes U.S. onshore production more responsive to changing oil prices compared to OCS projects. OCS projects can take 10 years or more from lease award to initial production, and are therefore subject to general long-term price expectations rather than short-term price swings. OCS hydrocarbon deposits must be found through exploratory drilling. OCS projects generally provide a steady and more predictable source of oil and gas for long periods once production begins. In general, long-term offshore projects are less susceptible to fluctuations in prices and price expectations.

Conventional onshore and OCS areas can provide oil and natural gas for decades to come. Therefore, broadly defined, the United States now has two general sources of domestically produced oil and natural gas supply: relatively quick-turnaround, onshore tight oil projects that produce higher-quality crude, and longer-term, traditional projects that generally produce medium-to-heavy sour crudes. Projects like those

[38] This may not be true for natural gas wells in fracking projects.

on the OCS provide a fairly stable source of oil and gas that is less susceptible to market changes or early assumptions about undiscovered resources, prices, technology, recovery rates, etc.[39] This overall stability allows for longer-term planning for infrastructure and other needs. Although such projects are more resource-efficient for oil production (i.e., they result in production of a greater percentage of resources before field abandonment) and provide more reliable long-term production estimates once started, they do not provide quick supply responses to changing conditions or expectations.[40] Conversely, fracking projects provide more timely responses to changing prices and other conditions, helping to mitigate market swings in supply and prices.

### 6.2.3 Relevant Developments in Domestic Natural Gas Markets

The surge in the use of new technology to develop large onshore tight-formation plays initially focused on natural gas. This early success led to significant downward pressure on gas prices, to the point that producers began to direct their attention to projects that yielded gas only in association with the more valuable liquids. Nevertheless, plentiful domestic natural gas production has kept domestic natural gas prices far below benchmark prices in many other parts of the world. Companies are constructing permitted liquefied natural gas (LNG) export terminals, hoping to take advantage of world prices that can be more than twice the level of U.S. prices.

While natural gas, like oil, varies in its characteristics and serves as a feedstock for non-fuel products such as fertilizer and plastics, processing natural gas is simpler than refining crude oil. The downstream markets are not as varied and there is no onshore natural gas export ban. The challenge is transporting the gas overseas, which is what has prompted recent applications to build or convert LNG export terminals. An example of how quickly energy markets can change is that, less than 10 years ago, companies were applying to construct LNG import terminals.

Less expensive natural gas has reduced manufacturing energy and feedstock costs. Many manufacturing companies are beginning or increasing U.S operations or returning manufacturing from overseas. This natural gas renaissance is helping to stem the long-term decline in U.S. manufacturing jobs and helping to provide a competitive advantage for the U.S. manufacturing industry.

### 6.2.4 Oil and Natural Gas Consumption and Production Estimates

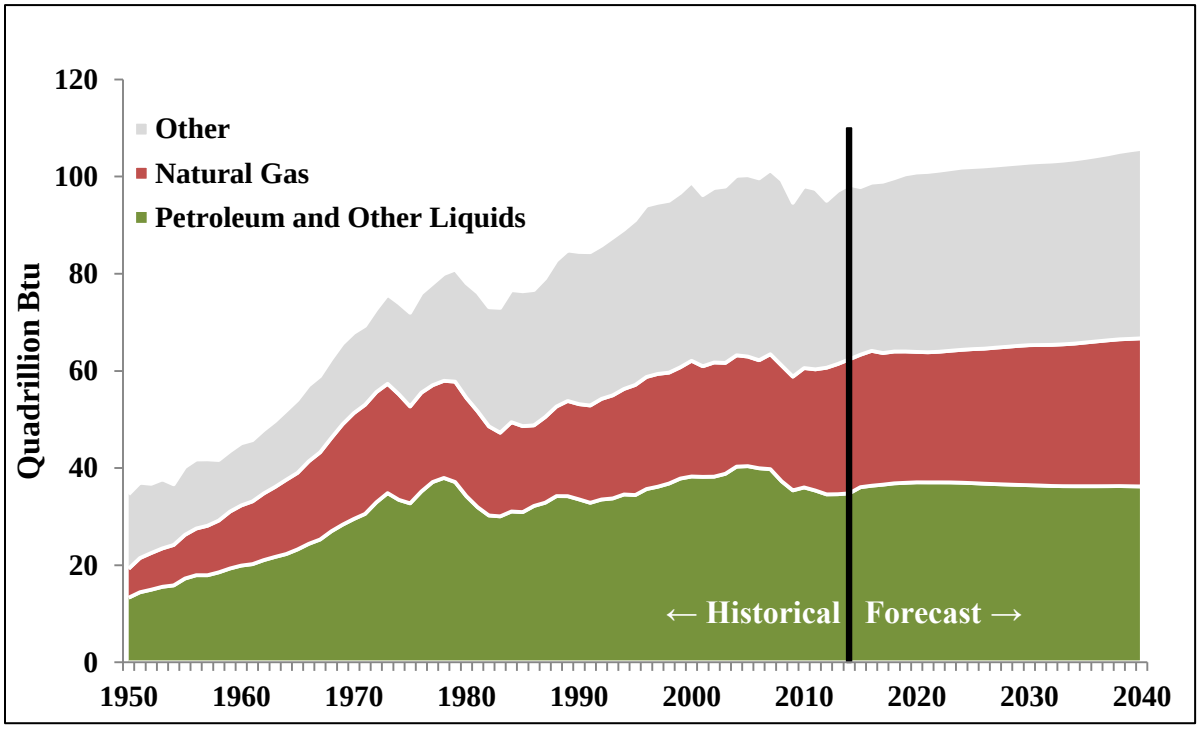
EIA forecasts that the United States will continue to heavily rely on oil and natural gas to meet its energy needs. In 2014, 63 percent of energy consumed in the United States came from oil and natural gas, and the EIA forecasts, based on current laws and regulations, that this percentage will remain fairly constant through 2040. Figure 6-3 shows total U.S. energy consumption by fuel source from 1950 to 2014 and includes the EIA's *Annual Energy Outlook 2015* projections from 2015 through 2040. The projections

[39] Many of the resource estimates for tight oil are necessarily tentative, given the associated data availability and unforeseen technological/efficiency advances. Early indications suggest that future tight formation production could be underestimated, but new information, changes in industry practices, or lower than expected prices during the 2017–2022 Program could show some of these early indications to be misleading.

[40] OCS exploration results cannot yield precise expectations for future production for a given project. However, given the lag between exploration and production for major OCS projects, the length of time the project is likely to maintain high production levels (in large part due to pipeline size constraints), and the longer experience with OCS production profiles, such projects lend themselves to more predictable long-term production estimates than do onshore shale oil and gas projects. A similar experience gap exists for estimation of undiscovered tight oil resources, given the short history of tight oil as a major component of overall domestic production.

shown in Figure 6-3 indicate that while the share of energy obtained from oil decreases slightly, the actual amount of oil needed to meet the United States' energy needs will continue to grow until 2020 before it begins to stabilize and eventually decline. Figure 6-3 shows that domestic natural gas consumption is expected to grow through 2040.

**Figure 6-3: Historical and Forecasted U.S. Energy Consumption by Fuel Type**




**Source**: EIA 2015c

Oil and gas production in the United States has increased rapidly in recent years. As shown in Chapter 1 (Figure 1-3), OCS lower 48 crude oil production as a percent of total oil production peaked in 2009 at 30 percent of domestic production, and stood at 17 percent in 2014. OCS natural gas production as a percent of total U.S. natural gas production peaked in 1990 at 27 percent of total U.S. natural gas production, and dropped to 5 percent in 2014. However, OCS natural gas production, and, even more so, OCS oil production, are projected to increase in quantity and as a percentage of domestic production in future decades, assuming resources are not subject to further leasing restrictions[41] (see Figure 1-3 and Figure 1-4 in Chapter 1 for EIA's projections of oil and natural gas production from 2015 through 2040).

### *6.2.5 Future Unpredictability and Possible Policy Implications*

Many factors influence actual oil and gas production, prices, and consumption. These factors include domestic and foreign GDP growth rates, technology development (affecting the supply and/or demand side), a variety of geopolitical events, and access to oil and gas resources. The confluence of improvements to existing technology has allowed access to hydrocarbon resources previously deemed to be too expensive or difficult to develop by more traditional means. This unexpected renaissance has

[41] EIA projections are based on current laws, regulations, and policies and therefore assume that all OCS areas not withdrawn or under moratoria are available for leasing as of 2017 or, for areas not included in the DPP, in later years.

reversed the long-term decline in U.S. oil production, catapulting the United States to the position as the world's top producer in a very short time. The U.S. produced 49 quadrillion British thermal units (Btus) of oil and gas in 2014 (EIA 2015i), the highest total level of oil and gas production in U.S. history. Through May 2015, domestic oil and gas production increased by nearly 11 percent compared to 2014.

A combination of circumstances caused the price of oil to roughly double from mid-2007 to mid-2008. As had happened when oil prices rose during the 1970s and into the 1980s, observers anticipated only increases thereafter. In both cases, industry experts were slow to see the collapse of prices in response to changing market conditions. Increasing production, combined with a worldwide recession that began in the latter half of 2008, caused oil prices to fall by more than two-thirds in the last 5 months of that year. However, in early 2009, prices began to recover fairly quickly—even if far below the previous high—and expectations were such that there was only a short pause in the growing use of fracking and horizontal drilling technology that has already been set into motion by the increasing prices prior to mid-2008. The surge in production from new projects significantly added to world oil supply and kept oil prices from exhibiting sudden spikes in response to numerous world events since that time. While prices grew to about $100 per barrel in early 2011 and remained near that price for more than three years, eventually the combination of annual increases in U.S. production and decisions by major OPEC countries not to reduce their production once again led to a decline in crude prices of more than two-thirds starting in late 2015.

The factors affecting oil and gas prices are complex and often unpredictable. Prevailing prices or price trends during Five-Year Programs, not to mention the extended lifecycles of resulting projects, have often been very different from those anticipated by even the most authoritative forecasters while those Programs were being developed. Likewise, unforeseen events and trends could negate current expectations during the lifecycle of projects resulting from the 2017–2022 Program. Unknown factors could include dissipation of the onshore fracking boom, changes in worldwide consumption patterns, geopolitical conflicts, or new technological breakthroughs. Major changes often take many years and can be costly and disruptive if they require new infrastructure, transportation networks, etc. The volatility of U.S. energy needs, oil and gas supply, and changes in prices cannot be predicted over the next 40 to 60 years. Markets will adjust to the changes that occur, but adjustments can be eased by resource availability. All other things being equal, it is better for the United States to pursue energy policies that maximize, rather than limit, the ability of markets to respond to the challenges of the future.

### *6.2.6 The Contribution of OCS Oil and Natural Gas*

As discussed earlier, the OCS is a major long-term supplier of reasonably predictable conventional crude oil and, to a lesser extent, natural gas. From a national energy and economic security standpoint, OCS production is an important part of the President's energy strategy to maintain domestic oil supplies to meet domestic demand (Executive Office of the President 2014). All domestic production serves to reduce exposure to the unpredictability of some foreign oil sources and resulting price volatility. OCS oil production complements other conventional sources and tight oil production, leading to greater stability in world markets overall. The OCS program provides significant benefits above and beyond oil and gas for fuel and refinery feedstock. It also provides billions of dollars of revenues to Federal, state, and local governments, as well as important employment benefits.

#### *6.2.6.1 Ability of OCS Production to Fulfill Short-term Needs*

OCS areas can provide oil and natural gas base load production for decades to come. While OCS production is not as responsive to price changes as is production from tight formations, it is more sensitive to low prices than to high prices, indicating that long-term planning to increase flexibility to respond to unexpectedly high energy needs may be more important than planning for adjustments to unexpectedly low energy needs in the future (see discussion of price sensitivity in Section 6.2.2). Given the nature of offshore oil and gas development, the OCS cannot provide resources to quickly mitigate the effects of a national energy emergency, such as a large portion of the world's oil supply being taken offline.[42] OCS projects take years to develop and even then, development can be further delayed by rig unavailability, time required to construct facilities, and other factors. Companies cannot simply explore and develop fields only to postpone production until a national need suddenly arises. Even if carrying excess capacity were not expensive, the OCS Lands Act necessitates due diligence in production of economic resources.

The legal constraints governing the OCS Oil and Gas Program leasing and development processes effectively restrict offering acreage to quickly make available additional undiscovered resources in response to changing energy needs. Should conditions warrant the need for energy production from areas not on the approved schedule of proposed lease sales, absent new legislation, the multi-year process of preparing a new Five-Year OCS Leasing Program must be undertaken, and it would take years before new lease sales could be held and leases awarded. Following lease award, it would still take many more years before industry could begin production on new projects capable of noticeably increasing overall production, even in the Western and Central GOM. In frontier areas, there would be further delays to devise exploration strategies, to obtain and transport needed exploration rigs, and to build the infrastructure/facilities needed to support development and production. Thus, when making decisions for this OCS Leasing Program, an important consideration is the value of allowing the Program and energy markets the option of responding to energy needs in the coming years, or even decades into the future.

Conversely, if the United States' need for oil and/or gas declines relative to supply, the USDOI can respond fairly quickly by cancelling or limiting lease sales and the OCS industry can also respond quickly by bidding on fewer leases or delaying development (within the limits of the initial period of the lease). Lease sales can be cancelled, companies can bid on fewer blocks in the lease sales that are held, and operators can decide to postpone or abandon plans to explore, develop, or produce on leased blocks. Recent GOM bidding activity has declined in response to relatively low oil and natural gas prices due primarily to the marked increase in oil and natural gas supply coming from onshore plays.[43] The decline in bidding activity has been most pronounced on the GOM shelf, which is rich in natural gas deposits.

[42] Crude oil prices are set on the world market. Changes in supply and demand will affect not only prices that refineries pay for imports, but also what they pay for domestic crude. This was true even before the recent lifting of oil export restrictions. Refineries will sell their petroleum products where prices are the most favorable, so U.S. markets will compete with the rest of the world for those products. In a free market, companies can put their resources where they bring the highest return, and attempts to control domestic prices have been shown to create disruptive, unintended consequences and to discourage investments that lead to increased domestic supply.

[43] For example, only six blocks received bids in water depths of 0 to 200 meters in the Western GOM Planning Area Sale 238 in 2014 (totaling $3.16 million), as opposed to 67 blocks in Western GOM Planning Area Sale 207 in 2008 (totaling $75.55 million).

#### *6.2.6.2 Importance of OCS Production*

Although overall net petroleum import levels have been decreasing, U.S. net imports are expected to begin increasing in a few years, and OCS production is still important to U.S. energy markets. Not all oil is equal—the medium-to-heavy sour crudes produced from the OCS are still greatly needed in U.S. refineries. Many Gulf coast refineries spent billions of dollars several years ago on new equipment and facilities to accommodate the (less-expensive) heavier or sour crude available from places like Venezuela or the OCS and are now not equipped to efficiently handle the light, sweet crudes from tight oil formations without incurring huge additional retooling costs.[44] Partly because Gulf coast refineries are equipped for medium and heavy crude rather than the light, sweet crude being produced in such abundance in recent years, there is a continued need for OCS crude, and there is an existing network of pipelines from producing areas to nearby refineries. Markets will adjust to the abundance of tight oil over time if it endures, but adjustments beyond those currently in place may be very expensive and could take place over a very long time, especially as the price discount for (and incentive to use) tight oil diminishes.

New production from the OCS would help meet the United States' continued energy demand and maintain a diversity of supply. Diversity of supply mitigates the effects of import disruptions and cushions the consequences of other disruptive forces. Volatile energy prices and continued dependence on foreign energy, especially for crude oil, raise important energy policy issues about energy supply options and their effects on the economy and the environment. The recent increase in domestic oil production, when added to OCS and existing onshore production has helped to increase world oil supply. The larger base of world supply has created more price stability, as supply disruptions of a given volume would no longer cause the same percentage change in overall supply. The reduced price volatility has added flexibility for U.S. foreign policy initiatives in a world that would otherwise be experiencing oil price shocks resulting from unrest and political turmoil in major oil producing countries. Aside from the current domestic mismatch between tight oil, crude qualities, and those needed by GOM and other U.S. refineries, increases and decreases in U.S. production affect the world market for oil, influencing prices, the flexibility of the United States to respond to international problems, and other such factors. This relationship may have become even more direct with the recent lifting of oil export restrictions. Significant declines in OCS oil production would therefore offset the increased supply and other benefits flowing from the recent U.S. fracking boom.

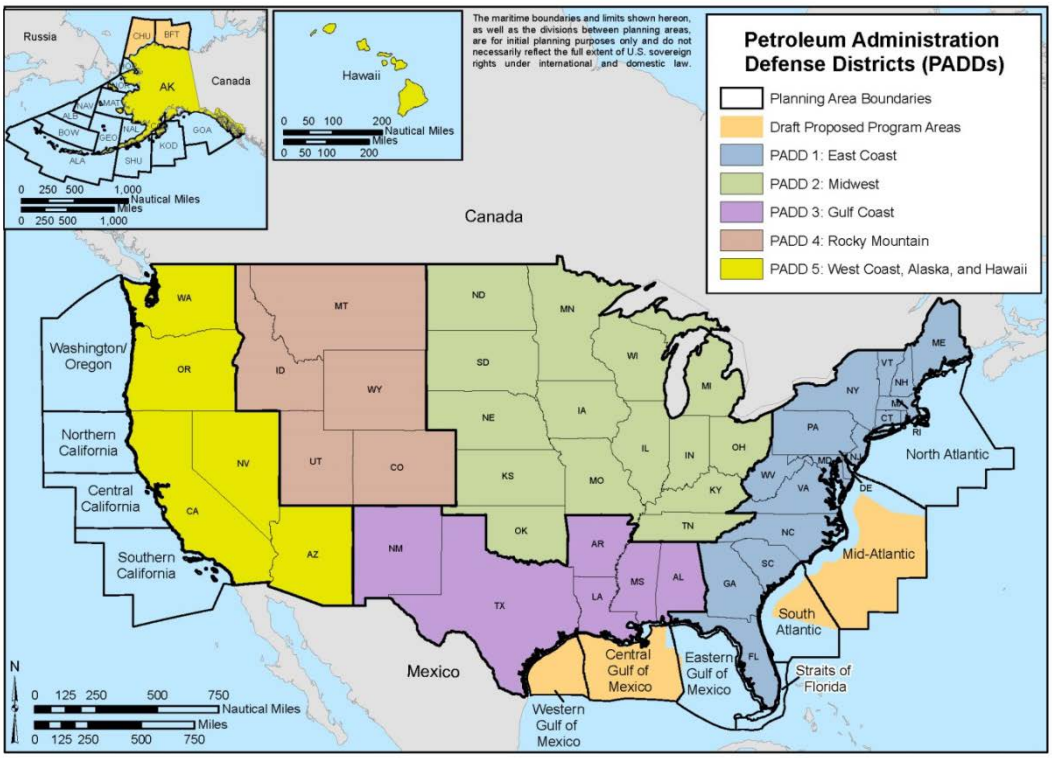
## 6.3 REGIONAL ENERGY MARKETS AND THE LOCATION OF THE PROGRAM AREAS

In making the decisions on size, timing, and location of OCS oil and gas leasing for the Program, the Secretary must consider "…the location of [OCS] regions with respect to, and the relative needs of, regional and national energy markets" (Section 18(a)(2)(C) of the OCS Lands Act). Given that crude oil and natural gas are both multi-product (and varied) compounds, the following "regional energy considerations" discussion provides information on the immediate markets for these resources as well as

[44] When there is a price advantage to do so, refineries will blend light crude with much heavier crude to obtain the desired input quality. However, there are limits to the amount of light crude a given refinery can accommodate and still maintain refining efficiency. Given the December 2015 removal of restrictions on the export of domestically produced crude oil (enacted after completion of this analysis), refinery owners are likely to postpone the huge investments required to retool refineries until new markets trends are easier to predict. That would imply that tight oil would constitute a disproportionate share of exports in the near future.

overall energy production and consumption. To analyze energy markets regionally, BOEM uses Petroleum Administration for Defense Districts (PADDs) from the EIA to group all 50 states by five separate districts.[45] The PADDs, shown in Figure 6-4, allow users, including BOEM, to analyze regional movements of natural gas and petroleum.

**Figure 6-4: Petroleum Administration Defense Districts**




**Source**: EIA undated

### *6.3.1 Regional Production and Consumption*

Regional energy markets are defined by the amount of crude production, refining, and consumption that occurs in each region. Figure 6-5 and Figure 6-6 show proportional petroleum production and consumption by region in the United States in 2013. Figure 6-7 and Figure 6-8 similarly show production and consumption by PADD for natural gas. To show the differences between Alaska and the rest of the West Coast PADD, Alaska is shown separately in Figures 6-5 through Figure 6-8. One noticeable theme is that the Gulf Coast PADD is responsible for a majority of both domestic oil and natural gas production, but consumes a much smaller share. The East and West Coasts and Midwest PADDs consume more than 70 percent of the domestic oil and natural gas used in the United States, but supply only about 40 percent of domestic oil and 49 percent of natural gas production. In 2014, the GOM OCS as a whole was responsible for 17 percent of domestic oil production and 5 percent of domestic natural gas production. As shown in Chapter 5, the anticipated production from the program areas considered in this Proposed

[45] Alaska is separated from other states in the West Coast PADD in Figures 6-6 to 6-9 as it has its own OCS region, and because its large oil production and low consumption mask a very different production-consumption relationship than is found in other states. Based on data availability, Alaska is grouped with the remaining West Coast PADD states for the other tables and figures.

Program analysis in the Gulf Coast PADD, Atlantic PADD, and Alaska portion of the West Coast PADD have offshore resources that could be used to meet regional energy needs.

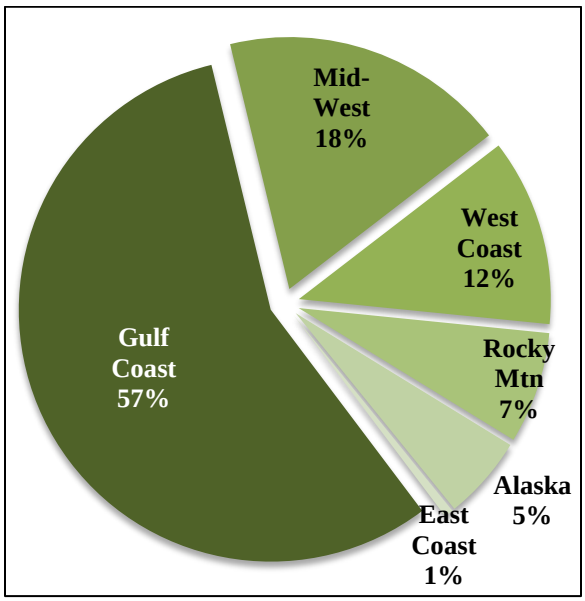
### 6.3.2 Regional Transportation

While clearly there are differences between the production and consumption levels of every PADD, resources must be transported between regions to ensure that each PADD is able to fulfill its consumption needs. Because crude oil and natural gas are rarely suitable for consumption without going through a refining/processing stage during which various final products are extracted, refineries and gas-processing facilities are the primary markets for oil and gas. Oil and natural gas are fungible resources, even more so once refined and processed, making location less relevant at latter stages. Therefore, refinery capacity within a region is a key component of each region's ability to support its own demand or the national energy demand. Figure 6-9 shows the percent of U.S. refining capacity in each PADD.

Even though the East Coast accounts for 27 percent of total U.S. oil consumption, it only contains 7 percent of the United States' refining capacity. To fulfill the regional energy demand, a network of pipelines, trains, trucks, and barges is required to transport resources to refineries and then again to the final consumer.

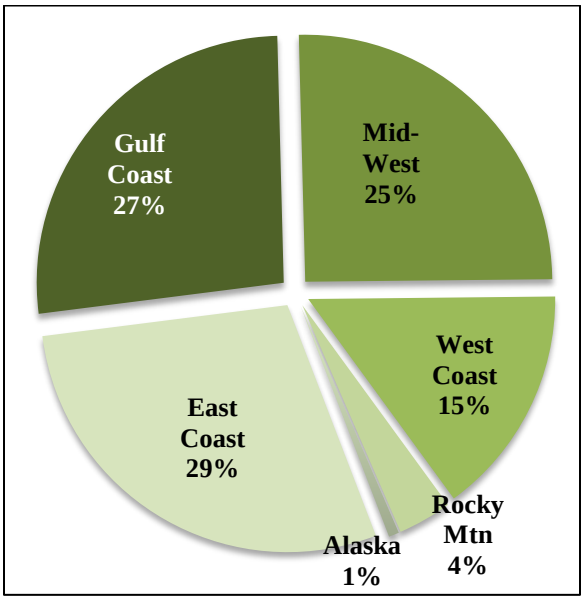
Each of the PADD regions receives crude oil and petroleum products in three different ways: production, regional imports, and foreign imports. Similarly, most of the regions have at least some regional and foreign exports. Figure 6-10 shows the crude oil and petroleum production and movement by pipeline, tanker, barge, and rail for each PADD region. The Gulf Coast PADD has the most throughput of oil and petroleum products because it has the largest production and refining capacity and receives the largest amount of foreign imports. The Gulf Coast PADD provides to consumers the largest share of both foreign and regional exports.

**Figure 6-5: Contribution to Oil Production by PADD**



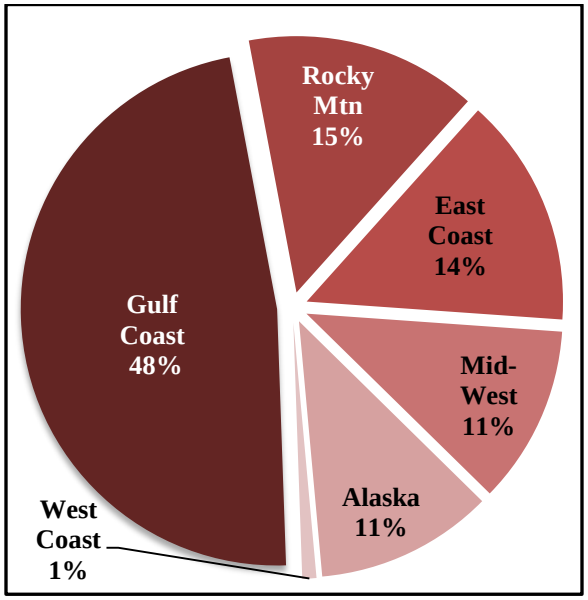

**Source**: EIA 2015j

**Figure 6-6: Oil Consumption by PADD**



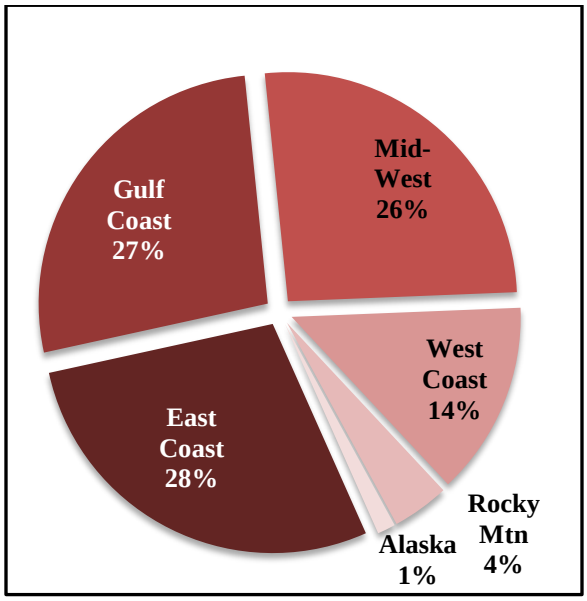

**Source**: EIA 2013b

**Figure 6-7: Contribution to Marketed Natural Gas Production by PADD**



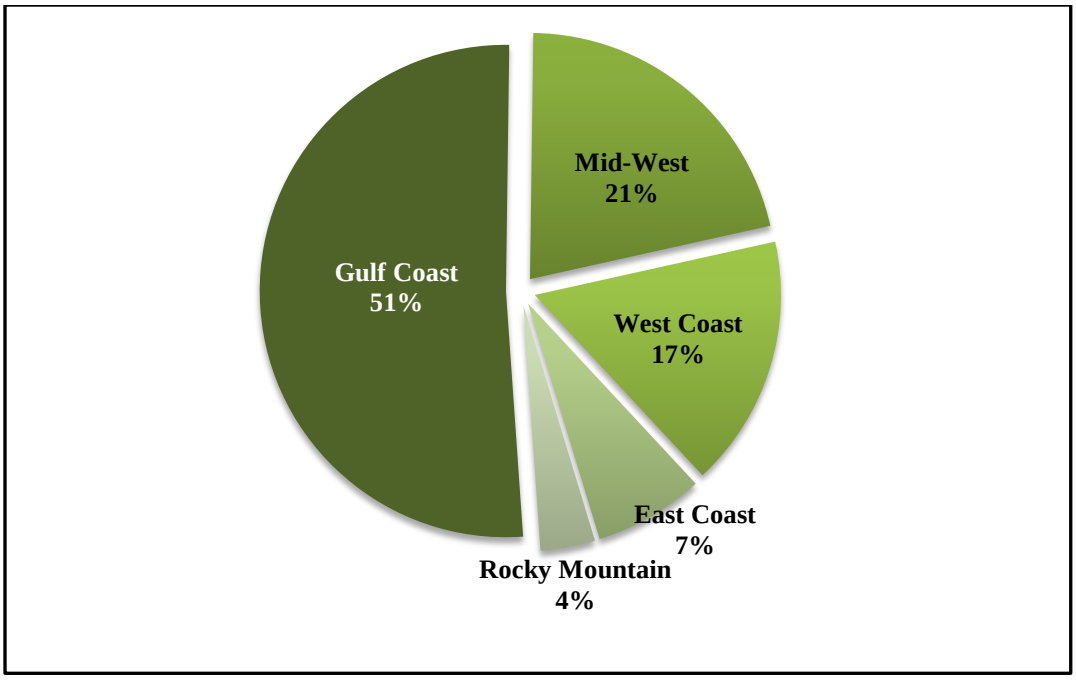

**Source**: EIA 2015k

**Figure 6-8: Natural Gas Consumption by PADD**



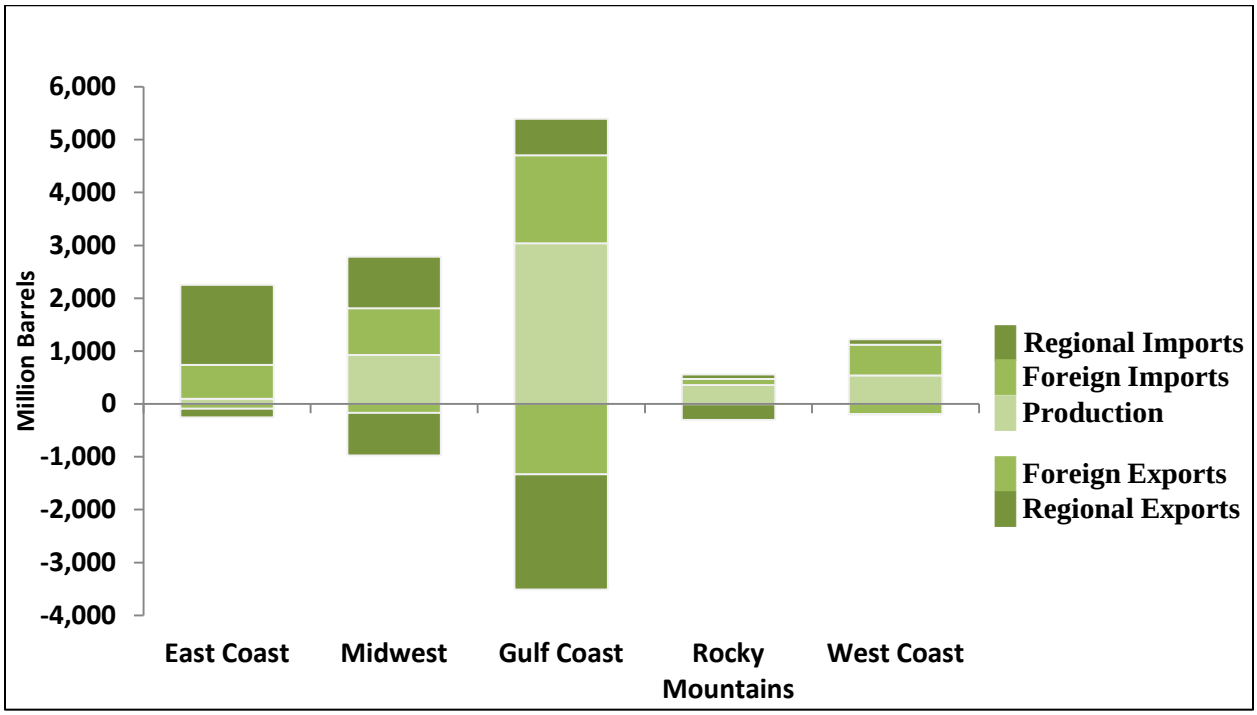

**Source**: EIA 2015l

**Figure 6-9: U.S. Refining Capacity by PADD, 2014**




**Source**: EIA 2015m

**Figure 6-10: U.S. Crude Oil and Petroleum Production and Import/Export by Region, 2014**




**Note**: This reflects crude oil and petroleum production and movement by pipeline, tanker, barge, and rail for each PADD region.
**Source**: EIA 2015n, EIA 2015o

Examining in particular the regional movement, Table 6-1 shows the 2014 inter-PADD movement of petroleum products by tanker, pipeline, and barge (EIA 2015n).[46] Table 6-2 shows the 2014 inter-PADD movements of crude oil. Approximately three-quarters of the petroleum product movements by tanker, pipeline, and barge originated in the Gulf Coast PADD, which includes the GOM offshore. More than three-quarters of these shipments from the Gulf Coast PADD went to the East Coast PADD.

**Table 6-1: 2014 Petroleum Product Shipments by Tanker, Pipeline, and Barge (million barrels)**

| PADD | From PADD 1 | From PADD 2 | From PADD 3 | From PADD 4 | From PADD 5 | Total Receipts |
|---|---|---|---|---|---|---|
| To PADD 1 (East Coast) | 0 | 32 | 1,187 | 0 | 1 | 1,220 |
| To PADD 2 (Midwest) | 135 | 0 | 262 | 52 | 0 | 448 |
| To PADD 3 (Gulf Coast) | 1 | 154 | 0 | 75 | 1 | 230 |
| To PADD 4 (Rocky Mountain) | 0 | 47 | 0 | 0 | 0 | 47 |
| To PADD 5 (Pacific) | 0 | 0 | 51 | 15 | 0 | 66 |
| **Total Shipments** | **135** | **233** | **1,504** | **144** | **2** | **2,018** |

**Source**: EIA 2015n

[46] EIA does not track transport of petroleum products by truck or rail.

**Table 6-2: 2014 Crude Oil Shipments by Tanker, Pipeline, Barge and Rail (million barrels)**

| PADD | From PADD 1 | From PADD 2 | From PADD 3 | From PADD 4 | From PADD 5 | Total Receipts |
|---|---|---|---|---|---|---|
| To PADD 1 (East Coast) | 0 | 144 | 13 | 9 | 0 | 166 |
| To PADD 2 (Midwest) | 4 | 0 | 328 | 103 | 0 | 434 |
| To PADD 3 (Gulf Coast) | 12 | 306 | 0 | 37 | 0 | 355 |
| To PADD 4 (Rocky Mountain) | 0 | 41 | 0 | 0 | 0 | 41 |
| To PADD 5 (Pacific) | 0 | 53 | 2 | 4 | 0 | 59 |
| **Total Shipments** | **16** | **543** | **342** | **153** | **0** | **1,055** |

**Source**: EIA 2015o

While Tables 6-1 and 6-2 show the inter-PADD movements, the United States exports additional petroleum products internationally, as shown in Figure 6-10. In some instances, it makes more economic sense to export refined petroleum products to other countries than to transfer them between regions. For example, most of the U.S. refined petroleum product exports come from the Gulf Coast due to a decline in U.S. demand for gasoline and an increase in refinery capacity. Gulf Coast refineries have a competitive advantage internationally because they use the lower quality, cheaper crude; run on natural gas (which is inexpensive in the United States); and are close to the emerging Latin American markets (EIA 2012a). Because of these advantages, pipeline capacity, and other regulatory issues (including Section 27 of the Merchant Marine Act [P.L. 66-261][47]), refineries in the Gulf Coast often export gasoline to Latin America rather than shipping it to the East Coast. The East Coast receives refined product imports from European refineries, which face stronger relative demand for diesel fuel than for gasoline. The Midwest, with its expanded production, is now much less dependent on Gulf Coast refined products (EIA 2012a). Given the interconnectedness of national and international markets, domestically produced fuel has a direct impact on U.S. energy markets even if it is consumed abroad. BOEM does not track what portion of OCS-derived fuels is consumed domestically, but instead considers the impact of OCS production on national and international markets. This approach was upheld in *Center for Sustainable Economy v. Department of the Interior*, 779 F.3d 588 (D.C. Circuit 2015). The court found that "what matters in determining whether OCS-derived fuel meets national needs is not whether the additional OCS fuel is consumed domestically, but whether it helps to satisfy domestic needs for fuel security and net supply, both in aggregate and over time."

### *6.3.3 Regional Energy Prices*

Regional production-consumption gaps, proximity to production areas, and existing transportation constraints can affect regional prices for petroleum and natural gas products. For gasoline prices, the largest factor affecting prices is the cost of crude oil. The EIA estimates that in 2014, approximately 65 percent of the price of a gallon of gasoline was the cost of crude oil, 13 percent was from Federal and

[47] The Merchant Marine Act requires that all goods transported by water between U.S. ports be carried on U.S. flag ships, constructed in the United States, owned by U.S. citizens, and crewed by U.S. citizens and U.S. permanent residents.

state taxes, 10 percent was from refining costs and profits, and 12 percent was distribution and marketing (EIA 2015p). Regionally, gasoline prices can vary based on taxes from both the state and local governments. Another regional factor affecting price is the costs and profits of refineries. Because the crude oil inputs vary by region and the gasoline characteristics of the output[48] are also different by region, price can vary greatly. After refining, gasoline is usually shipped from the refinery by pipeline to terminals and then distributed to gasoline stations by tanker truck. Thus, the distance from refinery to consumption point can greatly affect the cost (EIA 2015p).

### 6.3.4 Alaska Regional Energy Markets

As shown previously in Table 5-2, the Alaska OCS program areas as a whole appear to have huge, if uncertain, oil and gas resource endowments. Arctic areas (Beaufort Sea and Chukchi Sea) have especially promising oil and gas potential. In particular, Arctic OCS oil may be important to Alaska for continued operation of the TAPS. Declining onshore production from Prudhoe Bay is affecting the usefulness of TAPS, which requires a certain level of throughput to operate without posing major technological challenges. New OCS production could provide the additional throughput needed to extend the life of TAPS, allowing it to continue to carry oil from northern Alaska for many years in the future (NETL 2014). The State of Alaska and others raised the issue of the long-term viability of the TAPS pipeline and the role that OCS production could play in extending its life in comments on the development of this Program (see Appendix A).

Though BOEM and industry estimates indicate that the Chukchi Sea and Beaufort Sea Program Areas contain vast resources, significant infrastructure would need to be developed before major new production could begin. Outside of Cook Inlet, which is close to infrastructure that can accommodate activities on state leases and commercial markets, the Alaska OCS is fairly remote. Heavy investments in new infrastructure would be required.

### 6.3.5 Gulf of Mexico Regional Energy Markets

The GOM OCS region has by far the greatest resource potential of the four OCS regions and is located such that it can supply oil and gas to the United States' top three consuming PADDs: the East Coast, Gulf Coast, and Midwest. However, as discussed, new tight oil production from the Bakken and Eagleford fields and other Midwest tight oil formations has reduced the need for OCS crude in the Midwest. In fact, the existing pipeline infrastructure has created more supply to Cushing, Oklahoma, (a major center for oil refining and storage) than could easily be transported elsewhere, contributing to the recent devaluation of WTI, relative to Brent, crude referred to above. However, given the different qualities of crude discussed earlier, production from the OCS is very important to U.S. energy markets to fulfill the demand at the Gulf Coast refineries for heavy crude. EIA projects that more than 60 percent of the growth in domestic oil production anticipated over the next two years will be sweet crude, meaning that the GOM OCS oil still fulfills a specific need in the U.S. and regional energy markets (Sieminski 2014).

[48] States and some local jurisdictions have responded to air quality requirements with varying standards for gasoline composition, creating the need for refineries to modify their output for specific markets. Specific refineries will produce only a subset of the gasoline varieties required for different markets.

### 6.3.6 Atlantic Regional Energy Markets

The East Coast PADD has seen a shift in its energy sources during recent years. Given new crude-by-rail infrastructure, the East Coast has been able to receive increased crude from the Bakken formation and decreased tanker imports (EIA 2015q). Although the Gulf Coast is a large exporter of gasoline, due to infrastructure constraints and Merchant Marine Act restrictions on using non-U.S.-flagged vessels for transport, it is still more efficient for the East Coast to receive some imports from Canada and Europe. The imports are especially needed during the winter when demand increases and production from other regions is insufficient to meet the demand (EIA 2014b).

BOEM estimates of anticipated production from the Atlantic Program Area were shown previously in Table 5-2. Production from OCS areas along the Atlantic coast could feed directly into the market with the greatest import demand for petroleum products, distillate, and propane.

## 6.4 POSSIBLE OCS PRODUCTION SUBSTITUTES

A reduction in OCS oil and gas production will not lead to an equal reduction in the quantity of oil and gas demanded by energy markets. Instead, other energy sources (e.g., more imports, onshore production, coal, reduction in consumption) would substitute the forgone OCS production. Table 6-3 shows the energy market substitutions that would occur in the event the No Sale Option were selected in all of the OCS program areas.

**Table 6-3: Energy Market Substitutions in Absence of New OCS Program**

| Energy Market Substitutions | Percent of Anticipated OCS Production Replaced |
|---|---|
| Oil Imports | 58% |
| Onshore Natural Gas Production | 26% |
| Reduced Demand | 7% |
| Coal | 3% |
| Onshore Oil Production | 2% |
| Other Energy Sources | 2% |
| Production from Existing State/Federal Offshore Leases | 1% |
| Electricity from sources other than Coal, Oil, and Natural Gas | 1% |
| Natural Gas Imports | 0% |

As described in Chapter 5 and in more detail in the Draft Economic Analysis Methodology paper, BOEM uses *MarketSim* to estimate the amount and percentage of substitutes the economy would adopt in the absence of all, or even some, new OCS production.[49] *MarketSim* is based on authoritative and publicly available estimates of price elasticities, which reflect the changes in quantities supplied and demanded in response to changes in price. For the foreseeable future, forgone OCS production would be replaced with increased petroleum imports, increased onshore oil and gas production, reduced demand due to marginally higher prices, and other energy sources. As shown in Table 6-3, *MarketSim* estimates that in

[49] See BOEM 2012 for a detailed discussion of the data and methodology underlying the *MarketSim* model.

the absence of a new OCS program, approximately 58 percent of the production that would have occurred with a program would be replaced with imports. The model also estimates that approximately 7 percent of the production would be replaced by reduced consumption rather than by another fuel source. Most of this would likely be from lower natural gas usage, with the remainder coming from lower oil usage. This estimated reduction in consumption resulting from selection of the No Sale Option is net of a slight increase in consumption of electricity and coal. An important note to reiterate about these percentages is that they reflect substitution for forgone OCS oil and natural gas production, not proportional changes in consumption for the entire United States, which would be much lower. For example, the 58 percent replacement of OCS production by higher crude oil imports is equivalent to a 6 percent increase in the baseline level of U.S. net imports under the mid-price scenario. The reduction in natural gas usage would be equivalent to a 0.22 percent decrease in baseline national natural gas demand, and the lower oil usage would be equivalent to a 0.04 percent decrease in baseline national oil demand. The increased consumption of electricity and coal would be equivalent to increases in national electricity and coal demand of less than 0.1 percent.

OCS production is not currently anticipated to be replaced with appreciable quantities of renewable energy. Energy substitutes for production otherwise originating from the Program will come from energy industries likely to increase production or generation incrementally in response to small market changes. Development of renewable energy sources is driven by major forces outside the small relative increase in prices, which would occur in the absence of a new OCS program.

Data from EIA and other sources indicates that, in the context of this Proposed Program, renewable energy sources are not likely to be a major substitute for forgone production resulting from selection of the No Sale Option in any of the program areas. This likely is because energy of different kinds can be used differently and development of new capacity may be driven in part by different market and societal forces. For example, in terms of end use, about 75 percent of petroleum use in the U.S. is for transportation[50], whereas the predominant use of renewable energy in the U.S. is to generate electricity.[51] While oil and natural gas will remain important contributors to our energy mix throughout the foreseeable future, renewable energy sources will continue to mature over the next decade and beyond, regardless of the oil and gas production resulting from the 2017–2022 Program. Additional information on substitute energy sources is included in *Forecasting Environmental and Social Externalities Associated with Outer Continental Shelf (OCS) Oil and Gas Development – Volume 2* (BOEM 2015).

## 6.5 ENERGY MARKETS CONCLUSION

The OCS Lands Act requires long-term planning for OCS oil and gas sales in the form of an OCS leasing program. The program development process allows the Secretary to reconsider the current and likely energy needs of the United States. Within a program, the Secretary has the authority to limit the number of sales or area available for lease based on many factors (e.g., prices, industry interest). Though

[50] Because of this huge market share, even recent advances in renewable fuel vehicle technology and large increases in consumer preference for electric and hybrid-electric vehicles are causing only small annual changes in market share.

[51] Renewable energy can serve as part of the "base load" and generate at full capacity because of its minimal variable-input costs. While natural gas can be used as a base-load fuel as well, its use (in terms of both quantity and facility capacity) will vary throughout the day to provide immediate response to the constant fluctuations in demand for electricity. In addition, because natural gas is not costless as an input, demand for gas over time is responsive to its price. In these respects, biofuels are more like oil and natural gas, and biofuels are included in "Other Energy Sources," which EIA data indicate would likely be substituted for 2 percent of forgone OCS oil and gas.

domestic energy markets have undergone major changes in recent years with an abundance of new onshore production, the OCS remains a vital source of stable energy production. Regionally, OCS production contributes to the local energy markets. In the absence of a new OCS program, energy markets would adjust and substitute energy sources would be necessary.

The Proposed Program Options provide the Secretary the opportunity to provide the Alaska, Gulf Coast, and Atlantic PADDs with additional energy resources. These resources can then enter the energy market and be transported, refined, and consumed as market forces direct.

## 6.6 OTHER USES OF THE OCS

Section 18 (a)(2)(D) requires the Secretary to consider OCS regions "with respect to other uses of the sea and seabed, including fisheries, navigation, existing or proposed sea lanes, potential sites of deepwater ports, and other anticipated uses of the resources and space of the outer Continental Shelf." This section provides a summary discussion about other uses of the OCS, including commercial fishing, state oil and gas activities, DOD and NASA activities, tourism and recreation, commercial shipping and transport, coastal recreation (including recreational fishing and diving), and subsistence use. This section also provides information on the status of BOEM's renewable energy leasing and non-energy marine minerals leasing[52] in the program areas. Unless otherwise noted, the principal source of information on the economic and public uses of the OCS and the surrounding coastal region for the different program areas is BOEM's report entitled *Economic Inventory of Environmental and Social Resources Potentially Impacted by a Catastrophic Discharge Event Within OCS Regions* (BOEM 2014a; hereafter referred to as the "Inventory Report"). See the full Inventory Report for detailed information and data on the economic and public use categories for each of the OCS planning areas.

Appendix A contains a summary of the individual substantive comments that BOEM received in response to the DPP related to other uses of the OCS and potential conflicts between these other uses and oil and gas leasing program activities. Many of the comments received from Federal agencies, state agencies, Governor's offices, and environmental advocacy groups highlight the critical importance of other existing, diverse coastal and ocean uses to both regional and statewide economies and request that BOEM fully consider any potential use conflicts.

### *6.6.1 Alaska Program Areas*

For purposes of this discussion, the Beaufort Sea and Chukchi Sea Program Areas are grouped together because of their close proximity; the Cook Inlet Program Area is discussed separately.

#### *6.6.1.1 Renewable Energy and Non-energy Marine Minerals*

BOEM has not received nominations for renewable energy or marine mineral leasing in any of the Alaska program areas and is not aware of any specific plans or proposals to develop OCS renewable energy resources in these areas at this time. Therefore, BOEM does not expect that commercial leasing for OCS renewable energy resources would occur in the Alaska program areas during the 2017–2022 timeframe.

[52] BOEM's Marine Minerals Program issues agreements and leases for offshore non-energy marine minerals, primarily for sand resources for use in coastal resiliency projects. Although there has been some interest expressed in rare earth minerals, manganese nodules, and gold, no competitive leases have been issued. For more information, see http://www.boem.gov/Non-Energy-Minerals/.

Any renewable energy leasing that could occur during the approximate 50-year lifespan of the producing leases issued during the 2017–2022 Program will need to be coordinated during the later stages of BOEM's oil and gas leasing process (e.g., lease sale, exploration plan, and development and production plan stages). BOEM has not issued any leases or agreements for non-energy, marine minerals in the Alaska program areas.

#### *6.6.1.2 Military and NASA Uses*

BOEM-DOD coordination aims at preventing interference between military operations and oil and gas activities related to construction, operation, and maintenance of OCS oil and gas facilities, pipelines, helicopter flights, and vessel traffic in support of seismic testing. The military activities that DOD commonly seeks to protect from interference include: military munitions practice using offshore areas; the spatial use of water and airspace for port access and offshore ship and plane maneuvers; potential launch-abort areas for missile launches from military bases and secure military communications. Close coordination with DOD is also part of the BOEM G&G permitting process.

DOD conducts training, testing, and operations in offshore operating and warning areas, undersea warfare training ranges, and special use or restricted airspace on the OCS. These activities are critical to military readiness and national security. The U.S. Navy utilizes the airspace, sea surface, sub-surface, and seafloor of the OCS for events ranging from instrumented equipment testing to live-fire exercises. The U.S. Air Force conducts flight training and systems testing over extensive areas on the OCS. The U.S. Marine Corps amphibious warfare training extends from offshore waters to the beach and inland. The Department of Homeland Security's U.S. Coast Guard conducts search and rescue missions, science missions, exercises for maritime preparedness, protection of the environment, and coordinates with the U.S. Navy to conduct ice thickness and acoustic surveys.

#### *6.6.1.3 Beaufort Sea and Chukchi Sea Program Areas*

Commercial activity in the Beaufort Sea and Chukchi Sea Program Areas is limited. There is oil and gas production in state waters adjacent to the Beaufort Sea Program Area. Fishing activity is limited to subsistence and recreational fishing, as commercial fishing is prohibited in U.S. waters north of the Bering Strait. Among Alaska native communities, such as the Iñupiat along the Beaufort and Chukchi Seas, subsistence fishing and hunting activities hold a high cultural value and provide a substantial portion of many communities' annual diets. Based on a survey conducted by the Alaska Department of Fish and Game, 63 percent of households in the Arctic harvested game, while 92 percent of households used game, reflecting the wide sharing of subsistence foods (ADFG 2014). The harsh Arctic climate and the difficulty of physically accessing the area limit most recreational activity in the Arctic. The patterns and amount of vessel traffic in the Arctic are highly affected by seasonal variability and ice cover. Because of the limited infrastructure in the region, water transportation is an important means of transporting fuel and supplies for area residents.

#### *6.6.1.4 Cook Inlet Program Area*

Commercial fishing, seafood harvesting and processing, tourism and recreation, and commercial shipping are all important industries in and adjacent to the Pacific Margin subregion. Both commercial fishing and seafood harvesting and processing are economically important industries along Cook Inlet. Tourism is a

critical component of the Cook Inlet Program Area's economy. The subregion is also important for commercial shipping. The Port of Anchorage on the eastern end of Cook Inlet is an essential port for many Alaska residents; an estimated 90 percent of the merchandise goods for 85 percent of Alaska's populated areas pass through the port (Port of Anchorage 2015). There is oil and gas production in state waters adjacent to the Cook Inlet Planning Area.

Important public uses in and along the subregion include coastal recreation, recreational fishing and hunting, and subsistence fishing and hunting. The Cook Inlet Program Area is a popular site for outdoor recreational activities, particularly fishing, hiking, boating, hunting, and wildlife viewing. Subsistence fishing and hunting is a critically important public use of coastal and marine resources in the Cook Inlet Program Area. Communities engage in subsistence hunting and fishing for their economic, social, cultural, and spiritual value, and to meet basic nutritional needs. While species of salmon are the primary subsistence source in and near the Cook Inlet Program Area, halibut and shellfish (particularly crab) are also important. Subsistence fishing and hunting comprise a substantial portion of many communities' annual diets. For example, one-third of residents on the Kenai Peninsula and more than 15 percent in Anchorage (both of which are adjacent to Cook Inlet) report that they obtain 25 to 50 percent of their food supply from subsistence fishing and hunting (BOEM 2014a).

### *6.6.2 Gulf of Mexico Program Area*

The GOM Program Area is comprised of three planning areas: the Western, Central, and Eastern GOM Planning Areas not under congressional moratoria or other withdrawal. The most notable "other uses" in terms of economic contribution are coastal tourism and recreation, commercial fishing and seafood harvesting, and commercial shipping.

Millions of individuals participate in a variety of recreational activities in the region's coastal environment each year, including recreational fishing, boating, beach visitation, wildlife viewing, and swimming. Texas, Louisiana, and Florida have significantly more coastline and more coastal population centers than do Alabama or Mississippi. However, the tourism and recreation industries in Alabama and Mississippi still comprise sizable portions of GDP as a percent of each state's total employment. On an annual basis, coastal tourism and recreation industries contribute more than $1 billion in GDP to the states adjacent to the Western and Central GOM Planning Areas and more than $10 billion in GDP to the states adjacent to the Eastern GOM Planning Area (BOEM 2014a).

The commercial fishing and seafood industries also contribute billions to state GDP on an annual basis (most notably in and along the Eastern GOM Planning Area, with more than $4 billion in GDP [BOEM 2014a]). The commercial fishery sector is largest in Louisiana, followed by Texas and then Florida. However, Florida contributes most to GDP because of its contributions further along the seafood supply chain (e.g., processors, retailers). Commercial shipping is also important economically. As measured by the amount of cargo flowing through the ports on an annual basis, more than half of the 20 largest U.S. ports are along the Gulf coast (mostly along the Central and Western GOM Planning Areas) (BOEM 2014a). All five Gulf coast states have had some historical oil and gas exploration activity and, with the exception of Florida and Mississippi, currently produce oil and gas in state waters.[53]

[53] For recent information on state oil and gas leasing programs in the GOM, see Section 3.3.2 of BOEM's *Final Supplemental EIS for Central Planning Area Lease Sales 235, 241, and 247* (BOEM 2014b).

While very little data exist to track its economic contribution, subsistence fishing and seafood harvesting is also an important public use of coastal and marine resources along the three GOM planning areas, particularly to rural communities. Traditional subsistence harvesting including fishing and hunting continues among some ethnic and low-income groups (MMS 2003).

#### *6.6.2.1 Renewable Energy and Non-energy Marine Minerals*

BOEM has not received nominations for renewable wind energy leasing in the GOM Program Area and is not aware of any specific plans or proposals to develop OCS renewable energy resources in this area at this time. Therefore, it appears unlikely that commercial leasing for renewable energy resources will proceed during the 2017–2022 timeframe. Noting that leases with discoveries of oil or gas can be held for as long as commercial production continues, any renewable energy leasing that could occur during the approximately 50-year lifespan of the producing leases issued during the 2017–2022 Program will need to be coordinated during the later stages of BOEM's oil and gas leasing process (e.g., lease sale, exploration plan, and development and production plan stages).

BOEM has issued leases and agreements, and anticipates receiving future requests, for OCS sediment for coastal restoration projects along the GOM, specifically, offshore the western coast of Florida, Mississippi, and Louisiana. BOEM's GOM Marine Minerals Program expects to be a significant resource to the Gulf coastal region as funds from the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act (commonly referred to as the RESTORE Act; P.L. 112-141) are used for restoration projects by coastal states. Typically, resource borrow areas are in water depths of less than 90 feet and are in close proximity to the coast.

#### *6.6.2.2 Military Uses*

BOEM-DOD coordination aims at preventing interference between military operations and oil and gas activities related to construction, operation and maintenance of OCS oil and gas facilities, pipelines, helicopter flights, and vessel traffic in support of seismic testing. The military activities that DOD commonly seeks to protect from interference include: military munitions practice using offshore areas; the spatial use of water and airspace for port access and offshore ship and plane maneuvers; potential launch-abort areas for missile launches from military bases and secure military communications. Close coordination with DOD is also part of the BOEM G&G permitting process.

The DOD conducts training, testing, and operations in offshore operating and warning areas, undersea warfare training ranges, and special use or restricted airspace on the OCS. These activities are critical to military readiness and national security. The U.S. Navy utilizes the airspace, sea surface, sub-surface, and seafloor of the OCS for events ranging from instrumented equipment testing to live-fire exercises. The U.S. Air Force conducts flight training and systems testing over extensive areas on the OCS. The U.S. Marine Corps amphibious warfare training extends from offshore waters to the beach and inland.

Some of the most extensive offshore areas used by the DOD include Navy at-sea training areas. Training and testing could occur throughout the U.S. GOM OCS waters, but will be concentrated in Operating Areas and testing ranges. These activities may vary depending on where they occur (e.g., open water versus near shore). Major Operating Areas in the GOM include the GOM Range Complex, the Naval

Surface Warfare Center, Panama City Division, and the Key West Complex off the southwestern tip of Florida.

DOD and the USDOI will continue to coordinate extensively under a 1983 Memorandum of Agreement, which states that the two parties shall reach mutually acceptable solutions when the requirements for mineral exploration and development and defense-related activities conflict.

### 6.6.3 Atlantic Program Area

Portions of the Mid-Atlantic and South Atlantic Planning Areas comprise the Atlantic Program Area. Commercial fishing, ocean-dependent tourism, and commercial shipping and transportation are important economic uses in and along the Atlantic Program Area. The economic impacts of commercial fishing along the entire Mid-Atlantic Planning Area total more than $1.5 billion in total value added (GDP); the industry is especially large in Virginia. The economic impacts of commercial fishing along the entire South Atlantic Planning Area total more than $580 million in total value added (GDP). Ocean-dependent tourism is a significant economic use for the Mid-Atlantic and South Atlantic Planning Areas (accounting for more than $6.5 billion and $4.4 billion in value added, respectively, to adjacent coastal areas). Ocean-dependent tourism is particularly important for Maryland, Virginia, North Carolina, and South Carolina.

Ports in the Mid-Atlantic Planning Area handle approximately 5 percent of total U.S. waterborne traffic, and Norfolk Harbor is one of the 20 largest ports in the United States. While the South Atlantic Planning Area does not have as many adjacent ports as the other planning areas, three are in the top 40 ports in the United States in terms of traffic volume.

The Atlantic coastal region contains numerous National Wildlife Refuges (roughly 70), National Parks (2), and National Seashores (7), as well as many state parks and recreational areas where the public engages in various recreational activities. Beach visitation, swimming, wildlife viewing, recreational boating, and fishing are the most popular activities across the Atlantic states. Beach recreation is critically important to the Florida economy. Recreational fishing expenditures resulted in total value added in the Mid-Atlantic economy of more than $2 billion (with North Carolina accounting for more than half) and more than $1.3 billion in the South Atlantic economy (with East Florida accounting for the vast majority). Very little data exist on subsistence fishing and shellfish harvesting in and along the Atlantic planning areas, and what information is available is largely informal or speculative. It may be most prevalent in those areas designated as “fishing communities” by the National Oceanic and Atmospheric Administration (NOAA), due to their strong ties to commercial and recreational fishing. Overall, NOAA has identified 47 fishing communities near the South Atlantic Planning Area. NOAA has identified 50 fishing communities near the Mid-Atlantic Planning Area (NOAA 2006). According to NOAA’s profiles of fishing communities in the Northeast, the limited information available on subsistence fishing and harvesting is for the urban communities, and suggests a relative importance to immigrant populations in these areas.

#### 6.6.3.1 Renewable Energy and Non-energy Marine Minerals

Since 2009, BOEM has issued 11 commercial wind leases along the Atlantic Coast (Massachusetts, Delaware, Rhode Island, Virginia, Maryland and New Jersey), with additional site assessment and

construction activities potentially occurring in the 2017–2022 timeframe. BOEM is also considering offering additional areas for leasing, none of which are within the Atlantic Program Area. An overview of the current and proposed lease areas is provided in Figure 6-11. Information is provided for individual planning areas in the Atlantic from Virginia to Georgia to capture the relevant level of detail.

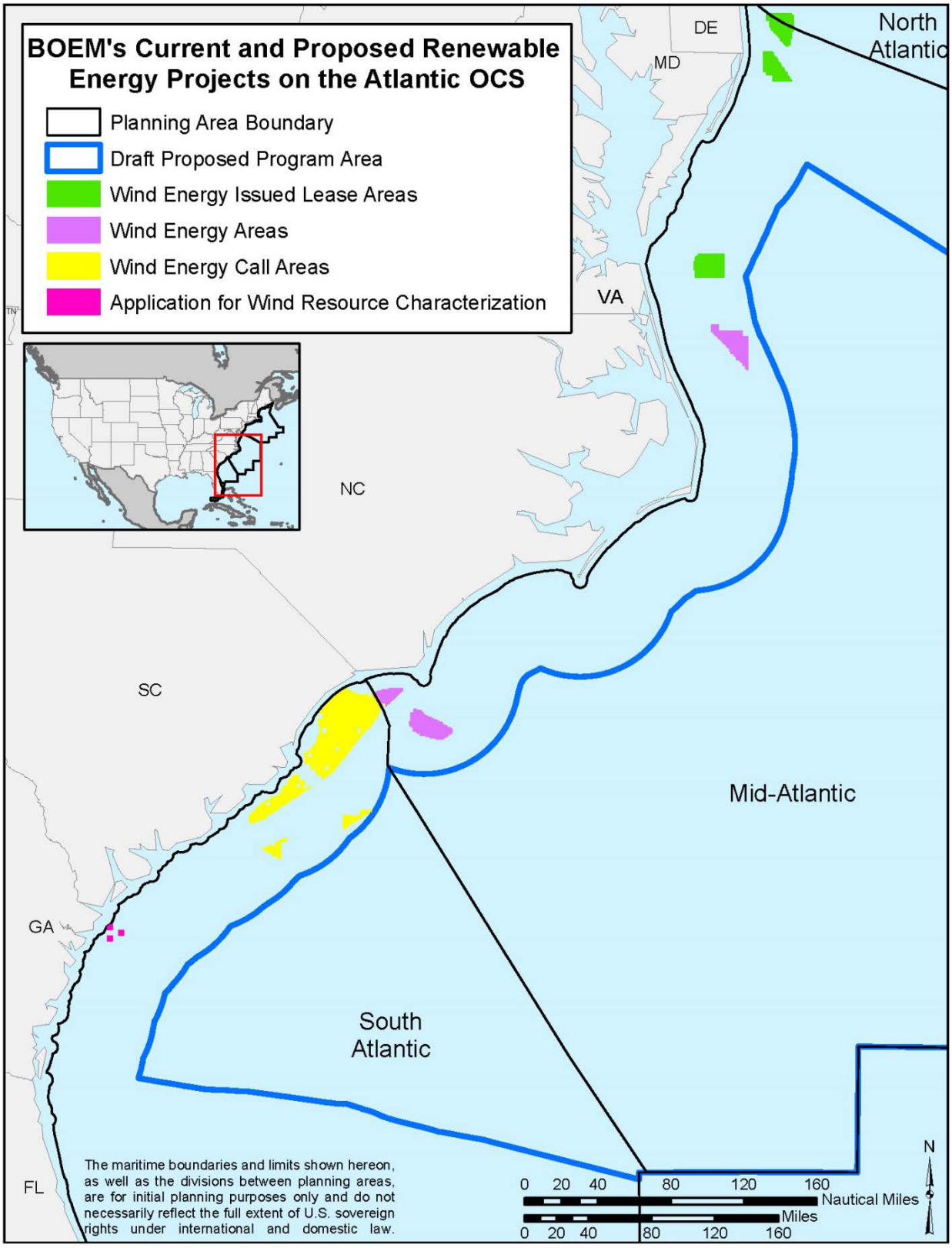
BOEM has executed two leases offshore Virginia. On October 22, 2013, BOEM issued a commercial lease to Dominion Virginia Power, and on March 23, 2015, BOEM issued a renewable energy research lease to the Commonwealth of Virginia, Department of Mines, Minerals, and Energy (DMME). DMME has proposed to demonstrate a grid-connected, 12-megawatt offshore wind test facility in an area adjacent to the commercial lease, with construction to be completed in 2018. A second research lease is also being negotiated with DMME for meteorological data collection and scientific research within the commercial lease area.

In August 2014, BOEM announced three wind energy areas offshore North Carolina for leasing consideration. On September 3, 2015, BOEM completed an EA for the Wind Energy Areas offshore North Carolina. As a result of the analysis in the revised EA, BOEM issued a Finding of No Significant Impact, which concluded that reasonably foreseeable environmental effects associated with the commercial wind lease issuance and related site assessment activities would not significantly impact the environment. BOEM anticipates holding a competitive auction and potentially executing leases in the three areas during the next several years, possibly within the 2017–2022 Program timeframe. Any additional renewable energy leasing that may occur during the approximate 50-year lifespan of the producing leases issued during the 2017–2022 Program will need to be coordinated during the later stages of BOEM's oil and gas leasing process, if oil and gas leasing occurs (i.e., lease sale, exploration plan, and development and production plan stages).

On May 1, 2013, Atlantic Grid Holdings, LLC submitted an application for the Atlantic Wind Connection. The Atlantic Wind Connection is an offshore high-voltage direct current submarine electrical transmission system offshore New York, New Jersey, Maryland, Delaware, and Virginia that would interconnect offshore wind generation to the onshore grid. On December 22, 2014, BOEM suspended the right-of-way application process at the request of the applicant. If the project moves forward to support future renewable energy generation, BOEM will continue the renewable energy regulatory process.

In November 2015, BOEM published a Call for Information and Nominations for commercial leasing for wind power on the OCS offshore South Carolina. BOEM intends to gather information from industry and stakeholders to inform BOEM's future decisions in delineating wind energy areas offshore South Carolina for leasing consideration. In addition to the Call for Information and Nominations, BOEM published in the *Federal Register* an NOI to prepare an EA. Through the NOI, BOEM is seeking public comment to determine significant issues and alternatives to be analyzed in the EA. The EA will consider potential environmental and socioeconomic impacts associated with issuing commercial wind leases and approving site assessment activities on the lease areas. Based on responses to the Call for Information and Nominations, BOEM could hold a competitive auction and potentially execute leases within four areas, possibly within the 2017–2022 Program timeframe.

**Figure 6-11: Current and Proposed Renewable Energy Projects Near the Atlantic Program Area**



In April 2011, Georgia Power Company submitted an application for a lease in Federal waters off the coast of Tybee Island, Georgia, which would authorize the installation and operation of a meteorological tower and/or meteorological buoy to collect site-specific wind and environmental data for up to 5 years. In April 2014, BOEM published an EA for public review and comment. Currently, BOEM is considering public comments on the EA before issuing a final decision.

Since 1995, BOEM has issued 39 leases and agreements for over 74 million cubic yards of OCS sand for coastal restoration projects along the Atlantic coast from New Jersey south to Florida. Typically, the resource borrow areas are in water depths of less than 90 feet and are in close proximity to the onshore placement site. In addition to areas historically using OCS sand, after Hurricane Sandy made landfall in October 2012, there has been increased interest in OCS sand resources along the mid-Atlantic as well as the New England states.

After Hurricane Sandy, BOEM received $13.6 million in dollars from the Disaster Relief Appropriations Act to identify new potential sand resource areas from Maine to Miami, Florida. This effort included data acquisition in the form of shallow geophysical surveys and geological samples (vibracores and grab samples) in data gap areas identified in collaboration with the Atlantic states. The objective of this study, as well as cooperative agreements executed with 13 Atlantic coast states with this funding, has been to identify sand resources that can be utilized for not only authorized storm damage reduction projects but for future emergency needs.

#### *6.6.3.2 Military and NASA Uses*

BOEM-DOD coordination aims at preventing interference between military operations and oil and gas activities related to construction, operation and maintenance of OCS oil and gas facilities, pipelines, helicopter flights, and vessel traffic in support of seismic testing. The military activities that DOD commonly seeks to protect from interference include: military munitions practice using offshore areas; the spatial use of water and airspace for port access and offshore ship and plane maneuvers; potential launch-abort areas for missile launches and secure military communications. Close coordination with DOD is also part of the BOEM G&G permitting process.

DOD conducts training, testing, and operations in offshore operating and warning areas, undersea warfare training ranges, and special use or restricted airspace on the OCS. These activities are critical to military readiness and national security. The U.S. Navy utilizes the airspace, sea surface, sub-surface, and seafloor of the OCS for events ranging from instrumented equipment testing to live-fire exercises. The U.S. Air Force conducts flight training and systems testing over extensive areas on the OCS. The U.S. Marine Corps amphibious warfare training extends from offshore waters to the beach and inlands.

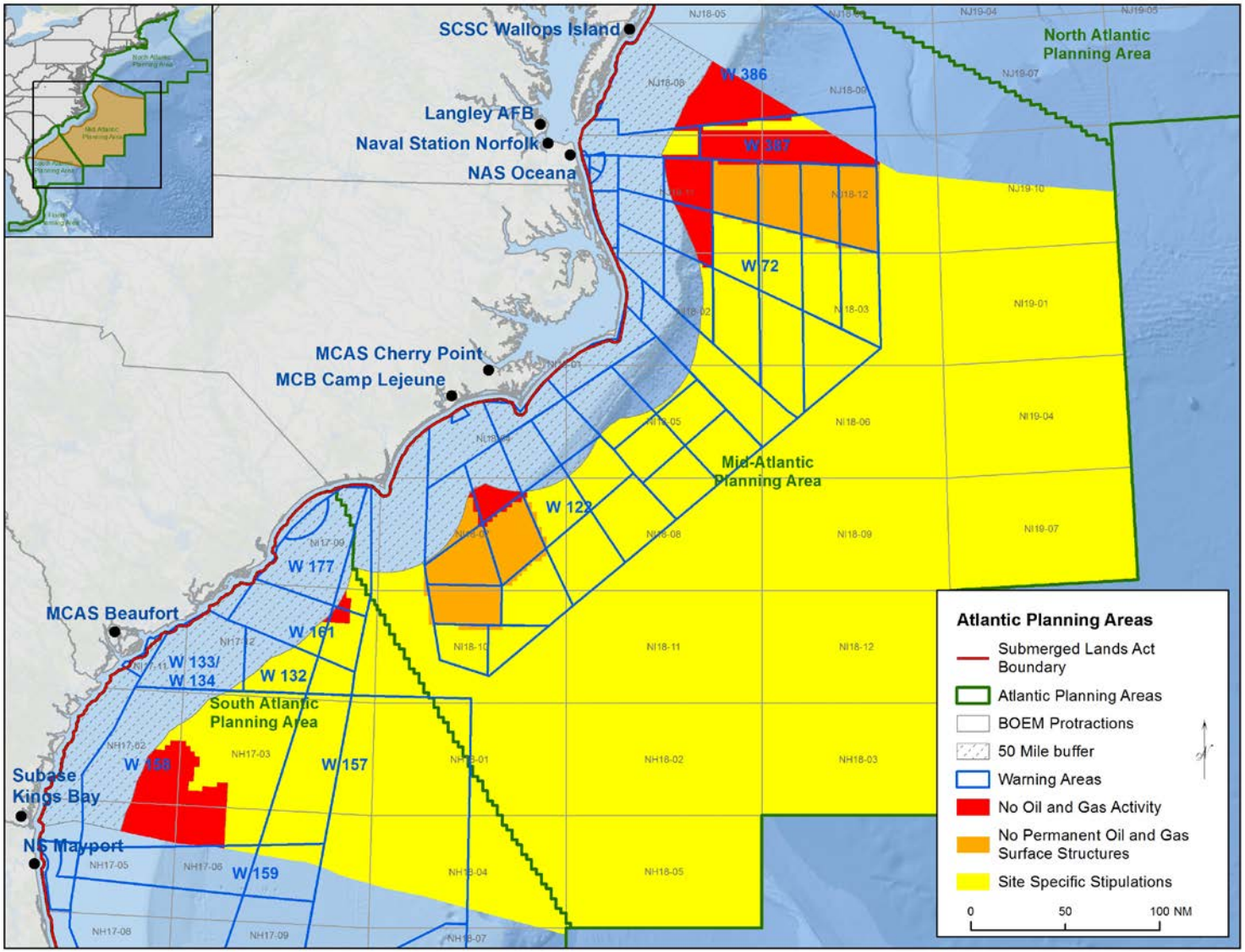
Some of the most extensive offshore areas used by DOD include Navy at-sea training areas. Training and testing may occur throughout the U.S. east coast OCS waters, but will be concentrated in Operating Areas and testing ranges. Four Operating Areas are located in the Atlantic Program Area, including Virginia Capes and Cherry Point in the Mid-Atlantic Planning Area, and Charleston and Jacksonville in the South Atlantic Planning Area.

DOD recently provided BOEM with a 2015 assessment of potential incompatibilities between DOD operations and oil and gas activities for the 2017–2022 Program based on DOD's current use of the OCS

and foreseeable activities (see Figure 6-12). None of the areas being considered for leasing in the Mid-Atlantic and South Atlantic Planning Areas were classified by DOD as "unrestricted" for purposes of oil and gas activities. BOEM incorporates this information throughout the 2017–2022 Program development process to identify and mitigate potential incompatibilities. BOEM and DOD have coordinated on similar incompatibility issues in the GOM, which was memorialized in a 1983 Memorandum of Agreement, stating that the two parties shall reach mutually acceptable solutions when the requirements for mineral exploration and development and defense-related activities conflict. BOEM will continue to coordinate with DOD to ensure compatibility of oil and gas activities with DOD operations.

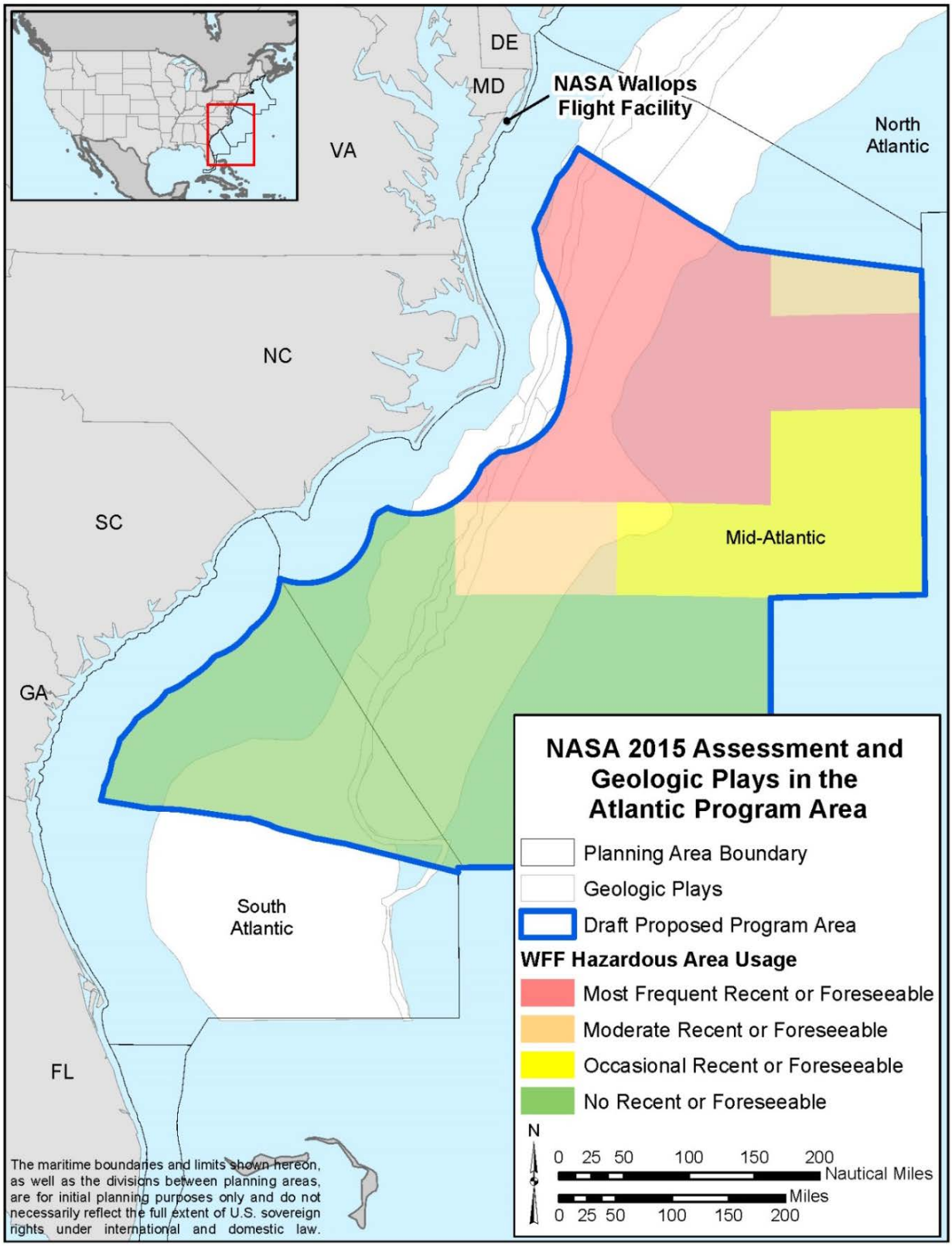
In addition to military installations, there are several facilities along the U.S. Atlantic coast operated by NASA that incorporate marine components. Wallops Flight Facility (WFF) on Wallops Island, Virginia, is a key location for operational test, integration, and certification of NASA and commercial orbital launch technologies. The facility has an offshore launch hazard area in adjacent waters. It also supports many Federal agency activities, including Department of the Navy activities in the Virginia Capes Operating Area. BOEM received comments from NASA regarding the possibility of oil and gas activities in U.S. Atlantic waters. NASA indicated that there is potential for these activities to impact operations at its WFF (see Figure 6-13). NASA's primary concern is that the presence of either moveable or fixed assets, including ships, aircraft, and extraction platforms, would require consideration during the flight safety risk assessment process, and, theoretically, could in turn result in NASA's inability to meet its own launch commit criteria.

**Figure 6-12: DOD 2015 Assessment**




**Source:** DOD 2015 Assessment

**Figure 6-13: NASA 2015 Assessment and Geologic Plays in the Atlantic Program Area**




**Note**: The Wallops Flight Facility (WFF) Hazardous Area Usage categories describe the frequency of use of these areas for both recent and foreseeable NASA activities.

# Chapter 7 Environmental Consideration Factors and Concerns

## 7.1 Environmental Setting, Ecological Characteristics, and Potential Impacts on Environmental Resources

As previously discussed in Section 2.2, the environmental setting, ecological characteristics, and potential impacts on environmental resources are presented in the Draft Programmatic EIS.

## 7.2 Relative Environmental Sensitivity and Marine Productivity

### *7.2.1 Summary of Methodology*

BOEM is required, per Section 18(a)(2)(G) of the OCS Lands Act, to consider the relative environmental sensitivity and marine productivity of the OCS when making decisions regarding the schedule of lease sales for the Five-Year Program. For the 2017–2022 Program, BOEM built upon previous assessments of these two environmental considerations using an improved model to analyze relative environmental sensitivity and taking advantage of technological advancements to estimate marine primary productivity. The environmental sensitivity and marine productivity analyses are intended to be used by the Secretary as one of many considerations when developing the Program. Analyses presented within this section are approximations using the best available information and reflect changes made at earlier stages of the 2017–2022 Program development process based on BOEM decisions and public comments received.

The current approach to determining relative environmental sensitivity takes into account both the vulnerability and resilience of an OCS region's ecological components to the potential impacts of OCS oil and gas activities within the context of existing conditions (e.g., climate change). For this Proposed Program analysis, only the areas of the OCS under consideration for oil and gas development during the 2017–2022 Program after issuance of the DPP were included in the sensitivity analysis. The same methods that were used in the DPP analysis were employed for the Proposed Program analysis with some adaptations incorporated to account for the reduction in area, response to public comments received on the DPP, and to incorporate the most recent scientific information into the analysis. These changes are described in detail later in this chapter.

In addition to updating the environmental sensitivity approach, BOEM has obtained updated estimates of marine productivity for this Proposed Program analysis. Primary productivity estimates for program areas still under consideration for leasing were generated using satellite-based measurements of chlorophyll, available light, and photosynthetic efficiency (BOEMRE 2011). These parameters were input into the Vertically Generalized Production Model (VGPM) to provide estimates of net primary productivity (NPP).

## 7.2.2 Relative Environmental Sensitivity

### 7.2.2.1 Background

Relative environmental sensitivity is not a commonly applied concept in ecology. BOEM previously examined environmental sensitivity using two different approaches in the development of the 2007-2012 Program. The first analysis employed the NOAA environmental sensitivity index (ESI) (MMS 1991a, MMS 1991b, NOAA 2002), which quantifies the sensitivity of shorelines based on geology, biological resources, and human-use resources. This original approach only considered shoreline impacts from oil spills and did not consider impacts on other ecological features, such as benthic and pelagic fauna and habitats. BOEM presented an expanded relative environmental sensitivity analysis in the revised 2007–2012 Program and the 2012–2017 Program in an effort to expand three variables: (1) the geographical extent; (2) the BOEM-regulated impacts considered; and (3) the ecological components considered in the analysis. This methodology combined the potential impacts on vulnerable organisms into an index of sensitivity. This index incorporated four model components, including coastal habitats, marine habitats, marine fauna, and marine primary productivity.

Building upon this expanded analysis, the approach for the 2017–2022 Program incorporates not only the sensitivity of the OCS, but also accounts for its "resilience," which is the ability of the OCS ecosystem to resist fundamental change and to recover from impacts. Relative environmental sensitivity thus incorporates both the vulnerability and resilience of a region's ecological components to the potential impacts of OCS oil and gas activities in the context of existing environmental conditions. This new method was first applied at the initial draft stage of this Program in the DPP. Here, the same methodology has been adapted to assess the relative environmental sensitivity of those areas of the OCS that remain available for leasing at this stage in the Program development.

### 7.2.2.2 Methods

BOEM's current approach to relative environmental sensitivity builds upon earlier methods. This method was developed through a BOEM-funded contract with the objectives of repeatability and scientific rigor. Several alternative methods were evaluated and considered; however, none of these alternative methods met BOEM's mission needs. The chosen approach treats all regions of analysis equally without bias to area, presence of existing BOEM activities, or differences in species composition. This current method is not biased by spatial inequalities of data availability, and weighs all species and habitats equally. It also allows unbiased comparison of geographic areas of differing size. A full description of the method developed for BOEM is available in BOEM 2014. Since its development, this method has been adopted in a simplified form for use by NOAA for oil spill planning and response in Alaska (NOAA 2015a).

### 7.2.2.3 Geographic Scope

For the analysis of environmental sensitivity, an ecosystem-based approach was used. BOEM's program areas are administratively constructed designations that do not necessarily correspond to ecosystem boundaries. For this Proposed Program analysis of the program areas, the OCS was divided into five regions, referred to here as BOEM Ecoregions (see Figures 7-1 and 7-2).

**Figure 7-1: Relative Environmental Sensitivity for GOM and Atlantic Program Areas**

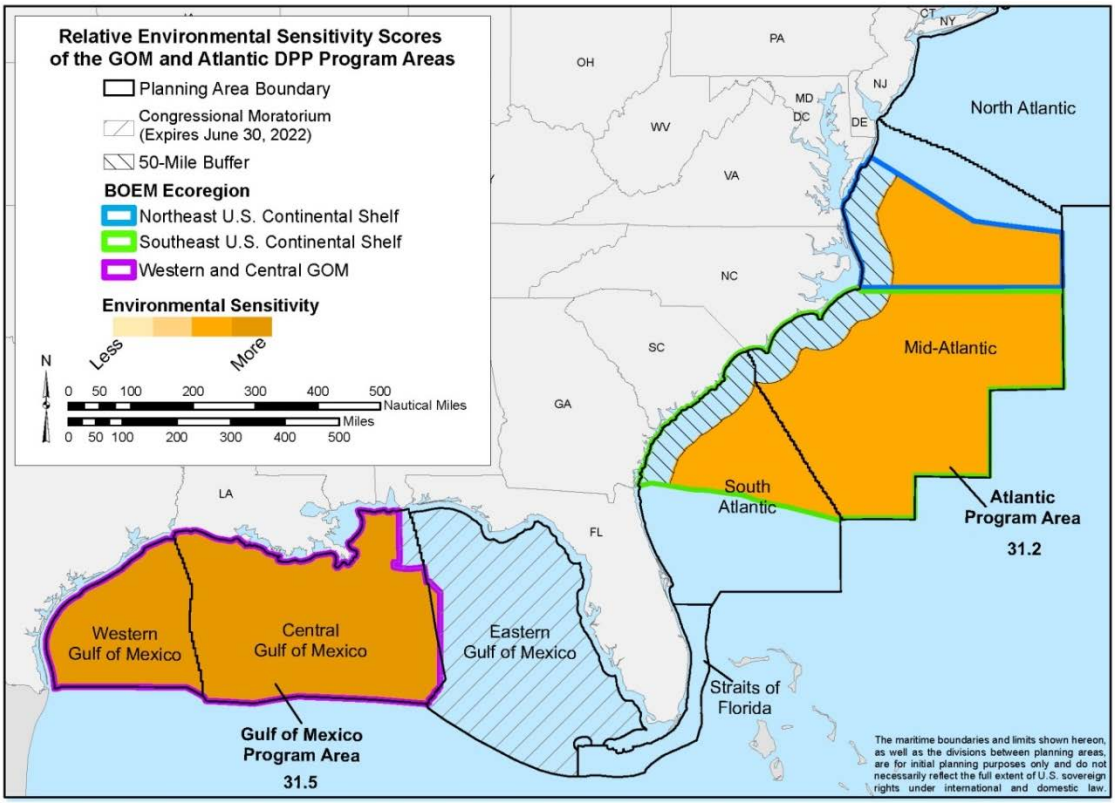
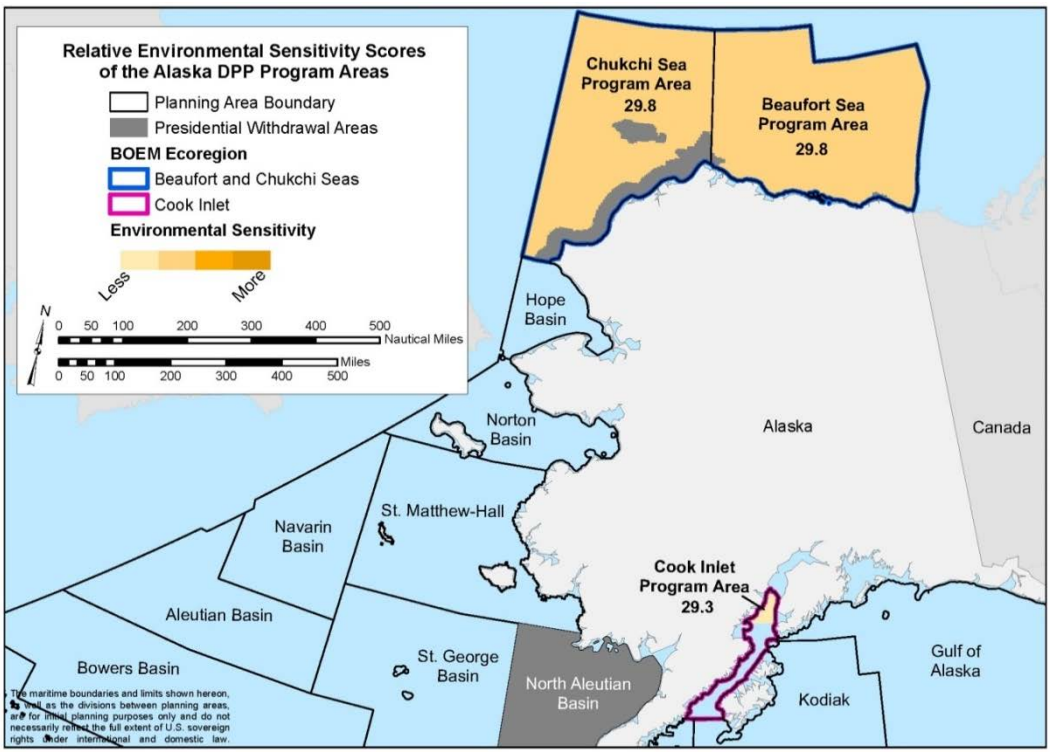



**Figure 7-2: Relative Environmental Sensitivity for the Alaska Program Areas**



The boundary designations for these BOEM Ecoregions were informed by the original ecoregion concept (Spalding et al. 2007) and were based primarily on the Large Marine Ecosystem (LME) boundaries (Sherman and Duda 1999). Marine ecoregions are areas that are differentiated by species composition and oceanographic features (Spalding et al. 2007, CEC 2009). LME boundaries are based on bathymetry, hydrography, productivity, species composition, and trophic relationships. BOEM Ecoregions account for the distinct physical and ecological characteristics of the various OCS regions while simultaneously meeting BOEM's mission needs.

In addition to the numerical scores provided for the GOM and Atlantic Program Areas, the intensity of the shading corresponds to the magnitude of these scores. The same shading scale is used in Figure 7-2. The outlines of the BOEM Ecoregions, which are the geographic units of analysis, are also shown.

In addition to the numerical scores provided for the Alaska Program Areas, the intensity of the shading corresponds to the magnitude of these scores. The same shading scale is used in Figure 7-1. The outlines of the BOEM ecoregions, which are the geographic units of analysis, are also shown.

The seaward extent of the BOEM Ecoregions used in this analysis is largely governed by the U.S. EEZ and BOEM program areas' seaward boundaries. The use of BOEM Ecoregions allowed for the analysis of geographic regions that are ecologically similar and contain similar habitat types and faunal assemblages. BOEM 2014 used the terms "broad OCS region" and "ecoregion" somewhat interchangeably. However, the boundaries of the broad OCS regions used in this analysis do not fully align with North America's ecoregions, as traditionally defined (CEC 2009). Thus, to avoid confusion or inaccuracies, the spatial unit of analysis for environmental sensitivity will only be referred to as a "BOEM Ecoregion" in this document.

Modifications were made to the geographic scope of the environmental sensitivity analysis for the Proposed Program by removing those areas of the OCS that were eliminated from consideration for leasing at the DPP stage. BOEM sought to maintain ecologically relevant areas of analysis while also supporting BOEM decision making by providing results in a usable and comparable format. The areas on the OCS that remain under consideration consist of five program areas: Beaufort Sea, Chukchi Sea, Cook Inlet, GOM, and the Atlantic. The five BOEM Ecoregions are: the Chukchi and Beaufort Seas, the Gulf of Alaska, the Western and Central GOM, the Southeast U.S. Continental Shelf, and the Northeast U.S. Continental Shelf. The Gulf of Alaska, which originally incorporated the Cook Inlet as well as all of the planning areas along the southern coast of Alaska, now only contains Cook Inlet. Thus, this BOEM Ecoregion has been renamed 'Cook Inlet' for this Proposed Program analysis. Additionally, the small portion of the Eastern GOM that is not under Congressional moratorium was subsumed into the Western and Central GOM BOEM Ecoregion so the entire GOM Program Area is contained within that single BOEM Ecoregion. Table 7-1 provides a crosswalk of the program areas and the corresponding BOEM Ecoregions in which they are located.

Although it is possible to conduct a sensitivity analysis for each program area, the model relies upon available data for each BOEM Ecoregion. The bulk of the scientific information available for this analysis was ecosystem-based or focused on individual faunal groups and their ecologies. In an effort to treat all regions of the OCS equally and not bias the analysis through data patchiness, the BOEM Ecoregions were created with boundaries that were ecologically meaningful and for which sufficient data were available for model input.

**Table 7-1: Crosswalk of BOEM Ecoregions and Program Areas**

| BOEM Ecoregion | Program Area |
|---|---|
| Beaufort and Chukchi Seas | Beaufort Sea |
| | Chukchi Sea |
| Cook Inlet | Cook Inlet |
| Western and Central GOM | GOM |
| Northeast U.S. Continental Shelf | Atlantic |
| Southeast U.S. Continental Shelf | |

The sensitivity scores from this Proposed Program analysis are based on the vulnerability and sensitivity of the species and habitats within each unit of analysis—the BOEM Ecoregions. Thus, areas with the same ecological characteristics will have the same sensitivity score. An analysis using planning areas as geographic units would use the same data and would support multiple planning areas with similar ecologies. Therefore, such an analysis would be redundant and the result would be identical to an analysis conducted by BOEM Ecoregion. As BOEM progresses with the development of the 2017–2022 Program, the areas included for analysis will be adjusted depending on the Secretary's decision at each Program stage. The selection of species and habitats within these areas of analysis also will be reevaluated at later Program stages. Distinguishing characteristics and explanations for the creation of these BOEM Ecoregions are outlined in the following paragraphs.

The Chukchi and Beaufort Seas BOEM Ecoregion is characterized by a sub-Arctic climate and considerable ice cover throughout most of the year. This BOEM Ecoregion spans two LMEs: the Chukchi Sea and the Beaufort Sea. The Chukchi Sea covers a broad shelf and water depths are primarily less than 165 feet. In contrast, the Beaufort Sea is much deeper (3,300 feet). While these two LMEs have different oceanographic characteristics, they share similar habitat and species assemblages (CEC 2009). This BOEM Ecoregion is home to roughly half of the world's population of polar bears, which are listed as threatened under the ESA. It is an important area for other marine mammals, including bowhead and beluga whales. This area provides critical habitat for numerous seabirds, including the threatened spectacled eider. Due to these shared similarities in ecosystem function, the two LMEs are roughly equivalent for the model's purposes and were therefore analyzed together as the Chukchi and Beaufort Seas BOEM Ecoregion. Thus, the Chukchi and Beaufort Sea Program Areas have identical scores. For more environmental information on BOEM's program areas, refer to the Draft Programmatic EIS. The Supplemental Option to move the Beaufort Lease sale from 2020 to 2019 was not analyzed independently because the method assumes all potential impacts could occur everywhere at all times (i.e., the timing of impacts is not relevant).

The Cook Inlet BOEM Ecoregion was created for this Proposed Program analysis. Previously, the Cook Inlet was included in the Gulf of Alaska BOEM Ecoregion, which was composed of the U.S. waters of the Gulf of Alaska LME. However, at this stage of analysis, only a portion of the Cook Inlet is under leasing consideration. The Cook Inlet is a large estuary in the northern Gulf of Alaska and stretches from the Gulf of Alaska to Anchorage. This sub-Arctic BOEM Ecoregion typically has little to no ice cover and receives saltwater input from the Gulf of Alaska through the Kennedy Entrance, as well as riverine inputs throughout the inlet. The Cook Inlet supports several commercially important fisheries, such as all five species of Pacific salmon, Pacific herring, and eulachon (ADFG 2011). Seasonal inhabitants of this BOEM ecoregion include many species of seabirds, whales, harbor seals, and the Steller sea lion

(MMS 2003). Portions of the Cook Inlet are designated as critical habitat for the beluga whale (NMFS 2015a).

The GOM comprises a single LME. The GOM is tropical to subtropical and receives water inputs from the Yucatan Channel, the Straits of Florida, and large riverine systems of the United States and Mexico. The GOM supports several important fisheries, including grouper, shrimp, menhaden, amberjack, tuna, and snapper (NOAA 2014a, NOAA 2014b). The GOM is also home to a diverse set of ecosystems, including coral reefs, mangroves, wetlands, oyster beds, and deep-water seeps. However, for this Proposed Program analysis, only the portion of the GOM that remains under leasing consideration was analyzed (i.e., the GOM Program Area). This area was analyzed as the Western and Central GOM BOEM Ecoregion. This ecoregion's boundaries are not simply administrative; there are several physical and biological justifications for its borders. The eastern edge of the Western and Central GOM BOEM Ecoregion follows the De Soto Canyon off the coast of Alabama and traces the eastern edge of the Loop Current, which effectively divides the GOM. This ecoregion contains the Flower Garden Banks National Marine Sanctuary (NOAA 2014c), and the outer edge of the Western and Central GOM continental shelf is dotted with numerous topographic features. Brown and white shrimp are abundant in this BOEM Ecoregion (NOAA 2014a, NOAA 2014b, NOAA 2014d, NOAA 2014e), and it is home to some of the most important nesting sites for the endangered Kemp's ridley sea turtle. Under both the Region-wide Leasing Option and the Modified Traditional Leasing Option for the GOM in the Proposed Program, the environmental sensitivity for the entire GOM Program Area was analyzed; therefore, there is no difference in environmental sensitivity between these two Proposed Program Options. The Baldwin County Buffer Option was not analyzed separately because there would be no difference in potential impact between this Proposed Program Option and the Region-wide Leasing Option.

The Atlantic Program Area is divided by two BOEM Ecoregions, the Northeast U.S. Continental Shelf and the Southeast U.S. Continental Shelf. These two BOEM Ecoregions are based primarily on the two LMEs of the same name. The location of this division is based on the physical oceanographic distinctions, with the primary feature being the two major surface currents of the western Atlantic Ocean: the Gulf Stream and the Labrador Current. The warm Gulf Stream flows along the east coast of the United States from Florida to North Carolina where it bends northeastward towards deeper water. The colder Labrador Current flows southward from the Labrador Sea along the Canadian coast and terminates off the coast of North Carolina (CEC 2009). The Southeast Continental Shelf LME supports a large number of commercial fisheries, including shrimp, herring, sardines, anchovies, blue crab, and oysters (NMFS 2009, NOAA 2014a). The Northeast Continental Shelf is a highly productive and temperate LME. It supports a number of commercial fisheries, including groundfish, flounder, mackerel, herring, haddock, lobster, and scallop. Because the area remaining under consideration for leasing in the Atlantic is much smaller than the Atlantic areas originally analyzed in the DPP, the areas of both the Southeast and the Northeast U.S. Continental Shelf BOEM Ecoregions have been reduced to align with the Atlantic Program Area (see Figure 7-1). The sensitivity score for the Atlantic Program Area was calculated by averaging the scores of the Northeast and Southeast Continental Shelf BOEM Ecoregions and weighted by the percentage of the Atlantic Program Area in each BOEM Ecoregion. Using geographic information system (GIS) software, this percentage was calculated as 37.8 percent within the Northeast U.S. Continental Shelf BOEM Ecoregion and 62.2 percent within the Southeast U.S. Continental Shelf BOEM Ecoregion.

#### *7.2.2.4 Selection of Impacts, Species, and Habitats*

The vulnerability and resilience of selected species and habitats to impact-causing factors were determined for each BOEM Ecoregion. A comprehensive list of impacts and impact-causing factors from BOEM-regulated activities was generated from recent EISs, notices to lessees and operators, and regulatory documents. Each specific impact factor was assessed for its comparative relevancy and overall potential impact on species and habitats on the OCS. Only impact factors considered to have the highest potential impacts were included in the analysis. These impacts were then grouped into the following categories: spills, artificial light, collisions with above-surface structures, habitat disturbance, sound/noise, and vessel strikes. In the original method, a temporal overlap of these activities with the presence of the species was incorporated into the model. However, this led to an inadvertent bias in lower sensitivity scores for those species that were not present year-round in their BOEM Ecoregions. For the analysis in the DPP and for this Proposed Program analysis, it was therefore assumed that all impacts and all species might occur year-round. BOEM is considering options on how to best include this temporal variability in future versions of this model.

The environmental resources that could be vulnerable to BOEM-regulated activities include not only individual fauna, but also their habitats. Thus, both habitats and species were chosen as parameters in the environmental sensitivity analysis. The species component was organized into four groups: (1) mammals and sea turtles; (2) birds; (3) fish; and (4) invertebrates. These groups were selected to ensure broad representation across the diversity of organisms that inhabit marine and coastal waters. Species were chosen using the criteria of conservation importance, ecological role, and also, for fish and invertebrates only, fisheries importance. The primary measure to determine conservation importance is Federal listing status under the ESA (NMFS 2014). The ecological role for fish and invertebrates was based on abundance and importance as a prey or keystone species. Fisheries importance was prioritized based on commercial landings weight data reported by NMFS. Species could be scored only once for each BOEM ecoregion. Four species each for the fish, birds, and invertebrate categories and five species for the marine mammal and turtle category were selected for each BOEM Ecoregion. The species in each of the categories was determined according to a balance between providing adequate representation while maintaining a practical level of effect in sensitivity assessments and impact scoring. For details on the selection process for species and the data supporting these selections, see BOEM 2014.

The habitat parameters were comprised of physical or biological features that support organisms or communities and have ecologically distinct properties. Habitat parameters were selected to ensure broad and diverse representation in coastal and marine areas within the BOEM Ecoregion. The habitat categories were shoreline, estuarine, and marine. The determination of shoreline parameters, using NOAA's ESI shoreline classification scheme (NOAA 1995, NOAA 2002), was based on all digital ESI shoreline data available as of 2012 (NOAA 2012). Only oil spills were assumed to potentially impact coastal habitats. While the bulk of BOEM-regulated activities occur in Federal waters miles from shore, shoreline habitats are at risk during spills because of the likelihood of being directly oiled when floating slicks impact the shoreline. Shoreline habitat scores were recalculated for those BOEM Ecoregions whose boundaries changed between the DPP and the Proposed Program according to methods by BOEM 2014 using current NOAA data (NOAA 2015b). The estuarine and marine habitats were selected based on their ecological role or importance in terms of their contribution to regional biodiversity and overall productivity. For a full description of the habitat selection process, see BOEM 2014.

As described previously, the area of analysis decreased between the DPP and the Proposed Program. The initial selection of species and habitats was examined at this stage to ensure that these parameters still met the criteria for which they were originally chosen and were appropriate for the new geographical areas of analysis. For most BOEM Ecoregions, these selections remained valid and were used again in the current evaluation of relative environmental sensitivity. However, for those areas where this reduction in area resulted in species or habitats that were no longer the most appropriate choice in that BOEM Ecoregion, an alternate species or habitat was selected. For example, the northern fur seal was selected for its ecological role in the Gulf of Alaska in the previous analysis in the DPP. However, these pinnipeds are quite rare in the Cook Inlet, which is the only remaining area under consideration for leasing in the Gulf of Alaska BOEM ecoregion at this stage of the Program development process. Thus, the harbor seal was selected to replace the northern fur seal in the Cook Inlet BOEM Ecoregion. Substitutions for more appropriate species and habitats were made using the same criteria as for the DPP analysis after BOEM 2014. A list of these alternates and their selection rationale is available in Tables 7-2 and 7-3. All other species and habitats remain the same as listed in BOEM 2014.

The environmental sensitivity of the selected species and habitats was assessed with respect to potential impacts of oil and gas activities occurring on the OCS. This assessment was based on the quantification of the species' and habitats' vulnerability and resilience to potential oil and gas impacts. Vulnerability was evaluated as the probability that a species/habitat would be exposed to an impact and it was based on the spatial overlap between a given species/habitat and an impact. The resilience was based on the intolerance of a habitat or species to a given impact and that species' or habitat's recovery potential. Resilience was not predicated on previous exposure of a species or habitat to oil and gas impacts, but rather on best available data relating to ecological characteristics, tendencies, and trends, such as species' reproductive rates and habitat recovery potential. Likewise, sensitivity was not based on the probability of an impact occurring, as all impacts were assumed to occur everywhere on the OCS.

**Table 7-2: Habitats Selected that Differ from the Environmental Sensitivity Analysis in the DPP**

| Selection Criteria | Habitat | Replaces | Selection Rationale | Reference |
|---|---|---|---|---|
| **Southeast U. S. Continental Shelf** | | | | |
| Marine-Nearshore/ Offshore, Benthic | outer shelf reef | worm substrate | Provide habitat for fish and invertebrates in the otherwise barren landscape of the open ocean, providing shelter from predators and plentiful food resources. Worm substrate habitat is not found north of Florida. | SAFMC 2015; NOAA 2015d |
| **Cook Inlet** | | | | |
| Estuarine Water Column | open water | coastal band | Essential fish habitat to numerous species of fish and invertebrates. The coastal band habitat is not relevant for Cook Inlet. | AFSC 2012; MMS 2003 |

**Table 7-3: Species Selected that Differ from the Environmental Sensitivity Analysis in the DPP**

| Selection Criteria | Species | Replaces | Selection Rationale | Reference |
|---|---|---|---|---|
| **Cook Inlet BOEM Ecoregion** | | | | |
| Conservation importance | Cook Inlet beluga whale | North Pacific right whale | Cook Inlet beluga whales are endangered and have critical habitat designated in the Cook Inlet. Public comments received by BOEM on the DPP recommended inclusion. | MMS 2003, Nielson et al. 2012, NMFS 2015b |
| Conservation importance | northern sea otter | sperm whale | The Southwest Alaska Distinct Population Segment of northern sea otters is threatened. Sperm whales are not common in the Cook Inlet. | USFWS 2015, MMS 2003, Bodkin et al. 2004 |
| Ecological role | harbor seal | northern fur seal | Harbor seals are an important predator species in the program area. Northern fur seals are rarely found in the Cook Inlet. | BOEM 2012, MMS 2003 |
| Ecological role | rock sandpipers | spectacled eider | Rock sandpipers are abundant in program area. The entire population of the Pribilofs/ St. Lawrence Island sub-species of rock sandpipers winter within Cook Inlet. Spectacled eiders are not common in Cook Inlet. | eBird 2015, Johnson and McCaffery 2004, MMS 2003, Rauthrauff et al. 2013 |
| Ecological role | black-legged kittiwakes | glaucous-winged gull | Black-legged kittiwakes are well-studied and abundant in the program area. | Baird 1994, Buck et al. 2007, Daunt et al. 2002, eBird 2015 |
| Fisheries importance | sockeye salmon | walleye pollock | Sockeye salmon are the largest fishery by weight in the Cook Inlet. The species is also important prey for beluga whales. | ADFG 2015a, MMS 2003, Walker et al. 2007, Welch et al. 2013 |
| Ecological role | hooligan/ eulachon | arrowtooth flounder | Although there is a small commercial hooligan fishery in the program area, hooligan (or eulachon) are important for personal and subsistence use. They are also an important prey for larger fish, sea birds, beluga whales, and other marine mammals. | ADFG 2015b, MMS 2003 |
| Fisheries importance | giant North Pacific octopus | golden king crab | Retention of octopus as bycatch of up to an annual guideline harvest level of 35,000 pounds is allowed and achieved most years. Viability as a commercial fishery is under consideration. | ADFG 2015c, MMS 2003 |
| Fisheries importance | Pacific weathervane scallop | tanner crab | Pacific weathervane scallops are found in the Cook Inlet and serve as an important subsistence fishery. Commercial fishing in Cook Inlet occurs in some areas intermittently. | ADFG 2015c, MMS 2003 |
| Ecological role | razor clam | Baltic macoma clam | Razor clams are harvested recreationally in the Cook Inlet year-round. | ADFG 2015d |
| **Southeast U.S. Continental Shelf BOEM Ecoregion** | | | | |
| Fisheries importance | Atlantic menhaden | vermillion snapper | Menhaden are the largest fishery by weight in the South Atlantic. They also play a large ecological role as forage fish for larger fish species and seabirds. | NMFS 2015b, NOAA 2015c |

#### *7.2.2.5 Impact-independent Modifiers*

The model was designed to accommodate the consideration of impact-independent modifiers (e.g., climate change, productivity, and unregulated impacts). These modifiers were included as scaling

factors, which were applied to the final sensitivity scores. A climate change vulnerability score was included as an additive impact-independent modifier. Using a similar approach to the 2017–2022 DPP analysis, the anticipated effects of climate change, including changes in temperature, sea ice melt and freshwater influx, permafrost thaw, ocean acidification and upwelling effects, sea level rise and saltwater intrusion, and changes in species composition, were assessed for each BOEM Ecoregion. A magnitude for each expected impact due to climate change was assigned to each BOEM Ecoregion using a relative scale (0-2 depending on intensity of effects; see Table 7-4). These sub-scores were summed for a total climate change score. This score was then converted to a climate change index with a scale of 0 to 4. This scale was chosen to allow an appropriate weight for impact-independent factors in the final environmental sensitivity score. This inclusion of climate change impacts is similar to the approach used in BOEM 2014 but scores potential impacts slightly differently based on additional factors identified as significant by BOEM through review of relevant literature. The climate change indices were revaluated for this Proposed Program analysis and some scores were changed based on changes in the BOEM Ecoregion area or newly available literature.

**Table 7-4: Scoring of Anticipated Climate Change Effects for BOEM Ecoregions**

| Anticipated Climate Change Impact | Chukchi and Beaufort Seas | Cook Inlet | Western and Central GOM | Southeast U.S. Continental Shelf | Northeast U.S. Continental Shelf |
|---|---|---|---|---|---|
| Temperature Change | 2 | 2 | 1 | 1 | 1 |
| Sea Ice Melt & Freshwater Influx | 2 | 1 | 0 | 0 | 0 |
| Permafrost Thaw | 2 | 1 | 0 | 0 | 0 |
| Ocean Acidification/ Upwelling Effects | 2 | 1 | 0.5 | 1 | 1 |
| Sea Level Rise & Saltwater Intrusion | 0.5 | 0 | 2 | 2 | 2 |
| Increased Storm Activity | 1 | 1 | 1 | 1 | 1 |
| Change in Species Composition | 1 | 1 | 1 | 1 | 1 |
| **Total** | **10.5** | **7** | **5.5** | **6** | **6** |

**Notes**: Total score reflects the climate change score prior to conversion to a climate change index with maximum score of four. Scores were assigned based on a scale of 0–2 and then summed for all anticipated effects. A score of 0 was given to BOEM ecoregions in which little to no effect was expected, a score of 1 to BOEM ecoregions in which a low to intermediate effect was expected, and a score of 2 for intermediate to high effect. Before adding the climate change index to the habitat and species sensitivity scores, the total climate change scores in the table were converted to a scale of 0–4.
**Sources:** Fabry et al. 2009, Jones et al. 2009, Haufler et al. 2010, Smith et al. 2010, Doney et al. 2012, USEPA 2014, IPCC 2014, Melillo et al. 2014, NOAA 2014f, Ekstrom et al. 2015, NOAA 2015e, USGCRP 2015.

Figure 7-3 outlines the complete process for determining the sensitivity scores. Relative environmental sensitivity scores were calculated for each habitat and species selected for each of the five BOEM Ecoregions (see Table 7-5). These scores (which also include the shoreline ESI) form the foundation of the total sensitivity score. The species and habitat scores were normalized before combining them. The climate change index was then added to this base score for a final sensitivity score. No theoretical maximum sensitivity score is possible for a BOEM Ecoregion. Such a maximum is dependent upon the

number of parameters included in the model (such as the number of species and habitats) and would therefore be mathematically impossible to achieve given the mechanics of the model.

**Figure 7-3: Environmental Sensitivity Index Methodology**

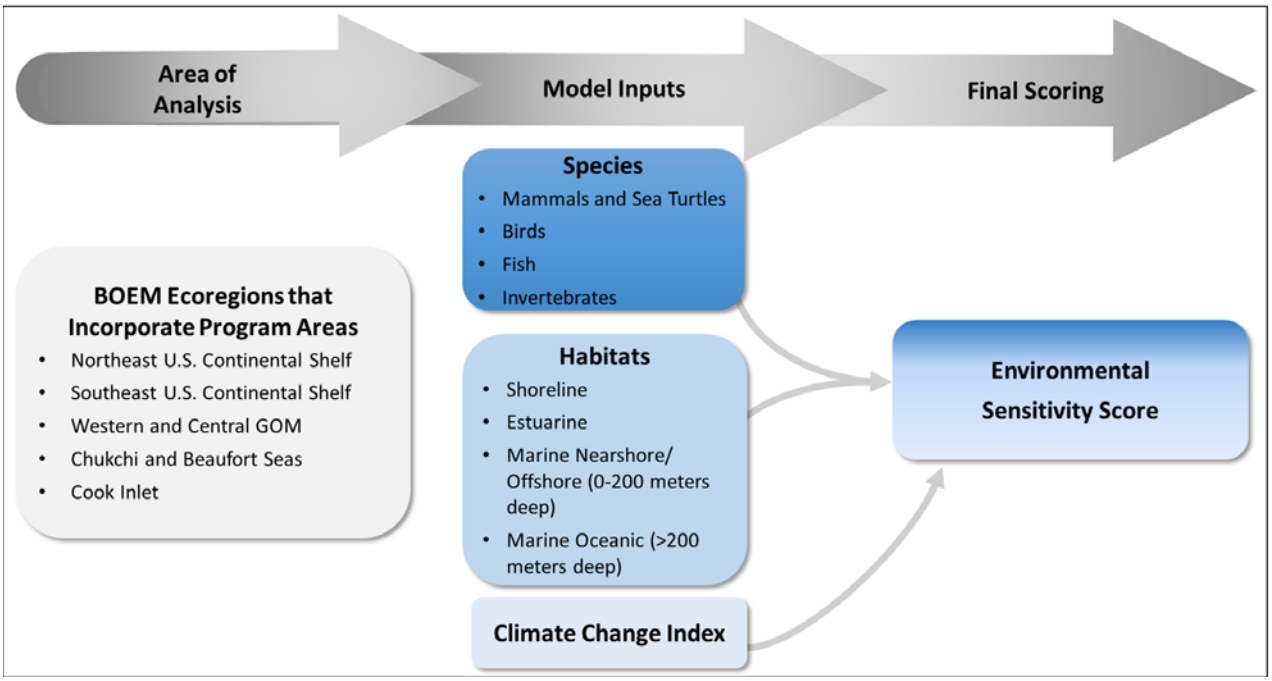



**Table 7-5: Environmental Sensitivity Score by BOEM Ecoregion**

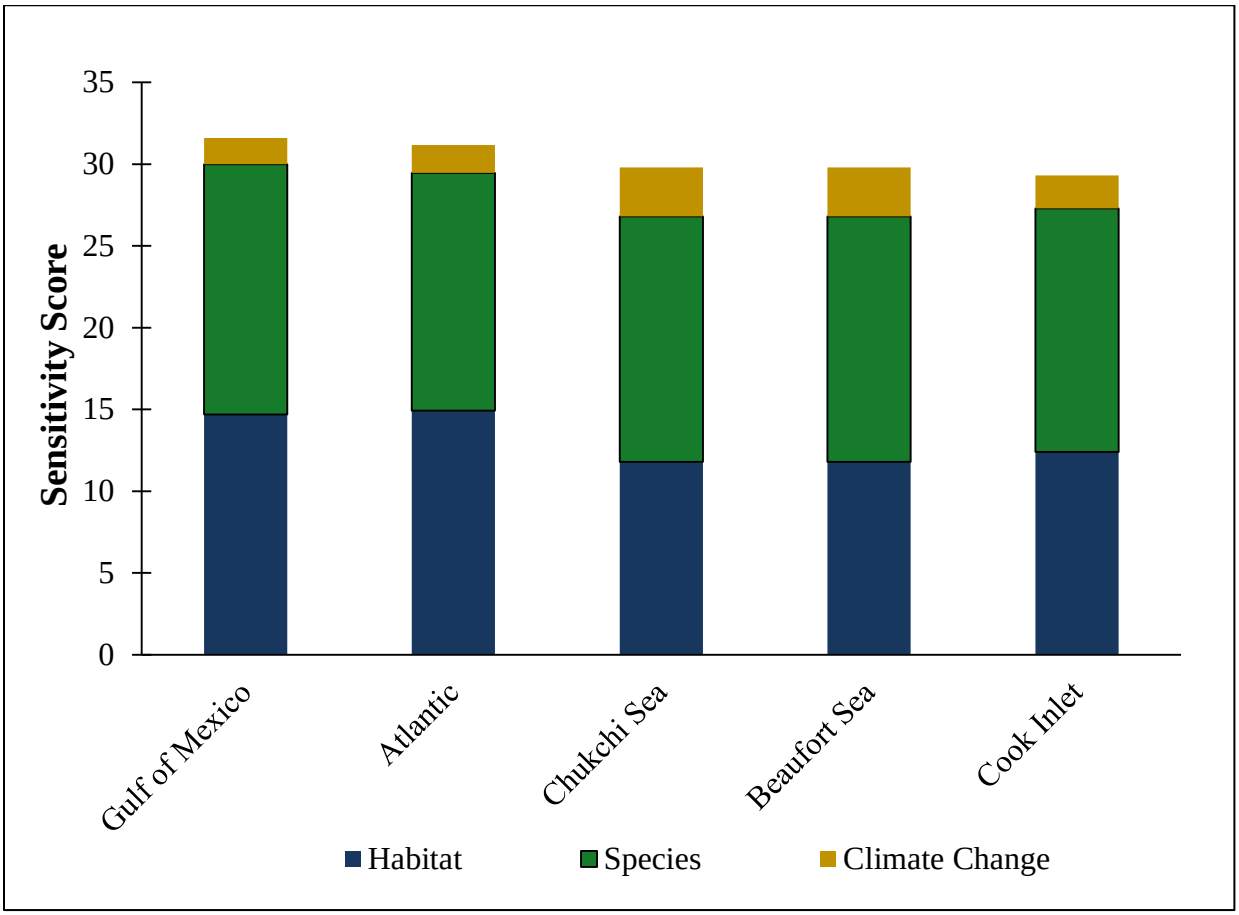
| BOEM Ecoregion | Environmental Sensitivity Score |
|---|---|
| Southeast U.S. Continental Shelf | 32.9 |
| Western and Central GOM | 31.5 |
| Chukchi and Beaufort Sea | 29.8 |
| Cook Inlet | 29.3 |
| Northeast U.S. Continental Shelf | 28.3 |

#### *7.2.2.6 Results and Discussion*

The environmental sensitivity scores for the program areas range from 29.3 to 31.5 (see Figures 7-1, 7-2, and 7-4). These scores are unitless and serve as an index of environmental sensitivity. The program areas with the highest sensitivity scores are the GOM and the Atlantic. The lowest scoring program area was the Cook Inlet.

The small range in sensitivity scoring demonstrates that all program areas are sensitive to oil and gas activities—some more so than others. Further, what drives this sensitivity differs from BOEM Ecoregion to BOEM Ecoregion based on varying species and habitat sensitivities. For example, the Western and Central GOM BOEM Ecoregion had the highest cumulative species score. This high score was primarily driven by the high sensitivity score in the fish category, which included the threatened Gulf sturgeon,

**Figure 7-4: Aggregated Sensitivity Scores for Habitats, Species, and Climate Change by Program Area**




which has a high maturity age (NMFS 2009). The Atlantic Program Area score was comprised of both the Southeast U.S. Continental Shelf and Northeast U.S. Continental Shelf BOEM Ecoregions' scores.

The Southeast U.S. Continental Shelf BOEM Ecoregion received the highest habitat score, which was driven by high scores in the shoreline, benthic estuarine, and benthic marine habitat categories. The overwhelming majority of this BOEM Ecoregion's shoreline is considered the most sensitive ESI category, Type 10: marshes, wetlands, and swamps (NOAA 2002). This indicates that the shoreline is considered very sensitive to oil spills and difficult to restore following a catastrophic spill. The benthic estuarine and marine habitats are aquatic vascular vegetation and deepwater coral, respectively, which are both extremely sensitive to disturbance (Roberts et al. 2006, Short and Wyllie-Echeverria 1996, Prouty et al. 2014). In contrast, the Northeast U.S. Continental Shelf BOEM Ecoregion was the lowest-scoring BOEM Ecoregion. It scored lower than average for species, habitat, and climate change. This result does not indicate that this region is not sensitive to impacts from oil and gas leasing activities. Rather, it suggests that, compared to the other BOEM Ecoregions, the Northeast U.S. Continental Shelf BOEM Ecoregion is somewhat less sensitive with a lower climate change risk, and species and habitats that are somewhat more resilient to impacts than those of other BOEM Ecoregions. However, since the majority of the Atlantic Program Area lies within the Southeast U.S. Continental Shelf BOEM Ecoregion, the Atlantic Program Area is among the most sensitive areas under consideration.

The low sensitivity score of the Chukchi and Beaufort Seas BOEM Ecoregion was driven primarily by its low habitat score, which was the lowest of all the BOEM Ecoregions. The shoreline sensitivity score was particularly low due to large proportions of shoreline being categorized as some of the less vulnerable types (type 5 and lower). However, the high climate change index for the Chukchi and Beaufort Seas BOEM Ecoregion resulted in a higher sensitivity score than the Cook Inlet BOEM Ecoregion. The Cook Inlet also had a low shoreline sensitivity score due to a majority of its shoreline being categorized as less sensitive types.

The Southeast U.S. Continental Shelf BOEM Ecoregion also had a comparatively higher sensitivity score. This BOEM Ecoregion had the highest species score for mammals and turtles, as well as a fish score that was above average. This BOEM Ecoregion houses several highly sensitive species, including the endangered Florida manatee, which has slow reproductive rates, and the endangered Atlantic sturgeon, which has endemic subpopulations in the BOEM Ecoregion.

The relatively small differences among the environmental sensitivity scores suggest that differentiation among the program areas based on the total score alone would be difficult. Rather, the environmental sensitivity is one tool of many that BOEM uses to make decisions regarding the development and exploration of oil and gas resources on the OCS. This model is driven by the best-available scientific information at the scale of analysis and strives to incorporate empirical data, where available. Similar approaches can be taken to evaluate proposed activity on particular areas of the OCS on a case-by-case basis. Program areas should be considered independent of each other with a full understanding of the species present, their distributions, and habitat needs, and therefore, the individual sensitivity to potential oil and gas activities.

BOEM will continue to refine the methodology, habitat and species selection criteria, and analysis given stakeholder input and as additional information becomes available.

### *7.2.3 Marine Productivity*

#### *7.2.3.1 Background*

Productivity is a term used to indicate the amount of biomass produced over a period of time. Primary productivity is the production of biomass using carbon dioxide and water through photosynthesis. The primary productivity of the marine community is its capacity to produce energy for its component species, which sets limits on the overall biological production in marine ecosystems. Primary production in the marine environment is conducted primarily by phytoplankton; macroalgae, such as *Sargassum* or kelp; and submerged aquatic vegetation like seagrasses. The rate at which this occurs is based largely on the organisms' ability to photosynthesize. The methods of measuring phytoplankton productivity are relatively standard and results normally are expressed in terms of chlorophyll-*a*, or the amount of carbon fixed during photosynthesis per square meter of ocean surface per unit of time.

Phytoplankton can occupy all surface waters of an OCS program area and fix carbon, as long as sufficient light and nutrients are available. Farther from shore, nutrient availability may limit productivity. Additionally, surface mixing due to wave action, down-welling, fronts, and convergence carry phytoplankton to depths in the water column where light is insufficient for photosynthesis to occur.

The difference between the energy produced during photosynthesis and the amount of energy expended during this process is known as NPP. The rate of NPP determines the amount of energy that is available for transfer to higher trophic levels (Ware and Thompson 2005, Chassot et al. 2010). Thus, the most critical aspect of marine productivity is NPP, which is the focus of this analysis.

The productivity of higher trophic levels (e.g., secondary and tertiary production) is more difficult to constrain than primary productivity. While some models of secondary and tertiary productivity exist for OCS regions, estimates are not available for all planning areas (BOEMRE 2011). Unlike primary production, secondary production is difficult to validate with empirical measures. Due to the limitations of existing data and inequalities in data availability among all planning areas and habitat types (BOEMRE 2011), secondary and tertiary production estimates are not robust and will not be presented for decision-support.

#### *7.2.3.2 Methods*

In 1991, BOEM (then MMS) completed a primary productivity review (MMS 1991a, MMS 1991b). The 1991 study produced estimates by tabulating the results of individual studies conducted in each planning area. These estimates relied on studies that used different methodologies, spatial scales, and/or sampling frequencies. The approach used in this Proposed Program analysis, finalized in 2012, greatly improves on these previous productivity estimates using new tools and technology that have become available since the 1991 report.

The current primary productivity study uses satellite-based observations to provide input parameters for the VGPM to estimate NPP in each planning area as a function of chlorophyll, available light, and photosynthetic efficiency. Productivity determinations were depth-integrated, extending from the ocean surface to the euphotic depth (i.e., the depth where 1 percent of the surface light, or photosynthetically available radiation, is available). This depth ranged from a maximum of 100 meters (i.e., within ocean gyres) to a minimum of several meters (e.g., within eutrophic coastal waters). For a more detailed discussion of methods, see BOEMRE 2011.

In the DPP analysis, each of the 26 planning areas was characterized in terms of areal coverage, mean annual NPP, annual and monthly variance, and trend (i.e., increasing or decreasing productivity) over a 12-year period (1998–2009). For this Proposed Program analysis, only the productivity rates for program areas are presented. The results for the GOM are presented for both Proposed Program Options: the Region-wide Leasing Option with one rate for the entire GOM (Table 7-6), and the Modified Traditional Leasing Option, with rates presented for the Western GOM and the combined Central/Eastern GOM (Table 7-7). These rates were derived from the rates for each individual planning area as follows. For the Region-wide Leasing Option, the rate is an areal average weighted by the area of the three planning areas in the GOM Program Area (the Western and Central GOM, as well as the small sliver of the Eastern GOM). For the Modified Traditional Leasing Option, the Central and Eastern GOM NPP rates were combined with an areally weighted average, and the Western GOM planning area's NPP is reported separately. The Atlantic Program Area's NPP rate was determined as an areally weighted average of the Mid-Atlantic and South Atlantic Planning Areas' NPP rates. The Baldwin County Buffer Option was not analyzed separately because the small size of the exclusion area would not impact the primary productivity rankings of the program areas. The Supplemental Option to move the Beaufort Sea lease

sale from 2020 to 2019 was also not analyzed separately because the analysis of primary productivity does not account for potential impacts of BOEM's activities or their timing.

#### *7.2.3.3 Results and Discussion*

Productivity ranged from 30.5 (Beaufort Sea) to 413.5 (Cook Inlet) metric tons of carbon per square kilometer per year (t C $km^{-2}yr^{-1}$) (Tables 7-6 and 7-7). The Alaska Region exhibited high NPP variability. It should be noted that the accuracy of primary productivity estimates for the Alaska Region may be substantially lower than in other regions for several reasons.

**Table 7-6: Rates of NPP for the GOM Region-wide Leasing Option**

| Program Area | Areal NPP (t C $km^{-2}yr^{-1}$) |
|---|---|
| GOM | 314.4 ± 31.8 |
| Atlantic | 139.1 ± 8.0 |
| Chukchi Sea | 42.0 ± 21.4 |
| Beaufort Sea | 30.5 ± 24.1 |
| Cook Inlet | 413.5 ± 28.1 |

**Key**: t C $km^{-2}yr^{-1}$ = metric tons of carbon per square kilometer per year

**Table 7-7: Rates of NPP for the GOM Modified Traditional Leasing Option**

| Program Area | Areal NPP (t C $km^{-2}yr^{-1}$) |
|---|---|
| Central and Eastern GOM | 323.2 ± 33.9 |
| Western GOM | 294.4 ± 27.1 |
| Atlantic | 139.1 ± 8.0 |
| Chukchi Sea | 42.0 ± 21.4 |
| Beaufort Sea | 30.5 ± 24.1 |
| Cook Inlet | 413.5 ± 28.1 |

**Key**: t C $km^{-2}yr^{-1}$ = metric tons of carbon per square kilometer per year

For one, the presence of turbid coastal waters may adversely affect remote sensing measurements (i.e., chlorophyll-*a* concentrations can be significantly overestimated [greater than 100 percent] from satellite measurements due to algorithm artifacts in the atmospheric correction and bio-optical inversion). Variations in seasonal solar insolation effects also may result in reduced primary productivity (i.e., most of the areas in the Alaska Region have limited sunlight). Despite these challenges, BOEM required an approach that could be consistently applied and compared across broad areas. Field-based methods suffer from variations in analysis, geographic coverage, temporal coverage, and other standardization issues. BOEM maintains that the current methodology is the best method available to measure NPP for the purposes of BOEM decision making. Additionally, it should be highlighted that these are annual averages taken over a 12-year period. The Arctic is known to house high rates of NPP (Shakhaug 2004); however, these rates are measured during seasonal blooms (Springer and McRoy 1993, Hill and Cota 2005). The low light availability in the Arctic contributes to low annual averages of NPP.

The GOM exhibited high annual primary productivity per acre: 314.4 t C $km^{-2}yr^{-1}$for the entire program area. On a regional basis, the Central and Eastern GOM region had a higher rate of NPP than the Western GOM.

The NPP within the Atlantic Program Area was below average for all program areas, with an areal average NPP of 139.1 t C $km^{-2}yr^{-1}$. While calculations are based on the VGPM model, and there are various studies showing the validity of this model in assessing primary productivity in marginal seas and upwelling systems, some degree of uncertainty is expected from the model as applied to all program areas.

Substantial interannual variability in primary productivity is found in several of the planning areas, with the highest interannual variability evident in the Alaska Region. The Beaufort Sea and Chukchi Sea Program Areas exhibited interannual variability greater than 10 percent, which is due to light limitation. In contrast, most of the remaining program areas show low interannual variability (less than 10 percent). Low-latitude areas are less sensitive to cloudiness, as long as the cloud cover is not persistent.

Marine ecosystems can be affected significantly by the rates and magnitude of primary production within their boundaries. Alterations in primary production in an ecosystem will have wide-ranging effects on all dependent species and chemical processes occurring within the affected system. Having sufficient knowledge of the magnitude and rates of primary production within an ecosystem allows for an accurate understanding of the overall potential productivity within that system. This knowledge may help elucidate the potential effects that altering the base of the food chain may have on dependent species and processes. Therefore, it is important to include estimates of primary production in any analysis of environmental sensitivity related to OCS oil and gas activities. Besides any direct effects of an oil spill on higher trophic levels, any anthropogenic alteration of the base of the food chain, such as spilled oil on the surface of the ocean decreasing light penetration, thus decreasing rates of photosynthesis of a system, would necessarily affect the functioning of the system as a whole. However, these effects on primary production most likely would be very short-term in duration and of low magnitude.

Comparison of 1990 and 2010 primary productivity determinations indicates that the model-derived estimates in the present analysis are in good agreement with literature-based determinations (BOEMRE 2011). Given the completely different assessment and, therefore, independent methods between the two periods, this similarity provides strong support for the argument that model results (based on satellite data) provide excellent estimates of primary productivity.

Within the 1998–2009 primary productivity dataset, significant variability in primary productivity determinations was evident, particularly in the Alaska Region. While some of this variability may be attributed to planning area-specific oceanographic features and/or local processes, some variability may be reflective of the data acquisition method. The accuracy of satellite-derived productivity estimates may be affected by one or more factors, including the overestimation of chlorophyll-*a* concentration from satellite measurements (particularly in the Alaska Region) due to algorithm artifacts in the atmospheric correction and bio-optical inversion; seasonal solar insolation effects are evident (i.e., predominantly in the Alaska Region); and uniform application of the NPP model may be slightly problematic for marginal seas and areas of upwelling (BOEMRE 2011).

In conclusion, NPP is highly variable on the OCS, with a nearly 14-fold difference between the lowest rates (found in the Beaufort Sea and Chukchi Sea Program Areas) and the highest rates (found in the Cook Inlet Program Area). These rates of NPP allow a ranking of the program areas; areas with high rates of primary production would have the greatest effect on the amount of energy available to higher trophic levels in that area (i.e., the amount of biomass that area could potentially support). The low productivity in the Beaufort Sea and Chukchi Sea Program Areas is largely due to the long periods of low light availability in the region.

# Chapter 8 Equitable Sharing Considerations

## 8.1 DEFINITION AND INTRODUCTION

In addition to various other factors, Section 18(a)(2)(B) of the OCS Lands Act requires that the Secretary base the timing and location of the OCS exploration, production, and development on a consideration of "an equitable sharing of developmental benefits and environmental risks among the various regions." To assist the Secretary in making decisions, this analysis goes beyond the strict requirements of the OCS Lands Act and considers the sharing of benefits and risks to the U.S. population, particularly in the coastal areas that produce, or could potentially produce, oil and gas. As recognized by the court in *California II*, the OCS regions are submerged lands off the U.S. coast. Because most developmental benefits and environmental risks are experienced onshore or along the coast, BOEM uses PADDs to help assess the sharing of benefits and risks among onshore "regions" (see Section 8.3.1.2.2).

The regions possessing substantial oil and gas resources (and the adjacent areas) tend to both receive most of the benefits from developing OCS resources, and be subject to the associated environmental risks of developing those resources. While this relationship tends to promote equitable sharing, this analysis provides additional information about developmental benefits and environmental risks of OCS activities within and between Program Areas and the states adjacent to those Program Areas that may assist the Secretary in her decisions. The Secretary is required to consider equitable sharing, but neither Section 18 of the OCS Lands Act nor the courts have indicated a specific standard of sharing that a new program should achieve.

### *8.1.1 Developmental Benefits Overview*

In this analysis, developmental benefits of the Program include increased wages, additional jobs, increased tax collection, revenue sharing, and proximity of supply and consumers. These benefits were described in detail in the DPP equitable sharing analysis, and are introduced again in the following paragraphs:

*Increased wages.* Generally, jobs in the OCS oil and gas industry tend to provide higher financial compensation than other jobs in nearby areas. The regional benefits associated with oil and gas activities include increases in employment and wages. This could manifest as a higher standard of living and increased contribution to local economies through spending and investment.

*Additional jobs.* In areas where there are new or expanded oil and gas activities, employment opportunities can increase due to purchases of labor, land, materials, equipment, and other factors. The direct employment also stimulates additional indirect economic activity for those companies that supply the industry with goods and services, as well as the additional "induced" spending of additional household income resulting from direct and indirect spending. The "ripple effects" of indirect and induced spending on local economies often are much greater than those of the initial industry expenditure. This analysis includes a description of BOEM's estimates of the level of economic activity in the program areas. In addition to BOEM's own estimates of employment impacts from OCS activities, numerous

independent groups have calculated their own estimates of economic impact as a result of OCS activities.[54]

In areas with new oil and gas development, it is often necessary to construct or modify supporting onshore infrastructure. While construction of onshore infrastructure can increase employment opportunities, improve access to roads, and provide other benefits, it also poses environmental risks and socioeconomic or fiscal risks, especially if the oil and gas activity is short-lived and does not provide local communities with the revenues to compensate for up-front expenditures or under-used facilities.

*Increased tax collection.* Increased wages and employment can result in a meaningful contribution to state and local tax revenues, as can construction and operation of support facilities subject to property taxes. Property taxes are a vital source of state and local government revenues in Alaska.

*Revenue sharing.* States adjacent to OCS regions producing oil and gas, with revenue sharing agreements in place, enjoy the financial compensation of sharing revenue with the Federal Government. Revenue sharing is one way to address equitable sharing of environmental risk with economic benefits. Only Congress has the authority to expand, extend, or otherwise revise revenue-sharing provisions during the period covering future Programs. Two Federal laws currently provide for revenue sharing, Section 8(g) of the OCS Lands Act and GOMESA. Section 8(g) of the OCS Lands Act applies to all coastal states adjacent to current or potential areas of OCS development and provides for coastal states and the Federal Government to share revenues earned from OCS leases in Federal waters between the state's submerged lands boundary and 3 nm seaward. BOEM shares 27 percent of these bonus, rent, and royalty revenues with the adjacent states. The 3-nm-wide area adjacent to the state's submerged lands boundary is known as the "8(g) zone." The 8(g) revenues are intended to compensate the states for drainage of oil and gas resources in state waters by companies operating on Federal leases. Because the 8(g) revenue sharing provision applies only to states that could have production of Federal oil and gas reserves within 3 nm of their seaward boundaries, creation of close-to-shore buffer areas that prohibit leasing would eliminate the possibility of any 8(g) revenue sharing for states adjacent to such a buffer. Currently, 8(g) oil and gas revenues are shared with the states of Texas, Louisiana, Mississippi, Alabama, California, and Alaska. Under GOMESA, revenues are shared with the GOM states of Texas, Louisiana, Mississippi, and Alabama. A detailed description of GOMESA is included in Section 8.3.2.

*Proximity of supply and consumers of energy.* The transportation of energy products such as oil and gas is expensive, especially if new transportation infrastructure is needed due to major shifts in production location, and it introduces risks along the routes. Producing energy close to where it is refined or processed and consumed reduces costs incurred by energy suppliers and improves economic efficiency. Additionally, close proximity of supply and consumers results in decreased expenditures to transport resources to consumers; decreased impacts on transportation volume, air emissions, and consumption of fuel just to transport resources; and decreased potential impacts on fuel distribution due to disruptions

[54] Many independent groups study the economic benefits associated with the oil and gas industry, representing the oil and gas industry, academia, environmental groups, trade associations, economic development associations, and more. The results of these studies are often made available to the public to inform the discussion of continuing or expanding oil and gas operations. The following is a list of some of the studies BOEM has considered during its analysis, grouped by region of interest. None of these studies necessarily represent the official views of BOEM or USDOI; they are included here for information purposes. Alaska: Northern Economics 2009, Conley 2013. GOM: IHS Global Insight 2010, Quest Offshore 2011. Atlantic Ocean: NRDC 2009, Quest Offshore 2013, API 2014, Considine 2014, The Thomas Jefferson Institute for Public Policy 2014.

from events such as natural disasters. This chapter highlights some of the consideration given to regional energy markets, but a more detailed review is included in Chapter 6.

### 8.1.2 Environmental Risk Overview

The Draft Programmatic EIS identifies and discloses the potential impacts associated with the Proposed Program, focusing on potential moderate or major impacts. The Draft Programmatic EIS describes the environments, species, and human activities that could be impacted by oil and gas leasing activities. The burden of environmental risk is borne primarily by the marine and coastal areas adjacent to and within which oil and gas activities occur. This is due to the fact that potential environmental impacts from oil and gas activities (and associated ramifications to the human population) are often linked to the proximity of the actions that may cause an impact. The risks associated with non-routine or accidental events such as oil spills may be higher in areas with the greatest activity or in areas where the oceanography or characteristics of the environment may lead to more oil reaching the shoreline.

The potential impacts associated with the Proposed Program Options can vary in likelihood, extent, and intensity. Environmental risks include the potential to adversely affect (1) the quality of the human environment (e.g., water quality, air quality, accidental or catastrophic oil spill events); (2) species and habitats that are commercially or recreationally valuable (e.g., commercial fisheries, coastal tourism); (3) species and habitats that are protected by Federal environmental laws and regulations; (4) cultural and archaeological resources; (5) access to subsistence resources; or (6) overall marine productivity that may affect or diminish ecosystem services (see Section 7.2).

### 8.1.3 Consideration of the No Sale Option

The selection of the No Sale Option eliminates many of the developmental benefits from OCS production. This could be detrimental in areas with existing activity (e.g., the GOM) where selection of the No Sale Option will not simply fail to add new jobs but would likely lead to a reduction in OCS activity that would fail to sustain the current employment base and lead to strain on local communities. Further, existing onshore infrastructure could become obsolete. A full assessment of the environmental risks and developmental benefits considers both the risks and benefits that would occur both with the inclusion of certain areas in the program and those that would occur under the No Sale Option.

Environmental risks could also occur from selection of the No Sale Option. Substitute sources of energy would be necessary to replace forgone OCS production, and these energy market substitutions present their own environmental risks. As discussed in Chapters 5 and 6, BOEM uses *MarketSim* to estimate the substitute energy sources that would replace OCS production with the selection of the No Sale Option (e.g., increased imports, onshore oil and natural gas production, fuel switching). This chapter outlines the geographical distribution of where the environmental risks might occur if the No Sale Option were selected in each of the program areas.

### 8.1.4 Consideration of Elements beyond the Secretary's Control

The law gives the Secretary wide latitude to assess the relative importance of a variety of factors in deciding the size, timing, and location of sales that best meet the energy needs of the United States. In addition to the elements listed above, there are dynamics that can greatly affect the equitable sharing

implications of the Program Options but which are not under the direct control of the Secretary. The actual location and level of activities in areas where leases have been issued are largely dictated by energy markets and the geographic distribution of oil and gas resources. Many of the developmental benefits and environmental risks will be concentrated around the areas containing the oil and gas resources that will eventually be produced. Similarly, technological advances can affect the distribution of benefits and risks because it can increase the amount of oil and gas resources that are economically recoverable or otherwise attractive for investment. The actual incidence of risk and environmental impact associated with the activities is influenced by environmental factors such as weather and pollution from other activities in the regions besides oil and gas development.

Other factors beyond the Secretary's control include laws that may prohibit oil and gas exploration in certain areas or that can discourage companies from timely operation on the OCS. Employment, income, and tax benefits in each region can change if localities change their relevant policies and laws. While revenue sharing of oil and gas revenues, as well as impact assistance, can be important in determining the distribution of benefits to regions, they are generally established by law and are outside the scope of the Secretary's decisions. Another constraint is the variation in public attitudes and in state and local government laws, goals, and policies concerning oil and gas activities in onshore areas adjoining the various program areas. In addition, there are environmental and socioeconomic factors (e.g., presence of certain environmental risks, existing onshore infrastructure) that affect the Secretary's ability to promote an equitable sharing of benefits and risks through a proposed five-year schedule.

### *8.1.5 Equitable Sharing Analysis for the DPP*

The equitable sharing discussion in the DPP presented an evaluation of developmental benefits and environmental risks of OCS oil and gas activities among all 26 planning areas. The analysis showed that regions potentially receiving the greatest direct developmental benefits from exploring for and developing OCS resources can also be subject to associated social and environmental risks. In addition to the local allocation of benefits and risks in onshore areas adjacent to the OCS planning areas, certain financial aspects of both the benefits and risks from OCS activity are shared somewhat widely.

The analysis contained herein analyzes the Proposed Program Options considered by the Secretary in making the Proposed Program decision.

## 8.2 METHODOLOGY

This chapter analyzes the developmental benefits and environmental costs of each program area and adjacent onshore area and the Proposed Program Options. A discussion is included for each broad region of program areas (i.e., Alaska program areas, GOM Program Area, and Atlantic Program Area) on the consequences of the selection of the No Sale Option in that region. The discussion on each broad OCS region also highlights developmental benefits and environmental risks that could be directly felt in another region. This equitable sharing analysis concludes with a discussion of the widely distributed benefits and risks that could occur as a result of the Program.

The developmental benefits in this analysis are calculated using an economic impact approach. This differs from the benefit-cost approach used to estimate the net benefits in Chapter 5. Economic impact analysis and benefit-cost analysis offer two means of estimating certain measures of benefits and costs,

and both approaches provide valuable information for the Five-Year Program decision. Each approach reflects different aspects of economic activity.

The effects measured in a benefit-cost analysis represent direct first-order real resource market outcomes, such as increased production and the accompanying increase in economic surplus, as well as the costs imposed by the DPP decision. Some factors, such as employment, often thought of as a benefit to society, are treated in a benefit-cost analysis as costs paid by society to conduct the activities that result in economic value. For example, the net benefits analysis in Section 5.3 starts with the calculation of net economic value of OCS leasing. In this calculation, costs of exploration, development, and transportation are netted from the gross revenue of production to estimate the net benefits of the Program Options. Alternatively, in an economic impact analysis these same costs generate income, employment, and revenues that state and local governments and residents almost always consider to be benefit. Thus, the economic impact analysis focuses on these broad macroeconomic measures, such as income, employment, wages, and revenue transfers, as they may relate to specific industries and geographical locations. Because the Secretary must make programmatic decisions for the benefit of the United States as a whole, the benefit-cost approach is more appropriate for the net benefits analysis, described in Section 5.3, which presents relative benefits and costs from a national perspective. However, for the equitable sharing analysis, it is the relative benefits enjoyed and distributed risks borne among geographic regions that are most important. Therefore, the economic impact analysis is used to evaluate developmental benefits. Though residents of local areas tend to view employment as a benefit, the Programmatic EIS acknowledges potential strains from an influx of new employment near frontier areas and from a failure to sustain employment levels in areas that support existing oil and gas activities.

BOEM used its recently updated regional economic impact models, collectively called MAG-Plan,[55] to estimate the economic effects of OCS oil and gas activities. The MAG-Plan estimates reflect the fact that OCS oil and gas activities can have sizable economic effects in the onshore areas adjacent to the offshore program areas as well as throughout the United States. Companies do business with suppliers throughout the country and the world, and offshore workers usually work shifts of 1 to 4 weeks, alternating with periods off duty, allowing them to commute long distances.

Expected effects of oil and gas activities in each of the regions depend on a number of factors, including local, national, and international economic conditions, the extent to which a local support industry exists, and the level of oil and gas activities already occurring.

A substantial part of the economic impacts reported in this section would be generated by the multiplier on oil and gas sector spending. When an industry is newly established or undergoes expansion, the local economy will generally benefit directly from the new expenditures on salaries, goods, and services. The recipients of this spending then purchase other goods and services; thus, there is a multiplier effect in which each dollar spent by the expanded industry results in additional spending throughout the economy.

[55] BOEM uses three separate MAG-Plan models to calculate economic impacts, one model each for Alaska, the GOM, and the Atlantic. MAG-Plan GOM is currently being updated, but the methodology remains consistent with that used in 2012 (BOEM 2013). MAG-Plan Atlantic estimates the effects of creating a new industry in and adjacent to the Atlantic Program Area. This current analysis was conducted using a draft version of the Atlantic model. As revisions are continuously being made to these models and exploration and development scenarios are being refined, the estimates provided here may change for the PFP analysis. However, changes should be minor and not affect any conclusions.

# 8.3 RESULTS

## 8.3.1 Alaska OCS Region Benefits and Risks

### 8.3.1.1 Lease Sale Option

#### 8.3.1.1.1 Developmental Benefits

*Increased wages.* Alaska has a fairly well-developed oil and gas industry operating onshore and in state waters, and direct and indirect employment patterns are unlikely to change significantly should the DPP decision be approved in the PFP and implemented. Many, if not most, of those who would work on new Alaska OCS projects are likely to either live in Alaska now or would move there, especially in the case of extended high oil and/or gas prices. Similarly, given Alaska's relatively small population and lack of industrialization, a large percentage of the (indirect) goods and services needed for development are likely to continue to be imported from other parts of the country and world markets. The high wages paid to (direct) oil and gas workers relative to other workers should result in higher-than-normal income for those Alaskan residents who are employed to work on OCS projects. The MAG-Plan model results support this, showing much higher worker income per job for Alaska than for the "Rest of the U.S."[56] The presence of more high-paying jobs generally means more spending, income, and taxes, and more money for local businesses and municipalities. It also equates to more purchasing power and the consumption of more goods and services, which benefits employees by increasing their standard of living and contributing relatively more to the economy.

*Additional jobs.* Extended work schedules (e.g., one week on followed by one week off duty) allow those employed on existing Arctic projects in Alaska to live in southern Alaska, other communities in the United States, or other countries to commute to work, where they are housed in separate worker enclaves while on duty. BOEM expects a continuation of this pattern for any new projects in the Beaufort Sea or Chukchi Sea, even with vigorous OCS development. These jobs will be open to local and Alaska Native residents, but BOEM does not expect their employment patterns to change significantly with new Arctic OCS development.

Due to oil and gas activities in Cook Inlet state waters, with populated areas and existing oil and gas facilities on the Kenai Peninsula nearby, a large proportion of OCS workers and their families are likely to reside in nearby communities, and employment benefits would be shared locally. However, a significant percentage of workers could commute longer distances, especially if sustained high oil and natural gas prices drive more aggressive OCS development than anticipated.

Should the world enter a long period of sustained high prices (as in BOEM's high price case scenario), many of the skilled workers would likely be brought from the GOM Region initially, with the proportion of employed Alaska residents gradually increasing as exploration and development activities increase. Under such conditions, it also is likely that new businesses would be created or existing businesses would expand to serve the needs of new worker households. It also is plausible that Alaska would enhance its ability to provide secondary goods and services now supplied from outside the state, generating additional employment.

[56] Due to a number of variable factors, the average wage premium indicated by model results differs considerably for different program areas under different scenarios.

Construction of onshore infrastructure may increase job creation. Given existing infrastructure in northern Alaska and the Cook Inlet area, the greatest need for new infrastructure construction is likely to be associated with successful operations in the Chukchi Sea. Benefits include development of new OCS-related industries and employment in adjacent communities. Construction and development of onshore support infrastructure would likely generate additional regional economic effects as measured by employment, labor income, and government revenues. Employment and income would be generated during the exploration, development, and production phases from the construction of any necessary onshore support infrastructure (e.g., service base, air support base, pipelines, roads, onshore processing facilities, oil spill response base). However, in the less-developed, less-populated areas of the Alaska North Slope and Bering Sea coasts, it is likely that construction work would be short-term and performed with non-local labor.

In addition to construction of new infrastructure, new OCS leasing would enable continued use of regional onshore infrastructure that depends on oil and gas. This is especially true for Alaska, where local economies—and even state and local treasuries—depend on revenues from continued use of existing infrastructure. The prime case for Alaska is TAPS. The TAPS transports large amounts of oil from the Prudhoe Bay area of the U.S. Arctic and its future viability depends on further development of either offshore or additional onshore oil to sustain sufficient throughput. The state of Alaska relies heavily on Arctic oil-related revenues, which will be lost if TAPS can no longer operate.

*Increased tax collection.* OCS oil and gas production increases the economic contribution to local economies through spending and investment, and provides a meaningful contribution to state and local tax revenues. In addition to employment and labor income, development of high-value onshore infrastructure to support offshore oil and gas activities would generate property tax revenues that accrue to the jurisdiction in which the infrastructure is located. Tax revenues, especially from property taxes generated by facilities serving onshore and offshore state oil and gas activities, are very important to Alaska and many of its local communities. For example, the North Slope Borough receives the vast majority of its government revenues from property taxes levied against oil and gas infrastructure in its jurisdiction. Since the North Slope Borough funds most of its government operations from these property taxes and is itself the largest employer of North Slope Borough residents, tax collections are a significant driver of indirect employment and the economic well-being of local residents. Should Alaska become an area of long-term OCS development and production, this tax revenue would contribute to state and local economies, as well. Conversely, should TAPS throughput become insufficient in the absence of new OCS oil, Alaska would not only forgo OCS-related tax revenues, but also lose its major source of general funding.

*Revenue sharing.* As in the other OCS regions, the Federal Government shares 27 percent of the bonus, rent, and royalty revenues from OCS oil and gas leases within the 8(g) zone with Alaska described in Section 8.1.1. The Beaufort Sea and Cook Inlet Program Areas include acreage in the 8(g) zone, but the coastal buffer in the Chukchi Sea Program Area excludes all blocks in the 8(g) zone and does not provide this opportunity for revenue sharing. Table 8-1 shows the 8(g) revenues disbursed to Alaska from 2008-2014. The revenues in 2008 included sharing from some of the eligible bonus bids from Beaufort Sea Lease Sale 202 in 2007. More recent 8(g) revenues to Alaska are from rental payments collected on active leases in both the Chukchi and Beaufort Seas, and royalties on a joint Federal-state production unit in the Beaufort Sea.

**Table 8-1: Historical 8(g) Revenues in Alaska**

| Year | Alaska 8(g) Revenues |
|---|---|
| 2008 | $17,814,997 |
| 2009 | $9,943,558 |
| 2010 | $5,601,829 |
| 2011 | $5,128,697 |
| 2012 | $3,100,756 |
| 2013 | $2,940,962 |
| 2014 | $2,519,780 |
| **Total** | **$47,050,579** |

**Source**: ONRR 2015a

*Proximity of supply and consumers of energy.* Although the Alaska Region is not in close proximity to most consumers, production of OCS oil could increase throughput of the TAPS, thereby increasing the utility of the pipeline and providing Alaska with valuable revenue. Natural gas produced in Cook Inlet is likely to be consumed in south-central Alaska, which currently is facing uncertainties in future supply given declining production on state-owned leases. Natural gas produced on the Arctic OCS would be reinjected back into the earth to increase oil production and might later be re-produced and transported to communities in Alaska or elsewhere if improved market conditions prompt construction of a major new natural gas pipeline. More on the national and regional energy markets is included in Chapter 6.

#### *8.3.1.1.2 Environmental Risks*

The Draft Programmatic EIS describes the important environmental, sociocultural, and socioeconomic resources of the Beaufort Sea, Chukchi Sea, and Cook Inlet Program Areas and discloses the potential environmental impacts associated with oil and gas leasing in those Program Areas. Environmental risks associated with oil and gas leasing activities in the Alaska program areas could come from OCS impacts on commercially valuable fisheries (Cook Inlet); federally protected species and habitats such as marine mammals, birds, or critical habitat areas for these species; access to subsistence resources and communities; and the introduction of noise to the marine environment. Should a large oil spill occur, it could significantly harm both offshore and coastal species and habitats as well as prevent human access to these areas. The latter could include access to recreational activities in and along the Cook Inlet, as well as subsistence activities. Although there are well-developed onshore and state-water infrastructure networks to support existing operations in the Beaufort Sea and Cook Inlet, the emplacement of onshore infrastructure to support the Chukchi Sea activities could result in modification of nearshore and onshore habitats. Similarly, construction or expansion of infrastructure to support activities in the Beaufort Sea or Cook Inlet could affect local habitats.

#### *8.3.1.1.3 Benefits and Risks on other Regions from Alaska OCS Activities*

Lease sales and activities in the Beaufort Sea, Chukchi Sea, and Cook Inlet would enhance benefits received in Alaskan communities. Many of the jobs created by OCS activities in the Beaufort Sea and Chukchi Sea would be filled by workers in Alaska, and secondarily by workers elsewhere in the United States or other countries.

While it is likely that most of the environmental risks from direct exploration, development, and production activities on the Alaska OCS would manifest inside the Alaska region, some would occur outside the region. To the extent that Alaska OCS production is transported by tanker to west coast refineries, slight environmental risk could be experienced in these regions outside of Alaska from the risk of oil spill and air emissions. Further, the transportation of drilling supplies and equipment staging would also likely occur outside of Alaska, possibly somewhere on the west coast. However, similar environmental and social costs would be experienced by the west coast in the absence of any Alaska OCS lease sales, as discussed in Section 8.3.1.2.

#### *8.3.1.2 No Sale Option*

##### *8.3.1.2.1 Developmental Benefits*

Under the No Sale Option, Alaska would not receive any of the developmental benefits of OCS production from new leases that would have been offered under the DPP decision. To the extent that the replacement of onshore production occurs outside of Alaska, the TAPS could fall below threshold levels for operation and the State of Alaska would lose tax revenues. Areas outside of the Alaska OCS that produce replacement energy would receive developmental benefits from that activity. However, to the extent that the production, at the national level, is replaced by imports, the vast majority of those benefits would accrue overseas.

##### *8.3.1.2.2 Environmental Risks*

Under the No Sale Option, no environmental risks from OCS exploration, development, and production activities would occur in the Alaska Region. However, as is the case now, in the absence of Alaska OCS production, alternative sources of energy are required to fulfill the country's demand for energy and replace what could have been produced in the Alaska Region. Substitute energy sources (e.g., increased imports, increased onshore oil and natural gas production) have their own environmental and social costs. Some of these costs associated with the selection of the No Sale Option occur in Alaska and the west coast, whereas others are felt elsewhere throughout the United States.

Using transportation data from the EIA, BOEM's environmental cost model (the OECM), includes an estimate of where substitute energy sources would be produced if OCS leasing were forgone in a particular area (BOEM 2015). To some extent, choosing the No Sale Option in any of the Alaska program areas would still pose environmental and social risks to some parts of the west coast from oil imports transported by tanker and from increased onshore production.

Table 8-2 shows BOEM's estimate of the distribution of replacement sources of energy throughout the United States if the No Sale Option were selected for the Alaska program areas. These estimates use the DOE's PADDs (see Chapter 6) to describe where in the United States the substitute production would occur. Under the No Sale Option for Alaska program areas, at least 65 percent of the energy content (on a Btu basis) that would have occurred from Federal OCS production would be replaced with substitute energy sources occurring in the West Coast PADD, 58 percent through additional oil imports to west coast ports,[57] and 7 percent through additional onshore oil and gas production onshore in Alaska,

[57] Internal calculations not depicted in Table 8-2 show that of the imports, 32 percent would be to ports adjacent to the Central California Planning Area, 56 percent to those near the Southern California Planning Area, and 11 percent to those near the

California, Arizona, Oregon, or Nevada.[58] An additional 20 percent of the replacement energy sources would be natural gas production in the Gulf Coast and Rocky Mountain PADDs. An additional 6 percent of substitute energy sources would occur through other sources such as coal, other sources of electricity, biofuels, etc. These substitute energy sources have their own environmental and social costs, which are monetized later in this chapter in Table 8-7 and described in the Draft Economic Analysis Methodology paper. Of the forgone energy production, there will be a slight reduction in consumption (7 percent of forgone energy will not need to be replaced), which will not have any associated environmental and social costs.

Table 8-2 demonstrates that with the selection of the No Sale Option, substitute energy sources would be required and produced elsewhere in the United States or shipped to U.S. ports, which will bring their own environmental risks. While these substitute energy sources will likely not directly affect Alaska, they will bring environmental risks to the west coast. Table 8-7 in Section 8.4.1 monetizes the environmental and social costs by region if the No Sale Option were selected in every Alaska program area.

**Table 8-2: Location of Substitute Energy Sources in Absence of Alaska Sales**

| Substitute Energy Sources | PADD 1 Atlantic | PADD 2 Midwest | PADD 3 Gulf Coast | PADD 4 Rocky Mountain | PADD 5 West Coast and Alaska | Other U.S. Impacts | No Impacts |
|---|---|---|---|---|---|---|---|
| Imports | - | - | - | - | 58% | - | - |
| Onshore Oil Production | 0% | 0% | 0% | 0% | 2% | - | - |
| Onshore Natural Gas Production | 0% | 0% | 11% | 10% | 5% | - | - |
| Existing Offshore Production | - | - | 1% | - | - | - | - |
| Fuel Switching (electricity, coal, others) | - | - | - | - | - | 6% | - |
| Reduced Demand | - | - | - | - | - | - | 7% |

### *8.3.2 Gulf of Mexico OCS Region Benefits and Risks*

#### *8.3.2.1 Region-Wide Leasing Option*

##### *8.3.2.1.1 Developmental Benefits*

*Increased wages.* Under the Region-wide Leasing Option, leases in the GOM Region would likely sustain the current levels of activity in this established area. Therefore, this source of high wages for local communities would generally be maintained. Should the world enter a long period of sustained high prices (as in BOEM's high price case scenario), there would be additional demand for labor, as well as for supporting goods and services. This could increase the income of existing GOM-area residents and bring

Washington/Oregon Planning Area. Less than 1 percent would arrive in the Cook Inlet. These imports are not related to any OCS production in these planning areas, but to oil imports arriving at ports in these areas.

[58] Washington and Hawaii are also in the West Coast PADD, but do not have any oil or natural gas production.

in new residents with higher-than-average incomes whose households contribute to local economies. Even in a situation of low oil prices, a certain level of industry activity will remain in the region sustaining a base level of wages.

*Additional jobs.* Because oil and gas production is well established in the GOM, it is anticipated that OCS activities resulting from including the GOM in the PFP would largely maintain the employment rate in the area, rather than create new jobs. However, as indicated previously, a long period of sustained high prices could produce a large increase in direct employment and employment in industries supporting the oil and gas industry and worker households, as has occurred in previous periods of aggressive OCS activity. Should a period of sustained low oil price occur (as in BOEM's low price case scenario), continued leasing in the GOM will maintain a certain level of employment in the region. Though the impact would be less than under a high price scenario, the number of jobs created or sustained from this program would be a vital contribution to the local economy. In the GOM, where OCS oil and gas activities have been occurring for decades, approximately 57 percent of jobs from oil and gas industry spending in these states are sustained in adjacent states (i.e., Texas, Louisiana, Alabama, Mississippi, and Florida) (see Figure 8-1 in Section 8.4.1). Continuing sales in the GOM Program Area would allow maintenance of, and perhaps an increase in, benefits for states adjacent to the region.

New OCS leasing would enable continued use of regional onshore infrastructure that depends on oil and gas. In the GOM, local economies—and even state and local treasuries—depend on revenues from continued use of existing infrastructure. Communities along the GOM would benefit from continued operation of facilities constructed to service OCS operations.

*Increased tax collection.* The GOM has extensive onshore oil and gas infrastructure that contributes to local and state economies. Oil and gas production in the GOM would therefore continue to provide revenue to the states through tax collection. Further, states and local governments receive tax revenue from the presence of OCS oil and gas employment and business expenditures in the region. In the high price case, new employment driven by heightened OCS activity would increase the tax base of local communities, while failure to select the Region-wide Leasing Option or something similar (such as the Modified Traditional Leasing Option) could strain the fiscal health of local governments that depend on the income of workers in the OCS and supporting industries, property-tax, or other revenues from workers and infrastructure, and other support from related companies in the communities.

*Revenue sharing.* Most of the states adjacent to the GOM Program Area receive revenues from two different revenue sharing programs, 8(g) and GOMESA. As described in Section 8.1.1, revenue sharing will continue to contribute economic benefits to Louisiana, Alabama, Texas, Mississippi, and Florida through Section 8(g) revenue sharing to the extent that new leases are offered and leased in the 8(g) zone. Table 8-3 shows the revenue sharing from 8(g) revenues to each of these states in FY 2014.

In addition to the Section 8(g) revenue sharing, GOMESA also provides substantial revenue sharing. GOMESA became law in 2006 and provides revenue sharing for Alabama, Louisiana, Mississippi, Texas, their coastal political subdivisions (i.e., counties or parishes) and provides revenue to the LWCF, which distributes revenue more widely for approved projects. The GOMESA revenue sharing was designed to compensate for potential negative impacts of OCS activities. GOMESA funds are reserved for uses specified in the Act, including coastal restoration and protection.

Phase 1 of GOMESA provides for the uncapped sharing of 37.5 percent share of OCS revenues from selected areas stipulated in the law, which are included in the Central and Eastern Planning Areas.[59] As shown in Table 8-3, in FY 2014, these states received a combined total of more than $5 million in revenue sharing (ONRR 2015b). The second phase of GOMESA begins in FY 2017 and includes the sharing of additional GOM oil and gas lease revenues (limited to $500 million annually). All revenues from applicable GOM leases issued during the 2017–2022 Program will be subject to these GOMESA revenue sharing provisions.

**Table 8-3: FY 2014 8(g) and GOMESA Revenue Sharing**

| State | 8(g) | GOMESA | Total |
|---|---|---|---|
| Louisiana | $19,466,649 | $1,398,632 | $20,865,281 |
| Alabama | $3,932,082 | $2,258,782 | $6,190,864 |
| Texas | $1,032,760 | $493,687 | $1,526,447 |
| Mississippi | $138,274 | $1,151,185 | $1,289,459 |
| Florida | $2,188 | N/A | $2,188 |
| **Total** | **$24,571,953** | **$5,302,286** | **$29,874,239** |

**Key**: GOMESA=Gulf of Mexico Energy Security Act; N/A=Not Applicable.
**Source**: ONRR 2015b

*Proximity of supply and consumers of energy*. As shown in Chapter 6, the Gulf Coast PADD consumes 27 percent of the country's oil and natural gas production. The region produces 57 percent of the country's oil and 48 percent of the country's natural gas. The Gulf Coast PADD contains 51 percent of the refining capacity for the United States. Production in this region provides resources directly for refiners, which limits the environmental risk and cost from transportation. Additional analysis on how program area leasing and activity contributes to onshore energy consumption is discussed in Chapter 6 on national and regional energy markets.

#### *8.3.2.1.2 Environmental Risk*

The Draft Programmatic EIS describes the important environmental, sociocultural, and socioeconomic resources of the GOM Program Area and discloses the potential environmental impacts associated with oil and gas leasing in that Program Area. Environmental risks associated with oil and gas leasing activities in the GOM could come from degraded air and water quality; offshore impacts on commercially valuable fisheries; reduced access to recreational activities such as sport fishing or coastal tourism; effects on federally protected species and critical habitats for marine mammals, sea turtles, birds, or other species; and the introduction of noise to the marine environment. Should a large oil spill occur, it could significantly harm both offshore and coastal species and habitats as well as prevent human access to these areas. Although there are well-developed onshore infrastructure networks to support existing operations, the emplacement or expansion of onshore infrastructure may result in modification of nearshore and onshore habitats such as coastal wetlands.

[59] More information on GOMESA revenue sharing is available on BOEM's website at http://www.boem.gov/Revenue-Sharing/.

#### *8.3.2.1.3 Benefits and Risks on other Regions from GOM OCS Activities*

The Gulf Coast region has supported both onshore and offshore oil and gas activity for decades. As such, the region has developed an extensive oil and gas industry and large portions of the employment and other development benefits and risks are experienced within the region. However, some of the industry is supported from other parts of the United States and the rest of the world. These impacts are discussed in Section 8.4. In addition, Section 8.4 considers the environmental risks of GOM activity that could be widely distributed.

### *8.3.2.2 No Sale Option*

#### *8.3.2.2.1 Developmental Benefits*

Under the No Sale Option, developmental benefits for the GOM Region would decline, because leasing necessary to sustain the current level of activities would not occur. While there would continue to be development on blocks leased under the current and previous programs, the decision could be interpreted by industry as a harbinger, leading to relocation of industry activities and an outflow of population, along with associated losses of employment, tax collections, and revenue sharing over a prolonged period. To the extent that industry left the region and activity ceased on current leases and no new leasing were allowed, the development benefits of the offshore oil and gas industry in the GOM would decline fairly quickly.

#### *8.3.2.2.2 Environmental Risks*

With selection of the No Sale Option, environmental risks from oil and gas production may also decline, but would not be eliminated due to the presence of ongoing activity from previous programs and given that many of the substitute sources of energy which would be required in the absence of additional GOM production would likely take place in the Gulf Coast region. The No Sale Option would not contribute to additional environmental risks, but the risks outlined for the Region-wide Leasing Option would persist until all activity ceased in the GOM.

If leasing in the GOM were reduced or canceled during this Program, oil and gas imports and onshore production would need to increase substantially to maintain the volume of resources required by consumers. Supplemental oil and gas would be obtained through other sources, including inland domestic sources and imports. Table 8-4 shows where substitute energy sources would either be produced or imported to the United States in the absence of additional lease sales in the GOM region. Of the forgone production under the No Sale Option in the GOM, 58 percent of the energy (on a Btu basis) would be replaced with imports coming to the GOM ports. An additional 19 percent would occur within the Gulf Coast PADD through onshore production of oil and natural gas or additional offshore production on existing leases.

### *8.3.2.3 Modified Traditional Leasing Option*

The developmental benefits and environmental risks would be similar with the selection of the Modified Traditional Leasing Option as with the Region-wide Leasing Option.

**Table 8-4: Location of Substitute Energy Sources in Absence of GOM Sales**

| Substitute Energy Sources | PADD 1 Atlantic | PADD 2 Midwest | PADD 3 Gulf Coast | PADD 4 Rocky Mountain | PADD 5 West Coast and Alaska | Other U.S. Impacts | No Impacts |
|---|---|---|---|---|---|---|---|
| Imports | - | - | 58% | - | - | - | - |
| Onshore Oil Production | 0% | 0% | 2% | 0% | 0% | - | - |
| Onshore Natural Gas Production | 3% | 2% | 16% | 4% | 0% | - | - |
| Existing Offshore Production | - | - | 1% | - | - | - | - |
| Fuel Switching (including electricity, coal, and other) | - | - | - | - | - | 6% | - |
| Reduced Demand | - | - | - | - | - | - | 7% |

#### *8.3.2.4 Baldwin County Buffer Option*

##### *8.3.2.4.1 Developmental Benefits*

The selection of the Baldwin County Buffer Option would have minimal impact on the developmental benefits in the region. Given the size of this area, and the amount of acreage offered elsewhere in the GOM, it is unlikely that there would be any meaningful impact on activity levels and developmental benefits from this Proposed Program Option.

##### *8.3.2.4.2 Environmental Risks*

Under the Baldwin County Buffer Option, current leases could be explored and developed, but new leasing opportunities could not occur in the buffer area. Therefore, with selection of the Baldwin County Buffer Option, there would be no change in environmental risks to the region as no new leasing could occur. The baseline level of risk would remain the same as activities on current leases could continue, but no new risks would be introduced.

### *8.3.3 Atlantic OCS Region Benefits and Risks*

#### *8.3.3.1 Lease Sale Option*

##### *8.3.3.1.1 Developmental Benefits*

*Increased wages.* In general, the states along the Atlantic coast have reasonably large, developed centers of industrial activity that, in relative terms, are unlikely to be as affected by new OCS-related employment as communities in Alaska and along the GOM coast would be. Even in a period of sustained high prices, when there would be a great demand for more workers, the cities and many towns in Atlantic coast states could experience these benefits without the need to pay for new facilities and services (e.g., housing,

schools, and roads) that might be necessary to support an influx of workers in many communities in Alaska.

Many of the skilled workers necessary for OCS activity would likely initially come from other areas such as the GOM region. Should exploration be successful, workers could transfer from more established oil and gas areas and provide training to the already existing large workforce in the Atlantic region. The number of local workers would gradually increase in proportion as exploration and development activities increase and especially if commercially viable discoveries lead to production. As such, increases in high income jobs associated with new OCS activity are more likely to occur somewhat slowly, as exploration and development proceed.

Companies operating on the OCS and those firms supporting them most directly would need workers from a range of backgrounds. In particular, workers without technical degrees could achieve higher wages with OCS-related work. This would benefit both their families and their local communities. The presence of more high-paying jobs generally means more spending, income, and taxes, and more money for local businesses and municipalities. It also equates to more purchasing power and consumption of more goods and services, which benefits employees by increasing their standard of living and contributing relatively more to the economy.

*Additional jobs.* Employment benefits would be slight unless and until exploration led to commercial discoveries of oil and gas. Because the Atlantic states do not currently support an offshore drilling employee base, drilling crews would likely come from outside the region. A large proportion of workers during the exploration and development phases are likely to be sourced from other places, and early benefits could be greatly affected by the availability of existing infrastructure that can support the industry. However, exploration and development would lead to increased activity for some local businesses, especially those providing goods and services not specific to oil and gas operations, such as port services, transportation, food, and accommodations. Major discoveries of oil and gas resources would likely lead to greater local sourcing and resulting employment benefits as local businesses expanded and new support industries evolved. Development and production of OCS resources could provide consistent, long-term employment opportunities with resulting population increases due to workers moving into the area.

The Atlantic coast has areas with significant general infrastructure (e.g., roads, housing, and medical facilities) that could support some of the needs required for potential new exploration and development, but new infrastructure would be needed to support production activities. There are numerous construction companies and labor sources in the Atlantic Region that would benefit from local infrastructure construction associated with new leasing opportunities.

*Increased tax collection.* Property taxes generated by facilities serving onshore and offshore oil and gas activities would contribute to the local economy. Should the Atlantic OCS become an area of long-term development and production, this tax revenue, along with the increased revenues from highly paid residents, would contribute to state and local economies.

*Revenue sharing.* No revenue sharing program currently exists for states adjacent to the Atlantic Program Area. Should Congress decide to enact legislation to create or expand revenue sharing programs to the Atlantic states, these communities would receive an additional developmental benefit from new Federal

impact assistance or revenue-sharing programs. Though 8(g) revenue sharing from the OCS Lands Act applies to the Atlantic states, the Atlantic Program Area does not include any applicable acreage due to the 50-mile buffer area.

*Proximity of supply and consumers of energy*. One of the developmental benefits resulting from OCS activities in the Atlantic Program Area would be the proximity of oil and gas resources to the refineries and consumers. A discussion on relationship between the Atlantic Program Area and nearby energy markets is included in Chapter 6.

#### *8.3.3.1.2 Environmental Risks*

The Draft Programmatic EIS describes the important environmental, sociocultural, and socioeconomic resources of the Atlantic Program Area and discloses the potential environmental impacts associated with oil and gas leasing in that Program Area. Environmental risks associated with oil and gas leasing activities in the Atlantic could result in degraded air and water quality; offshore impacts on commercially valuable fisheries; reduced access to recreational activities such as sport fishing or coastal tourism; effects on federally protected species and habitats such as marine mammals, sea turtles, birds, or critical habitat areas for these species; and the introduction of noise into the marine environment. Should a large oil spill occur, it could significantly harm both offshore and coastal species and habitats as well as prevent human access to these areas. The emplacement or expansion of onshore infrastructure may result in modification of nearshore and onshore habitats such as coastal wetlands and beaches.

#### *8.3.3.1.3 Benefits and Risks on other Regions from Atlantic OCS Activities*

Given that there is no offshore oil and natural gas operations in the states adjacent to the Atlantic Program Area, and only limited onshore oil and natural gas industry, much of the initial skilled labor would commute from areas outside the region. Initially, employees would be expected to commute to and from the GOM states, Alaska, and other areas. Thus, these regions would also experience some of the developmental benefits. Once Atlantic OCS oil and gas production is established, a skilled workforce would develop and employees would likely commute from Atlantic states near port staging areas (for crew boat or helicopter transportation to offshore locations).

Some of the environmental risks from Atlantic OCS development could also be spread to regions outside the Atlantic Program Area. For example, as crews and supplies are brought from the GOM or other regions, transportation could cause environmental costs from air pollution or other impacts. Similarly, the means of transporting Atlantic oil to shore and the location of landfall or unloading could affect the environmental risks. If some oil comes to shore via tanker it would pose oil spill risk during travel to the region of the offloading port.

### *8.3.3.2 No Sale Option*

#### *8.3.3.2.1 Developmental Benefits*

If oil and gas leasing is not offered in the Atlantic OCS, no developmental benefits would occur.

#### *8.3.3.2.2 Environmental Risks*

Under the No Sale Option, no environmental risks from OCS exploration, development, and production activities would occur in the region. However, in the absence of Atlantic OCS production, alternative energy sources would be needed to meet the energy demand of the United States. Table 8-5 estimates the location of different energy sources that would likely be used to replace the anticipated oil and gas from the Atlantic OCS should the No Sale Option be selected for the Atlantic Program Area.

**Table 8-5: Location of Substitute Energy Sources in Absence of Atlantic Sale**

| Substitute Energy Sources | PADD 1 Atlantic | PADD 2 Midwest | PADD 3 Gulf Coast | PADD 4 Rocky Mountain | PADD 5 West Coast and Alaska | Other U.S. Impacts | No Impacts |
|---|---|---|---|---|---|---|---|
| Imports | 20% | - | 38% | - | 0% | - | - |
| Onshore Oil Production | 0% | 1% | 1% | 0% | 0% | - | - |
| Onshore Natural Gas Production | 10% | 1% | 14% | 1% | 0% | - | - |
| Existing Offshore Production | - | - | 1% | - | - | - | - |
| Fuel Switching (including electricity, coal, and other) | - | - | - | - | - | 6% | - |
| Reduced Demand | - | - | - | - | - | - | 7% |

Under the No Sale Option, no production would occur on the Atlantic OCS. However, oil and gas supplies would still be obtained in or by transportation through the region. Instead of being from OCS production, 30 percent (on a Btu basis) of the forgone Atlantic OCS production under the No Sale Option would still be produced in the Atlantic PADD (through onshore natural gas production) or transit through the Atlantic planning areas (through replacement imports). Of the production that would have occurred in the Atlantic, 54 percent would be replaced in the Gulf Coast (again from increased offshore production, imports, and onshore production). Additional energy substitutes (6 percent of the production that would have occurred in the Atlantic) would come from fuel switching to other electricity, coal, etc., but the location of these substitute energy sources is not identified in this analysis. Because there is no OCS leasing in the Atlantic, these energy substitutes are currently in use. If the Lease Sale Option was selected and production began in the Atlantic region, Atlantic OCS production would replace the energy substitutes.

Table 8-5 demonstrates that even with the selection of the No Sale Option, the environmental risks to the Atlantic Program Area are not eliminated. Table 8-7 monetizes the environmental and social costs by region if the No Sale Option were selected in every program area.

## 8.4 WIDELY DISTRIBUTED BENEFITS AND RISKS

### *8.4.1 Widely Distributed Benefits*

As discussed, many of the developmental benefits of the Program occur in onshore areas adjacent to the OCS program areas included for lease sale. In addition to these benefits, substantial benefits also accrue to the United States as a whole as widely distributed benefits. The oil and gas industry is integrated with the rest of the U.S. economy; therefore, growth and profitability in the oil and gas sector have positive and far-reaching economic impacts. Current employment benefits from OCS leasing are largest in states with the most oil and gas activity, namely Texas and Louisiana. However, OCS leasing supports thousands of jobs and millions of dollars in GDP (value added) in coastal and inland states alike throughout the United States. Benefits flowing from Federal leasing revenues (bonuses, rents, and royalties) tend to be widely distributed among the geographic regions of the United States. In FY 2014, OCS oil and gas leasing provided more than $7 billion in leasing revenues, which accrue to the general treasury (ONRR 2015c). As general treasury revenues, the money is spent throughout the country for national defense, benefits programs, etc. Future OCS leasing and development will also contribute to the national benefits of additional oil and natural gas production.

Though portions of certain revenues are distributed regionally to states through 8(g) and GOMESA revenue sharing programs, the vast majority of leasing revenues are disbursed into the U.S. Treasury General Fund and then appropriated by Congress for various Federal functions. Another small percentage of OCS funds is appropriated to the Historic Preservation Fund and the LWCF. The Historic Preservation Fund was created to provide grants to states, Tribes, local governments, and non-profit organizations to preserve historic places. The LWCF provides assistance to states and local efforts to acquire land for parks and recreational facilities. Because states and organizations around the country can apply for grants and assistance, these funds provide national benefits from OCS development as well as help to offset or mitigate environmental risk for communities near oil and gas activities. The Trust for Public Land conducted a study of the return on LWCF investment and found that every $1 invested returned $4 in economic value from natural resource goods and services (The Trust for Public Land 2010).

Taking into account all the industry spending, government revenues, and industry profit generated by OCS leasing activity in FY 2014, BOEM estimated that more than 650,000 jobs were sustained, and more than $64 billion of value added (representing the contribution to GDP) was generated. Much of the impact from industry spending is proximate to the region of OCS activity, but the benefits from government spending and industry profits are distributed throughout the country. An OCS oil and gas project requires equipment and supplies for exploration, development, platform fabrication, pipeline construction, air and water transportation, and other activities. Not only does the industry purchase goods and services from vendors and suppliers across the country, but its work schedules (usually a week or more offshore, followed by the same period off duty) allow offshore workers to commute even from thousands of miles away.

Approximately half of the current total employment and GDP contribution of GOM OCS activities are concentrated in the GOM states, whereas the remainder is shared throughout the United States. Table 8-6 and Figure 8-1 show BOEM's estimate of economic impacts in FY 2014 from current OCS activity including industry spending, company spending of profits, and government revenue. Figure 8-1 shows

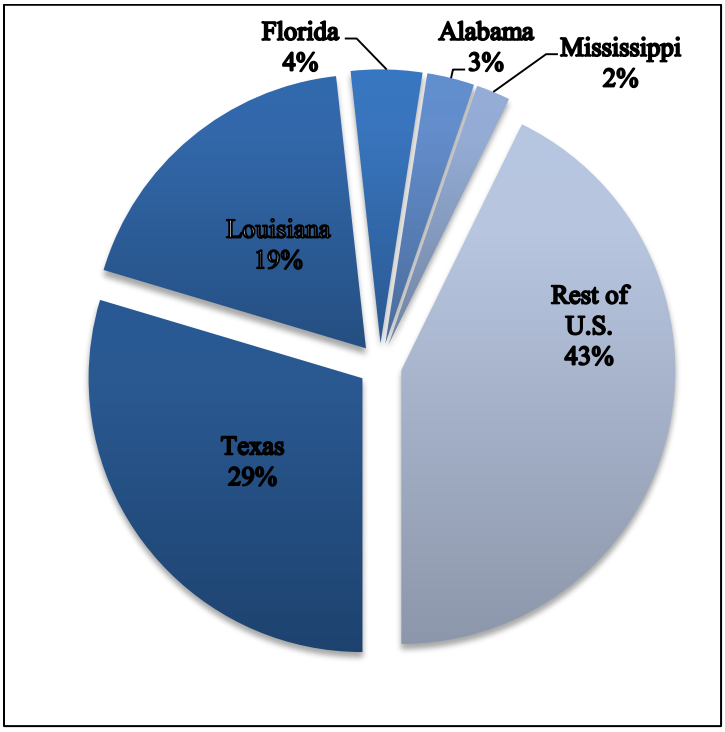
the distribution of total jobs to the GOM states and to the rest of the United States. Table 8-6 and Figure 8-1 represent BOEM's estimate of the current level of economic activity based on current OCS leasing and activity. As sales occur in upcoming programs and exploration and development occurs in other regions, these estimates and locational distributions will change, but historical values are included to be illustrative of the types and magnitudes of impacts that could be expected.

**Table 8-6: Total Economic Impacts from FY 2014 OCS Activity**

| Area | Total Output ($ billions) | Total Value Added ($ billions) | Total Jobs (thousands) |
|---|---|---|---|
| Alabama | $2.9 | $1.5 | 18 |
| Florida | $4.4 | $2.4 | 27 |
| Louisiana | $19.1 | $9.7 | 121 |
| Mississippi | $2.0 | $1.0 | 13 |
| Texas | $36.4 | $20.4 | 193 |
| Rest of the U.S. | $48.6 | $29.4 | 278 |
| **Total** | **$113,472** | **$64,430** | **651** |

**Notes**: Includes government spending of OCS revenues, industry profits, and industry spending. Totals may not sum due to rounding. Methodology is explained in USDOI 2015. Total output is the total estimated value of production of goods and services supported by GOM activity. Value added is the difference between estimated total output and the cost of intermediate inputs (contribution to GDP).

**Figure 8-1: Distribution of Total Jobs Supported by FY 2014 OCS Activity**



In addition to employment benefits, OCS oil and gas activities generate substantial industry profits that provide dividends to shareholders, and serve as a source of investment capital to ensure future growth and innovation. These outcomes positively impact the entire economy to a significant degree.

In addition to monetary benefits to the United States from OCS activities, development of the OCS provides other national benefits that are less easily quantified. One of these benefits is a reduction in the U.S. trade deficit with reduced dependence on imported oil. Domestic energy production also reduces risks to national security and adds to supply that can fulfill U.S. energy needs. The recent increases in oil production from tight formations, added to oil produced by conventional means, are largely responsible for declining oil prices that exist in spite of increased unrest in and near several major oil-producing countries. These national benefits from OCS production are discussed in more detail in Chapter 1.

In addition to receiving the financial and national security benefits that result from OCS oil and gas development, the United States benefits through reduced use of substitute energy sources when OCS oil and gas are consumed. As discussed in Section 5.3, in the absence of OCS production, energy markets will respond to the slightly higher oil and gas prices by substitution of energy from other sources and, to a much smaller extent, reduced consumption. The production of OCS resources reduces the United States' need for additional onshore oil and natural gas production and oil imports, and it prompts some fuel switching from coal and other sources of electricity. Overall energy consumption would be reduced only slightly in the absence of any given quantity of OCS oil and gas. Substitute sources of energy have their own environmental and social costs, which are avoided with OCS production (e.g., air emissions, oil spill risks).[60]

Section 5.3 presents the incremental environmental and social costs of the program, which net the environmental and social costs of these energy substitutes with the environmental and social costs of the Proposed Program Options. The incremental environmental and social costs calculation in the net benefits analysis of Section 5.3 is conducted from a national approach where the costs and benefits to the United States as a whole are represented. The analysis shows that the environmental and social costs of energy substitutes are greater than those of the Program in every program area. This means a benefit of OCS production is avoided environmental and social costs. In Chapter 5, the costs of the energy substitutes are presented with the program area in which they would be required if the No Sale Option were selected in that area. In some cases, the areas that have OCS production will be the same areas where reduced substitutes are needed (e.g., OCS production from the GOM reduces the need for additional imports, resulting in lower risks of spills from tankers traveling through the GOM). However, in other instances, the social and environmental costs of OCS production are not necessarily realized proportionally in the same region as the benefits of not relying on the energy substitutes (e.g., Alaska OCS production reduces the need for additional foreign imports, resulting in different transportation flow patterns and risk in Alaska, which could, in the absence of such Alaska OCS production, be borne elsewhere in the country). This equitable sharing analysis considers the regional aspects of OCS leasing and presents these No Sale Option costs in the program area in which they would occur in the absence of a new OCS leasing program.

[60] BOEM does not include environmental and social costs imposed outside the jurisdiction of the United States (e.g., the costs imposed on countries exporting oil such as Canada or Venezuela). The OECM does include the impact of imports (through increased oil spill risk and air emissions) once they enter U.S. waters.

Table 8-7 shows a comparison of the regional and national cost allocation for the mid-price case. The first data column of Table 8-7 shows the environmental and social costs of the Program activity for the mid-price case. The second and third columns show the environmental and social cost of selecting the No Sale Option in all program areas (i.e., no proposed OCS lease sales anywhere). As shown, total environmental and social costs are equivalent under both the national allocation approach (second data column) and the regional allocation approach (third data column). Under both approaches, the OECM calculates the estimated environmental and social costs of the No Sale Option in the area in which they are expected to occur. Under the regional allocation approach, these costs are allocated to the planning areas in which they would occur (or to the non-coastal U.S.). Alternatively, under the national allocation approach, these same costs are allocated to the program areas where the resources that must be replaced are located (i.e., the program areas for which the No Sale Option would be selected). The national perspective is appropriate for the net benefits analysis, because it allows the Secretary to easily determine the level of benefits and the level of costs to the United States likely to result from selection of each Program Option. However, the regional allocation approach also provides important regional information on the trade-offs between having and not having OCS lease sales. The only difference between the two columns in Table 8-7 is whether the costs are attributed to the areas in which the forgone resources are located or to the areas that would experience the environmental and social costs likely to result from producing and getting those resources to market.

**Table 8-7: Mid-Price Case – Regional vs. National Allocation Comparison ($ millions)**

| Planning Area | Program Costs | No Sale Option Costs: National Allocation | No Sale Option Costs: Regional Allocation | Incremental Environmental and Social Costs: National Allocation | Incremental Environmental and Social Costs: Regional Allocation |
|---|---|---|---|---|---|
| Beaufort Sea | 230 | 4,323 | 0 | -4,093 | 230 |
| Chukchi Sea | 154 | 3,262 | 0 | -3,108 | 154 |
| Cook Inlet | 20 | 472 | 0 | -452 | 20 |
| Washington-Oregon | 0 | 0 | 25 | 0 | -25 |
| Central California | 0 | 0 | 94 | 0 | -94 |
| Southern California | 0 | 0 | 202 | 0 | -202 |
| Western Gulf | 750 | 1,901 | 382 | -1,151 | 369 |
| Central Gulf | 3,443 | 9,777 | 172 | -6,335 | 3,270 |
| South Atlantic | 0 | 0 | 0 | 0 | 0 |
| Mid-Atlantic | 525 | 2,419 | 5 | -1,894 | 521 |
| North Atlantic | 0 | 0 | 28 | 0 | -28 |
| Non-Coastal U.S. | 0 | 0 | 21,247 | 0 | -21,247 |
| **Total** | **5,122** | **22,155** | **22,155** | **-17,032** | **-17,032** |

**Note**: For easy comparison with results from the national perspective, planning area names are used to show the rough distribution of environmental and social costs to both the planning areas and those coastal states adjacent to them. The impacts on the non-coastal United States represent impacts that are experienced from the production of onshore sources of energy. These environmental impacts could be experienced in coastal states to the extent that onshore sources of energy are produced in those states.

For example, given the level of anticipated production in the Chukchi Sea and the likely sources of replacement energy, the OECM calculates that the environmental and social costs of the No Sale Option are $3,262 million. As shown in the "national allocation" column of Table 8-7, under the national allocation approach these costs are attributed to the Chukchi Sea Program Area. However, as demonstrated earlier in Table 8-2 in Section 8.3.1.2.2, these No Sale Option costs would actually occur elsewhere in the United States. As that table shows, 58 percent of the forgone production from the Alaska program areas would be replaced with imports to the west coast. Thus, a portion of the $3,262 million in environmental and social costs under the Chukchi Sea Program Area No Sale Option would be attributed to the west coast planning areas under the regional allocation approach. This is shown in the "regional allocation" column of Table 8-7 where there are no costs associated with the Chukchi Sea Planning Area, but there are costs in the Washington-Oregon, Central California, and Southern California Planning Areas. Again, from Table 8-2 in Section 8.3.1.2.2, an additional 28 percent of the forgone production from the Alaska program areas is replaced by onshore production. Under the regional allocation column, these costs are included in the Non-Coastal U.S. row, which is the last line in Table 8-7.

The key to Table 8-7 is that the national and regional allocation approaches produce the same levels of cost (the United States incurs $22 billion dollars in total environmental costs), but those costs can either be attributed to the planning areas where the forgone resources are located or to the general locations where the costs would be experienced, and these geographic allocations can be very different. The last two columns in the table show the incremental environmental and social costs under both the national and regional allocation approach. These numbers represent the environmental and social costs of the program by planning area. Therefore, a negative number is an avoided cost (i.e., a benefit of having the program). For example, the states along the North Atlantic Planning Area avoid $28 million in environmental and social costs as a result of the OCS program because tankers, which would have brought imports to North Atlantic ports, are no longer necessary given the additional domestic offshore production. Under the regional approach, the six program areas with OCS activity as a result of this program show net costs, but the benefits of avoided costs for other areas result in a net national benefit of $17 billion. These regional allocation costs show the Secretary the regional trade-offs in environmental and social costs in the absence of an OCS program. The avoided costs of having an OCS program are a widely distributed benefit of the program.

### *8.4.2 Widely Distributed Risks*

Environmental risks that accrue on a national level from oil and gas leasing activities could result in a direct impact on human health or economic stability. However, there are many risks that are not easily quantified and that could present short- or long-term implications on a national scale.

Human health and well-being is affected by numerous, interrelated and unrelated activities, one of which is the exploration, development, and production of oil and gas resources on the OCS. The primary direct impact pathway from oil and gas exploration, development, and production activities to human health is degradation of air quality through emissions. Air emissions affect both the health and quality of life of humans directly (e.g., increased prevalence of asthma or other respiratory illnesses) and contribute broadly to the effects of global climate change. BOEM also recognizes that the broad marine and coastal ecosystems that may be impacted by oil and gas activities provide a variety of other ecosystem services including food, carbon sequestration, recreation, and aesthetics.

Risks associated with air quality are largely regional. However, the risk is also one of national (and international) scale due to the fact that greenhouse gas (GHG) emissions are one of the causes of climate change. Climate change is a global phenomenon driven by multiple factors including human and natural influences, so predicting climate change impacts requires consideration of large-scale or even worldwide GHG emissions, not just local emissions. Climate change predictive capability (modeling) cannot estimate a particular, localized impact of GHGs from a particular source or sources such as oil and gas activities associated with the Program. In addition, because some GHGs like carbon dioxide can persist in the atmosphere for up to a century after emission, the potential impacts of any source could extend well beyond the active lifetime of the source or even the Program. See the Draft Economic Analysis Methodology paper for estimates of GHGs likely to be emitted as a result of the activities associated with the DPP decision and those associated with energy substitutes under the No Sale Option.

The environmental risk of a low-probability, catastrophic discharge event, such as the *Deepwater Horizon* accident, is primarily regional. However, the compensation costs for such events and for other losses not attributable to specific parties are shared by companies and individuals throughout the country. For example, after the *Deepwater Horizon* oil spill, any shareholder of BP stock was affected by compensation liabilities associated with the spill. In that case, there was a massive transfer of funds to the Gulf coast for cleanup and compensation from an international company with widely dispersed operations and stockholders. A less dramatic example would be industry payments into the Fishermen's Contingency Fund, which compensates U.S. commercial fishermen and other eligible citizens and entities for property and economic loss caused by obstructions related to oil and gas development activities on the OCS, representing individually small, widespread costs to provide more concentrated compensation to a few local, negatively affected entities.

The risks of environmental impacts from the Program are not limited to the United States. The contiguous United States is bounded by Canada on the north and Mexico on the south, and the Commonwealth of the Bahamas and Cuba are 50 miles and 110 miles, respectively, from the coast of Florida. In the Arctic, the Alaska OCS is bounded by Canada to the east and Russia to the west. These countries could experience environmental impacts from oil and gas leasing activities, especially if a catastrophic discharge event occurs in the vicinity, and the physical and environmental conditions (e.g., wind direction, current flow) are conducive to the spread of oil outside of U.S. waters. These countries could also be conducting their own oil and gas activities that, regardless of any decision by the United States, would increase the risk to U.S. waters and coasts. Many long-lived marine species such as whales, dolphins, sharks, and tuna could have distributions that cross international boundaries, as well. Impacts on these species or populations originating within U.S. waters could be detectable within the waters of other countries and vice versa.

## 8.5 SUMMARY

Regions share both the benefits and risks for a program area with oil and gas exploration and development. Regional risks include possible environmental impacts that could negatively affect marine and coastal resources. A wide range of risks are discussed, which include impacts on commercial fishery stocks, other uses of the ocean, or availability of subsistence resources. These risks vary greatly depending on the sensitivity of an area to perturbation, the types and scale of oil and gas activities, existing OCS activities, and the presence and distribution of environmental resources such as fish, birds,

or coral reefs. Regional benefits include the increases in employment and wages generated from oil and gas activities. Revenue sharing through the 8(g) provision of the OCS Lands Act will continue to contribute economic benefits to states where the Program Area includes lands within 3 miles of the Federal-state boundary. GOMESA revenue sharing will continue to contribute economic benefits to the GOM. Other potential revenue sharing programs would have to be created by Congress.

Nationally, there are economic benefits associated with oil and gas activities, including employment and wage benefits for widely distributed workers, and the overall contribution from oil and gas revenues to the U.S. economy. National risks include threats to global climate health from damaged coastal and marine ecosystems and the introduction of additional GHGs into the atmosphere. Additional domestic oil and gas production reduces the need to obtain oil and gas from other domestic and foreign markets, reducing environmental risks from onshore oil and gas activities, coal and other substitutes, and oil imported by tanker, as well as reducing the overall trade deficit and increasing energy security.

Alaska has an established oil and gas industry onshore and in state waters. Assuming prices and other conditions were sufficient to prompt successful industry activity on the OCS, the Program would sustain and add high-paying jobs for the more populated areas of Alaska and possibly protect vital oil and gas tax revenues for the state, as well as local governments near oil and gas activity. It also would increase environmental risks for communities and natural resources near OCS blocks with significant levels of activity. If prices remain low throughout the life of the Program, it is unlikely to provide lasting benefits or risks outside the Cook Inlet Program Area. In a sustained high-price environment, these effects would be magnified, bringing both the benefits of higher incomes and steady, increased revenue streams, but also increased risks of harmful environmental effects and possible strains on community lifestyles and infrastructure in some areas. Selection of the No Sale Option would shift benefits and risks almost entirely to other areas of the country (see Table 8-2).[61] In addition, due to the questionable viability of TAPS in the face of declining North Slope production at Prudhoe Bay and the unique relationship between revenues from oil-related activities in northern Alaska and state and local government revenues, selection of the No Sale Option could have critical impacts beyond those that would be experienced in other onshore regions.

The oil and gas industry has been a major part of state and local economies along the GOM for decades. The GOM coast also hosts numerous oil refineries and gas processing facilities, and it is a major source of oil imports brought by supertankers. Decades of production have led to declining resources in some areas of the GOM; nevertheless, the Program would support existing patterns of employment and government revenue collections. In a sustained low-price environment, it would cushion, but not prevent, negative socioeconomic impacts on local communities, while in a sustained high-price environment, it could exacerbate strains on local housing and infrastructure. There would be accompanying environmental risk to GOM environmental resources, but sustained or increased production from the GOM would displace risks imposed by energy substitutes to a far greater extent than would be the case for Alaska or the Atlantic regions (see Table 8-4). Selection of the No Sale Option would hurt employment in those industries supporting exploration, development, and production, as well as the resulting revenue base for state and local governments. This would be less true for refinery-related jobs and revenues, given that

[61] Although Alaska is included in PADD 5, increased environmental risks from imported oil would fall almost entirely on the West Coast. Because the west coast would be a major consumer of any Alaska OCS oil, it inevitably would face environmental risks posed by oil transportation under either the Proposed Program Options or the No Sale Option.

roughly 60 percent of forgone oil production would be replaced by imports coming into GOM ports (and, to a lesser extent, by increased production from existing OCS leases). The risks of oil spills, air quality degradation, and other environmental and social harms under the No Sale Option appear to be greater for the GOM area—not just to the country, as is the case for the other regions—than those imposed by the Program.

The Atlantic states are fairly well developed, with large population bases. There is some oil and gas activity, primarily in western parts of those states, and there are a few major refineries, but in general the industrial base is not oriented toward serving the oil and gas industry. For these states, the Program is unlikely to provide major developmental benefits or major environmental risks unless and until companies are able to begin the production anticipated in the analysis. Much of the exploration and development activity is likely to be staged from the GOM states and elsewhere until commercial discoveries lead to production. There would, however, be economic benefits near some ports and for some companies that provide goods and services not specific to the oil and gas industry. With production, there would be the potential for a range of high-income jobs and much greater development of a local service industry, and there would be environmental risks of oil spills, air quality degradation (primarily if oil were shipped, rather than piped, to shore), and construction in the vicinity of pipeline landings and rights-of-way. If the No Sale Option is selected, the Atlantic states would lose the opportunity for the developmental benefits of the Program, but would benefit from reduced environmental risks. As implied by Table 8-5, the states near the Atlantic Program Area would still bear some environmental risk from the energy substitutes, but it is likely that most of the avoided risk would shift to the GOM states.

# Chapter 9 Laws, Goals, and Policies of Affected States and Industry Interest

## 9.1 LAWS, GOALS, AND POLICIES OF AFFECTED STATES

OCS Lands Act Section 18(a)(2)(F) (see Section 2.2) requires BOEM to consider laws, goals, and polices of affected states that are specifically identified by their Governors. BOEM received 9 comment letters on the DPP representing 11 states from Governors (separately or as part of the OCS Governors Coalition) or state agencies on behalf of the Governor. These letters identified laws, goals, and/or policies that the state deemed relevant for the Secretary's consideration. Comments from Governors and state agencies are summarized in Table 9-1. More detailed comment summaries are presented in Appendix A. Comments by OCS region and planning area are discussed in the following sections.

**Table 9-1: DPP Comment Summaries from Governors**

| Commenter(s) | Comment Summary |
|---|---|
| Alaska | Concerned about delayed Beaufort Sea lease sale; if lease sale does not occur in 2017, requests that it be held in 2018. |
| Washington State | Opposes including Arctic areas in the Program. |
| New Jersey | Opposes inclusion of Atlantic planning areas. |
| Delaware | Appreciates exclusion of areas off its coast; concerned over Mid-Atlantic activities impacts. |
| Maryland | Did not state support or opposition but directed the Department of Natural Resources (DNR) send technical comments to assist BOEM in developing the issues needed to be considered in the Proposed Program and in the Programmatic EIS. DNR comments covered issues such as impacts from oil spills and day-to-day drilling activities on ocean-dependent industries, ports and coastal communities. |
| Virginia | Supports Mid-Atlantic sale; stated need for revenue sharing. |
| North Carolina | Requests a decrease of the Atlantic buffer to 30 miles, holding the Atlantic lease sale earlier in the Program, and an additional Atlantic lease sale. Without revenue sharing, support may be withdrawn. |
| South Carolina | Raised environmental concerns and requested lease conditions; stated need for revenue sharing. |
| OCS Governors Coalition Letter Signatories (AL, MS, ME, VA, and NC) | Requests no further narrowing and discussion with other stakeholders/users of the areas. Requests additional and earlier Alaska and Atlantic lease sales. Wants expanded revenue sharing. Requests a 15-mile no-leasing buffer off Baldwin County, Alabama (on behalf of the Governor of Alabama). |

**Key**: AL = Alabama; ME = Maine; MS = Mississippi; NC = North Carolina; VA = Virginia

### *9.1.1 Alaska Region*

The Governor of Alaska requested the lease sale in the Beaufort Sea be scheduled for 2018 instead of 2020 if the current Program's lease sale is not held in 2017. The Department of Natural Resources requested that all lease sales be held as soon as possible. Two Alaska boroughs were generally supportive

of some activity, recognizing the economic benefits, but with some deferrals to protect the subsistence lifestyle. See the comment summaries for the Kenai and North Slope Boroughs in Appendix A.

### *9.1.2 Pacific Region States*

The Governor of Washington opposes opening up areas of the Arctic coastline to oil and gas drilling, stating that drilling in this area poses a huge potential ecological threat, should there be a spill.

### *9.1.3 Gulf of Mexico Region States*

There were no separate comments received from the states adjacent to this region. The Governors of Alabama and Mississippi commented as part of the OCS Governors Coalition in support of lease sales in all DPP areas and revenue sharing, and the Coalition requested a no-leasing buffer within 15 miles of Baldwin County, Alabama. A stipulation for no-surface-occupancy within 15 miles of Baldwin County has been in use for Central GOM sales since 1998.

### *9.1.4 Atlantic Region States*

Comments were received from 7 of the 14 states adjacent to the Atlantic Region. Of the seven state respondents, Virginia and North Carolina support inclusion of the OCS off their coasts in the 2017–2022 Program. North Carolina also requested that the 50-mile buffer be reduced, the proposed sale be held earlier in the program, and a second Atlantic sale be added. Delaware, Maryland, and New Jersey expressed concern about oil and gas activity off the Atlantic coast. South Carolina's Department of Health and Environmental Control requested narrowing the scope of the areas as the consequences in a broader area are harder to predict. The Governors of Maine, Virginia, and North Carolina also commented as part of the OCS Governors Coalition in support of increased access to Atlantic oil and gas resources. North Carolina, Virginia, and the signatories of the OCS Governors Coalition (including North Carolina and Virginia) requested revenue sharing. Numerous local governments commented on the DPP, many in opposition to potential oil and gas activity off the Atlantic coast.

## 9.2 INDUSTRY INTEREST

In response to the DPP request for comments, BOEM received 13 responses from companies and associations in the energy industry that explore for and produce oil and gas. Of those responses, many supported continuing to include the DPP program areas in the Proposed Program, but asked for more and/or earlier sales. Table 9-2 summarizes the comments on specific planning areas that were received by industry. Summaries of substantive comments are included in Appendix A.

**Table 9-2: Summary of Energy Exploration and Production Industry Comments from the DPP**

| Energy Exploration and Production Companies and Associations | Alaska Planning Areas | | | Atlantic Planning Areas | | GOM Planning Areas | | Notes |
|---|---|---|---|---|---|---|---|---|
| | Beaufort Sea | Chukchi Sea | Cook Inlet | Mid | South | Western | Central | |
| Alaska Oil and Gas Association | • | • | | | | | | Supports expansion in Alaskan Arctic OCS. |
| American Petroleum Institute (API) et al. | • | • | • | • | • | • | • | Supports expansion into other OCS areas, including the entire Mid- and South Atlantic Planning Areas. |
| API | • | • | • | • | • | • | • | |
| Chevron U.S.A Inc. | • | • | • | • | • | • | • | Supports another lease sale in the Atlantic Region. |
| ConocoPhillips | • | • | • | • | • | • | • | Supports expansion into additional areas in the Atlantic Region, area-wide leasing in the Arctic, and making localized portions of the Western GOM available. |
| Deep Gulf Energy | • | • | • | • | • | • | • | Supports expansion into additional areas in the Atlantic Region. |
| Diamond Offshore | | | | • | • | • | • | Supports additional lease sales in the Atlantic. |
| ExxonMobil | • | • | • | • | • | • | • | Supports inclusion of all Atlantic OCS areas. |
| International Association of Geophysical Contractors (IAGC) | | | | • | • | | | Statement released showing support of the five-year leasing plan in the Atlantic planning areas, but do not include details of support in this letter. |
| Louisiana Mid-Continent Oil and Gas Association | • | • | • | • | • | • | • | Supports additional offshore access in the Alaska, Atlantic, and GOM Planning Areas. |
| Louisiana Oil and Gas Association | | | | | | • | • | Supports expanded development of all areas of the GOM. |
| Noble Energy | | | | • | • | • | • | |
| Shell Offshore, Inc. Energy Resources Company | • | • | | • | • | | | Supports another lease sale in the Atlantic Region. |
| Statoil (Foster Wade) | • | • | • | • | • | • | • | Leaseholder in deepwater GOM; concurs with API et al. comments on PEIS. |
| Statoil (Jeremey Averty) | • | • | • | • | • | • | • | Supports consideration of additional leasing in the Arctic and Atlantic, and area-wide leasing in the GOM. |
| Tennessee Oil and Gas Association | • | • | • | • | • | • | • | Supports broad access to the Atlantic, Alaska, and GOM. |

**Notes**: Support for expansion in areas excluded from leasing in the DPP decision (e.g., the Pacific, North Atlantic, and most of the Eastern GOM) is not shown in this table. See Appendix A for comment summaries.

**Key**: •= Region was mentioned in the comment letter without specific reference to individual planning areas, or all planning areas in the specified region were mentioned.

# Chapter 10 Assurance of Fair Market Value

Section 18(a)(4) of the OCS Lands Act requires receipt of FMV from OCS oil and gas leases: "Leasing activities shall be conducted to assure receipt of fair market value for the lands leased and the rights conveyed by the Federal Government." Furthermore, the OCS Lands Act states that the OCS is a "vital national reserve held by the Federal Government for the public, which should be made available for expeditious and orderly development, subject to environmental safeguards, in a manner which is consistent with the maintenance of competition and other national needs" (43 U.S.C. § 1332 (3)). The consideration of FMV is an ongoing process through the different stages of the OCS leasing process. At this programmatic stage, BOEM finds, through the hurdle price analysis described in this chapter, that there is no reason to exclude any of the proposed program areas in the Proposed Program Options based purely on the price of oil and gas. However, through the balancing considerations required in Section 18, the Secretary may exclude areas for other reasons and FMV would still be assured, through BOEM's processes described in this chapter, for the lands leased.

While the OCS Lands Act mandates that BOEM ensure receipt of "fair market value," the Government Accountability Office has issued reports in recent years that refer instead to "fair return." FMV was operationally defined by the report entitled *Procedures for OCS Bid Adequacy Including the Final Report of the OCS Fair Market Value Task Force* (USDOI 1983) as related to the adequacy of the level of the high bid offered for a lease with given fiscal terms, not on the design or setting of the fiscal terms themselves. In contrast, the term "fair return" does give full consideration to whether all aspects of a lease sale, including fiscal terms, are likely to give an appropriate share of revenue to the Government. This chapter considers both the specific procedures designed to ensure FMV for a specific lease as well as the broader consideration of fair return.

To secure and maintain public trust in utilizing OCS resources, BOEM uses an established set of criteria, described herein, that provide adequate returns to the general public for the OCS rights issued. The assurance of FMV is a multi-phase process including national Program-level analysis, lease sale-level analysis, and, finally, analysis conducted prior to the issuance of an individual lease following a lease sale.

At the Program development stage, BOEM has adopted screening criteria that recognize the importance of considering the value of waiting to lease in carrying out its FMV responsibilities. BOEM considers the importance of timing using a hurdle price analysis. This analysis, described in detail in this chapter, gives an indication of program areas where delaying a sale offering may provide greater future economic value from the entire program area. Some other factors that could affect the value of waiting to lease are discussed qualitatively in Section 8.1.1.

Another component of assuring FMV, pertinent for both the Program and individual lease sale stages, is the consideration of the size(s) and frequency of lease sales. Both size and frequency can affect FMV because they can affect competition and pace of leasing. The size of a lease sale is determined based on several factors, including FMV considerations, economic efficiency, need for orderly development,

environmental sensitivity, marine productivity, and subsistence use. BOEM considers FMV during preparation and execution of the Program. Further discussion is provided in Section 8.3.2.

Following the size, timing, and location decisions formulated at the Program development stages, BOEM assesses other FMV-related components, such as bidding systems and fiscal and lease terms, at the lease sale stage to help ensure that the public receives a fair return when leasing resources. Regulations allow BOEM flexibility in tailoring these components to assure FMV in each program area at the lease sale stage. The stages and components of the FMV analysis are described herein.

The final assurance of FMV involves assessment of the bonus bids submitted for leases, which occurs for each individual lease receiving a bid shortly after a lease sale and prior to the time of lease issuance. The rules and procedures for this process were recently revised and are available at http://www.boem.gov/Fair-Market-Value/. These FMV assessments of the cash bonus bids, also referred to as determinations of bid adequacy, follow a two-stage procedure, and in the second stage, the Government's assessment of the high bid is based on a stochastic simulation model of the activities, results, and outcomes anticipated to occur post-sale related to exploration, development, and production of the oil and gas resources potentially contained on the applicable tract. Therefore, the bid adequacy determinations are in part based on forecasts of future prices and discovery amounts rather than on the actual value of the oil and natural gas eventually discovered and produced. Furthermore, consistent with the private formulation of the cash bonus bids, these determinations take into account existing statutory and regulatory conditions such as drilling requirements within the lease terms that may restrict lessee flexibility in attaining certain timing milestones.

## 10.1 Timing of OCS Lease Sales and Related Activities

In determining whether an area is ripe for inclusion at this Program stage, BOEM evaluates broad area-specific considerations, including a comparison of market prices to the calculated hurdle prices for oil and natural gas. However, in making the ultimate decisions on size, timing, and location, many other factors are considered, including coastal state, industry, or stakeholder interest as well as environmental factors (see Chapter 2).

The value of the OCS resources and associated leases is affected by the timing of leasing. Because OCS leases have fixed initial lease periods (described in Section 8.3.2) as required by the OCS Lands Act, lessees planning to explore and initiate development on an economic prospect must do so within that initial period. However, in certain cases, it may theoretically be better for the lessee to wait longer to explore and develop, but this cannot be accomplished if it requires waiting beyond the initial period. This situation could arise, for example, if the price of oil or gas were trending downward, but showing signs of recovery after the initial term. In this situation, the lessee cannot wait to explore and develop because the initial period would be nearing expiration, but—if indeed prices did recover after the initial term—it would be socially optimal for the lessee to wait since the value of the resources would increase. It is conceivable that greater value could be realized by waiting longer to lease in the first place, given the fixed length of the initial lease periods.

To account for the possibility of situations where the variation in future resource prices implies that exploration and development within the initial term of some leases could be privately profitable but not

socially optimal (as lessees may have to explore when it is slightly less profitable because the lease is near the end of the primary term), a hurdle price screen is employed.

The hurdle price screen is conducted at the Program stage to determine whether there are any geologic fields within a program area whose offering for sale in this Program would provide a greater economic value compared to delaying and offering for sale in a future Program. In this context, a hurdle price is defined as the program area-weighted BOE price above which immediate exploration of at least one undiscovered prospect as identified by BOEM's resource assessment is the most profitable timing option. Further, the hurdle price for the program area is compared to actual prices prior to each lease sale held under the Program. The hurdle price is one consideration, subject to uncertainty about future price projections, when evaluating an area before a lease sale and should be considered in conjunction with other factors. The same approach could be used to fine-tune the scope of a sale's offering, such as by water depth, as this analysis does for the GOM. Also appropriate at the lease sale stage is examination of fiscal terms for leases and how they might be tailored to improve timing of activities where option value (i.e., the value of waiting) is found to be significant. Although difficult to do in practice, conceptually setting fiscal terms appropriately (e.g., appropriate levels of minimum bids or royalties) can provide another policy instrument for discouraging the premature acquisition, exploration, and development of marginally valued blocks as these terms increase the costs of blocks, thereby making them uneconomic to acquire at market prices below the hurdle prices (Davis and Schantz 2000).

The logic of the argument that the greatest value can be obtained with consideration of the optimal timing of leasing extends beyond the volatility of price factor to include other areas of uncertainty, as discussed in Section 10.1.1.

### *10.1.1 Information and Uncertainty*

At the time of lease issuance, uncertainty exists regarding not only future prices, but also as to risked resource endowments, capital and operational costs, available technologies, environmental and social costs, and the prevailing post-sale regulatory and legal environments. An objective of both the Government and industry is to manage the risks associated with these uncertainties. With its fiscal terms, the Government, as the lessor, transfers most of the fiscal risk to the lessee in exchange for an upfront bonus bid, rentals on non-producing acreage, and a royalty interest if the lease enters production. The lessee assumes virtually all of the cost risk. Other risks are managed through employment of industry best practices, legal liability, and enforcement of safety and environmental laws and regulations governing OCS operations.

All of these considerations may be reflected in the FMV of the lease. The analysis described in this chapter avoids an overly narrow interpretation of fair "market" value, and considers aspects of the value of leasing that may be viewed as "social value," extending beyond the value that would be observed in private markets if the latter do not fully reflect externalities. Bearing that in mind, this chapter explains how decisions regarding the timing of leasing, at the appropriate points during preparation and conduct of the Program, may reflect consideration of how uncertainty and information might evolve.

#### *10.1.1.1 Option Value*

Option value is defined as the value of waiting to make an irreversible investment until critical new information arrives. In general, option value can be an element of the FMV of a lease, and its magnitude and significance is directly affected by components of uncertainty and information, or lack thereof. In designing the Program, BOEM provides the Secretary with information relevant to decisions on the size, timing, and location of lease sales. Public comments received about prior programs, as well as on the development of the 2017–2022 Program, have suggested that USDOI should consider option value while performing its size, timing, and location analysis to fulfill the FMV statutory requirement. The hurdle price analysis considers the uncertainty of oil and gas prices and the expected hydrocarbon endowment. This section discusses nonmarket factors that are reflected in option value in a broad sense.

When uncertainties exist, having the option to delay activities creates value as more information can be revealed and acted on in the future. However, once an action is taken, the presence of uncertainty is known to reduce the net benefits of a project because the action eliminates the value from the option of waiting to make that decision (Arrow and Fisher 1974). In connection with socially optimal offshore oil and gas development, the gist of option value is that a decision regarding whether to use an oil and gas asset can be modeled as a perpetual call option (Davis and Schantz 2000). From the Government's perspective, offshore oil resources are a perpetual call option in that the Government has the right, but not the obligation, to offer OCS areas for lease at any time in the future (i.e., the option does not expire). The decision regarding exercising the option at a particular time can reflect price volatility as well as emerging information about resources, costs, and risks when the social value of the option is in question.

The broad form of option value here includes what can be termed "quasi-option value." The concept of "quasi-option value" was identified by Arrow and Fisher (1974) and is defined as the "benefit associated with delaying a decision when there is uncertainty about the payoffs of alternative choices and when at least one of the choices involves the irreversible commitment of resources" (Freeman 1984). While traditional option value focuses on the value of an action now versus in the future, quasi-option value of an action is based on uncertainty and the value of information that can be gained now versus in the future. An important distinction in quasi-option value is what is uncertain and how those uncertainties are resolved. There are uncertainties about both the benefits of development and the benefits of preservation when choosing to offer or withhold an OCS area for oil and gas development. In the case of the uncertain preservation benefits, these uncertainties will likely only be resolved through receipt of additional information. This is defined as "independent learning" as the uncertainties can be resolved without development (Fisher and Hanemann 1987). However, in the case where many of the uncertainties revolve around the benefits of development, these uncertainties are likely only resolved with exploration and development, demonstrating "dependent learning."

In their work on option value, Fisher and Hanemann (1987) specifically discuss the example of offshore oil leasing, acknowledging the "dependent" nature of uncertainties given that the largest uncertainty lies in estimating the quantity of oil and gas resources, which can only be resolved by exploratory well drilling. Therefore, if the desired information regarding environmental and social costs is, or can be, obtained without drilling, which by nature embodies some degree of risk, then it is "independent" information, and the case for significant option value and deferral is strengthened. Conversely, if there is no way to obtain information other than by conducting exploration activities, then this aspect of option

value is ambiguous. As described by Fisher and Hanemann (1987), "[i]t surely requires no algebra to show that, if the information about the consequences of an irreversible development action can be obtained only by undertaking development, this strengthens the case for some development. The practical importance of this observation depends on the answers to two empirical questions. Is it true that the information can be obtained only by undertaking development? How much development is required in order to obtain the information?" To answer these questions, we must first consider the nature of the information being sought based on the many uncertainties surrounding offshore oil and gas development and how these uncertainties can be resolved.

#### *10.1.1.2 Considering Uncertainties for the Five-Year Program*

To determine whether the possibility exists for significant option value associated with delayed leasing, BOEM considers the uncertainties surrounding OCS activities and how these uncertainties could impact the value of OCS acreage. Resolving uncertainties can reduce risk and greatly change the value of a lease and corresponding societal value. The following sections discuss the uncertainties that can affect the potential value and possible risks of OCS oil and gas and how these uncertainties could be resolved. Major uncertainties surrounding oil and gas development are discussed in context of independent and dependent learning. Many include components of both, and these uncertainties tie to components of the net benefits analysis discussed in Section 5.3.

The discussion of uncertainties and option value must always consider the pyramidal structure of the Program development and lease sale processes. The Program development process begins by considering all leasing areas, and the potential areas are winnowed down into what is ultimately the final sale schedule. Program areas can be removed at any stage of the Program development process, but cannot be added back in once they are removed. Further, the Secretary has the flexibility to cancel a sale even after the Program is approved. Given these procedures, to maintain the maximum option value, USDOI may consider retaining Program Options in the initial stages of the Program in order to potentially hold sales in these areas during the next 5 years, should some of the independent information become available. Theoretically omitting any area from the Program can cause a loss of option value to the Government. USDOI retains the greatest flexibility, and therefore option value, by including areas in the Program, but it is also true that there can be instances where the Secretary may be justified in excluding an entire area from the program. These reasons could include the possibility that major environmental or comparative studies would not be completed and no new information would be available within the 5 years of the Program, or if the estimated developmental value of an area is so marginal that the probability of sufficient information being generated to improve its value is so negligible there is no value to including it in the Program. Excluding very marginal areas also reduces administrative and study costs. Further, as described in the balancing considerations of the Section 18 requirements, the Secretary may remove areas from the Proposed Program for many reasons through weighing all of the enumerated factors. Through BOEM's FMV processes, FMV would still be assured for lands leased throughout the Program.

The Secretary may choose to cancel lease sales if any important informational uncertainties have not been satisfactorily resolved at the lease sale stage. Further, sales could be scheduled later in the Program, to allow for additional information to be collected, as was done in the previous 2012–2017 Program. That Program deliberately scheduled Alaska planning area sales late in the Program to allow for further development of "scientific information regarding the oil and gas resource potential in these areas, as well

as sensitive habitats, unique conditions and important other uses, including subsistence hunting and fishing, that are present in Alaskan waters and must be reconciled with energy resource development" (BOEM 2012). Ultimately, the Secretary chose to cancel the Beaufort Sea and Chukchi Sea lease sales in response to low industry interest and low oil prices. By including the Beaufort Sea and Chukchi Sea Program Areas in the 2012–2017 Program, the Secretary created option value for these sales, which could have been held if different market conditions or levels of industry interest prevailed.

While it is possible to reevaluate and cancel sales during the sale planning process, it is important to be aware of the industry need for predictability and orderly leasing. An intended benefit of the Program lease sale schedule is that a schedule of possible lease sales within the period facilitates industry planning, operations, and scheduling, thereby increasing the value of OCS acreage. In contrast, a process in which there is no presumption that a program sale will actually be held as scheduled imposes costs on industry and decreases the value of OCS acreage.

At the Program stage, no irreversible commitment of resources occurs because, as discussed, the Secretary can always choose to cancel a sale. For these reasons, the lease sale stage is a more appropriate place to consider quasi-option value because that is when the irreversible leasing decision is made. However, the Program stage is where BOEM holistically considers all program areas and therefore it is helpful to discuss the nature of OCS oil and gas leasing and the resolution of uncertainty.

In addition to obtaining FMV for OCS resources, the OCS Lands Act mandates that OCS resources must be made available for expeditious and orderly development. The Congressional declaration of purposes in the OCS Lands Act Amendments of 1978 states that one of the purposes of the OCS Lands Act is to "make such resource[s] available to meet the Nation's energy needs as rapidly as possible" (43 U.S.C. § 1802(2)(A)). A further purpose is to "encourage development of new and improved technology for energy resource production which will eliminate or minimize risk of damage to the human, marine, and coastal environments" (43 U.S.C. § 1802(3)). Any decision to delay leasing based on the possibility of greater future value must be balanced with the requirement to expeditiously make prospective OCS oil and gas resources available. Through the Program development process and lease sale design process, the Secretary can evaluate decisions in conjunction with both mandates.

The next subsections consider the many different uncertainties that exist in OCS oil and gas development. Most of these uncertainties are discussed qualitatively with reference to the nature of the uncertainty and how the uncertainties could resolve themselves over time. This discussion is included because BOEM acknowledges the possibility for additional information that could affect the value of OCS resources over time. This value was also recognized by the court in *CSE v. Jewell* (779 F.3d 588 (D.C. Cir. 2015)).[62] While discussed, BOEM does not quantify the quasi-option value of each of these uncertainties given difficulties in quantifying the informational value of delay and lack of well-established methods to

[62] "There is therefore a tangible present economic benefit to delaying the decision to drill for fossil fuels to preserve the opportunity to see what new technologies develop and what new information comes to light." *CSE v. Jewell*, 779 F.3d 588 (D.C. Cir. 2015), pages 38-39.

quantify such considerations.[63] BOEM is evaluating what literature exists on quantifying the informational value of delay and could incorporate these methods in future program analyses.

While the majority of the uncertainties are considered qualitatively, BOEM includes a quantitative treatment of price and resource uncertainty. These uncertainties are discussed in Section 10.1.2, which describes the hurdle price analysis.

#### *10.1.1.3 Resource Uncertainty*

The fundamental unknown for offshore oil and gas leasing is the uncertainty of the resource endowment. The uncertainty associated with the presence and estimated quantity of oil and gas resources can only be fully resolved through lease acquisition and subsequent drilling of OCS acreage. In this sense, "dependent learning" is required to resolve uncertainty. Private companies must spend billions of dollars to acquire leases and analyze geologic information in an effort to discover and ultimately produce new oil and natural gas reserves that are undiscovered today.

At the initial stage of Program development, there is significant uncertainty regarding the individual and aggregate volumes of oil and gas that are present on unleased acreage. The Secretary is also uncertain about the extent to which these undiscovered resources are commercially viable and when those resources that are not currently commercially viable could become so, especially in relatively less mature OCS areas. BOEM's estimates of resources available in each of the planning areas are presented in the 2016 National Assessment (BOEM 2016a). A summary of the methodology for this assessment is presented in Chapter 5.

An example of how exploration of an OCS region has changed the knowledge of resource potential is provided by experiences in the GOM Region, where estimates of undiscovered oil resources have increased dramatically since the discovery of major deep water oil and natural gas fields. In deep water, increases in oil and gas potential have been facilitated by industry's development of new technology to explore for and extract oil and gas resources. In all water depths, the expansion of offshore infrastructure and new technology has allowed industry to produce smaller and more geologically complex reservoirs.

Conversely, exploration also can lead to reduced resource endowment estimates. The Navarin Basin in the Alaska OCS is an example of how exploration can render an area less attractive. A resource assessment published in 1985 reported that estimates of mean risked oil volumes in the Navarin Basin of 1.30 BBO were much larger than the Chukchi Sea's 0.54 BBO (MMS 1985). A 1983 lease sale in the Navarin Basin resulted in 163 tracts being leased for $633 million, followed by eight exploration wells. None of the wells discovered oil or natural gas pools and the subsequent geologic analysis severely downgraded the resource potential to 0.13 BBO in the 2011 assessment (BOEM 2014). There has been little or no subsequent industry interest in this area. Meanwhile, drilling results in the Chukchi Sea in 1990 and 1991, new technologies, and higher oil prices were key factors leading to the largest lease sale ever in the Alaska OCS, Chukchi Sea Sale 193, with 487 tracts leased for $2.66 billion in 2008. The current risked mean technically recoverable resource estimates for the Chukchi Sea increased by a factor of 30 over the 1985 estimate to 15.4 BBO and more than a factor of 25 to 76.8 Tcf of natural gas in this

[63] The D.C. Circuit court upheld BOEM's qualitative approach to considering option value in *CSE v. Jewell*, 779 F.3d 588 (D.C. Cir. 2015). The court found that "Interior acted reasonably in employing qualitative, rather than quantitative, measures of the informational value of delay." BOEM continues to study ways to quantitatively measure the informational value of delay.

frontier area. According to Shell, drilling results in 2015 found resources "not sufficient to warrant further exploration" in the explored prospect, which, in conjunction with other market factors, lead to a decline in industry interest in the region (Shell 2015). Of course, future drilling on other prospects, higher oil and gas prices, or other new information would have a great impact on the resources estimates in the region. Future exploration in this area will further decrease the uncertainties regarding its oil and gas resource potential.

While drilling is the most efficient way to reduce resource uncertainty, it is also possible to reduce uncertainty through improved knowledge about the resource potential using seismic surveys and exploration and development activities on nearby leases. Information from activities on nearby leases can only be obtained in areas where leasing already exists.[64] One important consideration for the Atlantic Program Area is the new information that could be available following seismic studies in the region. As noted in Section 8.1.1.1, only by drilling can the volume of oil and gas resources be established, but new seismic data could help to better define play boundaries and/or identify new plays along the margin. BOEM approved the ROD on the G&G PEIS in 2014. With completion of the G&G PEIS, companies can request authorizations to conduct seismic and other data acquisition activities in these Atlantic planning areas. While new seismic data could improve the ability to image potential hydrocarbon-bearing traps, this information may not significantly reduce resource uncertainties regarding the presence or volumetric ranges of potential oil and/or gas resources. Companies may have little incentive to conduct seismic and other G&G studies unless there is the likelihood of lease sales in the program area. The inclusion of the Atlantic Program Area in the Program could provide an additional incentive for industry to conduct seismic and other data acquisition activities, which will lead to more information that could be utilized to refine future estimates of potential resource endowments.

Because resources form the basis for the net benefits analysis, changes in perceptions of resource endowments could greatly change the ranking of the planning areas. The largest potential for resource growth or decline would be in the areas where the least exploration has occurred. However, it is unlikely that substantial information could be reliably compiled before some development has occurred. This is an example of dependent learning.

#### *10.1.1.4 Capital and Operating Cost and Extractive Technology Uncertainty*

Companies operating on the OCS face uncertainty regarding future capital and operating costs. This uncertainty is greater in frontier planning areas because much is still unknown about the costs. In the GOM, lessees have had decades of experience and there is generally less cost uncertainty. Costs cannot be known with certainty in frontier areas until exploration and development begin.

A portion of the cost uncertainty is driven by changes in resource prices. Increased oil prices create additional competition for existing drilling rigs and investment dollars from other parts of the world, which raises the cost of exploration, development, and production. Through internal modeling efforts and validation with external sources, BOEM has estimated that costs increase at roughly half the rate of increase in resource prices. In addition to price, capital and operating costs are driven by changes in international demand for oil and natural gas extraction resources. For example, Mexico's recent energy reforms could impact U.S. OCS capital and operating costs over the next few years since oil and gas

[64] This is the situation analyzed in the paper by Rothkopf et al. (2006), *Optimal Management of Oil Lease Inventory*.

opportunities in the southern portion of the GOM could increase competition for oil and natural gas investment dollars, and drive up demand for rigs and skilled workers.

According to the logic of option value, value can be enhanced by delay of action in a case where costs are currently deemed to be high, with a probability of decreasing in the future. In the case of OCS oil and gas, there is not a reliable method to know, or to predict, whether costs will decrease in the future. In addition to the capital and operating costs, technical challenges during the exploration and delineation of a particular prospect can result in drastic cost changes. For example, unexpected challenges can greatly influence project economics, such as drilling a well into a high-temperature/high-pressure reservoir or natural events such as hurricanes. This further demonstrates dependent learning.

Uncertainties surrounding the magnitudes of capital and operating costs also influence the net benefits estimates for each program area. Because the capital and operating costs are inherent in calculating the NEV (a major component of a program area's net benefits calculation), changes in costs could alter the estimate of NEV in each of the program areas.

Over time, innovative technology may become available to more efficiently or safely extract the oil and gas resources, and/or to reduce risks associated with their extraction. Well control and containment technologies are improving operators' ability to mitigate damages of a well control incident through closing the well, capturing the flow, or assisting in clean-up operations. This further illustrates the concept of dependent learning, which is an element in the option value calculus but is oftentimes not considered in comments received regarding the importance of taking into account option value concepts in program formulation.

#### *10.1.1.5 Environmental and Social Cost Uncertainty*

Additional environmental information is always becoming available. As part of the Program decision on size, timing, and location, the Secretary considers the state of available environmental and social cost information.

All of the environmental or social cost estimates in BOEM's analysis, particularly the impacts estimated in the OECM, are subject to uncertainty and future revision. One can envisage a range of uncertainty around any of the point estimates provided. Viewed from an analytical perspective, the situation is similar to that of resource estimates; there is some probability that environmental and social costs might be smaller or greater than the point estimates provided, and that directly affects the magnitude of the expected option value.

In contrast to resource estimates, most environmental impacts can be mitigated, remediated, or otherwise compensated. However, even with mitigations, certain impacts could be deemed as significant and irreversible. For many years, environmental scientists and economists have examined the risks of irreversible impacts, and some researchers have applied real options theory to irreversible issues such as species extinction and climate change.

Certain studies consider the uncertainty of the chances of oil and gas exploration and development causing species extinction, and the uncertainty of the value of a given species. Abdallah and Lasserre (2008) assert that logging in a certain forest might cross an ecological threshold leading to caribou extinction. Option value models formalize the intuition that logging is not beneficial unless the implied

risk is "low enough." The value lost if a species becomes extinct is also uncertain. As described by Kassar and Lasserre (2002), biodiversity relates to a "portfolio" of future uses for species.

Climate change uncertainties have been modelled through the use of probabilistic methods or thresholds and participatory approaches (IPCC 2007), but some "deep" uncertainties are not readily quantifiable (IPCC 2014). "Deep uncertainty" contains scientific uncertainty, lacks clear solutions, and arises from problems that are not well bounded. Kandlikar et al. (2005) propose a hybrid approach of using quantitative evidence as available with qualitative means to improve communicating problems of uncertainty.

Another study specifically considered the amenity value that would be lost with development of the Arctic National Wildlife Refuge. Conrad and Kotani (2005) estimate a "trigger price" for oil that would justify the loss in amenity value if development were allowed in the region. In theory, a similar approach could be applied to OCS leasing. BOEM is continuing to evaluate methods in which an amenity value could be incorporated into future hurdle price analyses.

The relatively few studies that apply real options concepts to possibly irreversible environmental impacts from oil and gas activities demonstrate the serious difficulty of assessing these risks. It is not hard to envisage the broad outlines of a real options model of environmental impact; but it is surpassingly difficult to specify and estimate a useful, empirical model of that type.

BOEM's Environmental Studies Program (ESP) recognizes the need for new environmental information and has funded more than $1 billion in research throughout its 40-year history, covering physical oceanography, atmospheric sciences, biology, protected species, social sciences and economics, submerged cultural resources, and environmental fates and effects. Information collected from BOEM's ESPIS and other sources is incorporated in environmental analyses conducted by BOEM and builds the foundation for science-based decision making throughout the Program development and leasing stages.

The ESP recognizes the different needs for information in each of the OCS regions and tailors the studies accordingly. In Alaska, the ESP focuses on many topics including protected species, physical oceanography, wildlife biology, subsistence and traditional knowledge, economic modeling, oil spills, and Arctic resources. In the GOM, studies focus on a wide range of subjects including oil spill modeling and deepwater oceanographic processes, archaeological and biological research, deepwater corals and habitat mapping, protected species observations and monitoring, and socioeconomic issues. Research in the Pacific region focuses on platform biology, an intertidal monitoring program, and renewable energy development. In the Atlantic, much of the recent focus of the ESP has been on establishing environmental baseline data and on visual impacts, space use conflicts, and associated economic effects of renewable energy projects, but some research, especially that conducted historically, has focused on the impacts of oil and gas projects in the region.

BSEE also has an active safety and technology research program. For example, the long-standing Oil Spill Response Research Program researches oil spill response technologies for oil spill detection, containment, treatment, recovery, and cleanup. Part of this research is conducted at the National Oil Spill Response Test Facility, Ohmsett, which allows testing of oil spill response technologies. BSEE conducts extensive oil spill response research on Arctic conditions, which considers how sea ice, cold temperatures, and hazardous conditions could potentially interfere with oil spill response in the Arctic. In

addition, BSEE also manages a Technology Assessment Program that conducts research related to operational safety and pollution prevention. This program focuses on assessing offshore engineering technology to promote safety and environmental protection.

In addition, BOEM receives information from other Federal agencies. In particular, BOEM collaborates with agencies such as NOAA and the U.S. Fish and Wildlife Service. Focusing on Alaska, the USGS published a report in 2011 outlining the additional information needs for Alaska oil and gas development,[65] and Executive Order 13580 created the Interagency Working Group on Coordination of Domestic Energy Development and Permitting in Alaska to define information needs. Both documents have led to interagency coordination on research projects and information sharing in the U.S. Arctic.

Further, BOEM works with non-Federal entities, such as Alaska Native groups, the scientific community, industry, and state and local governments. Valuable information has been obtained through collaboration and coordination with other entities, such as the North Pacific Research Board and the Arctic Research Council, which are involved in directing, conducting, or prioritizing science in the Arctic. Two specific examples include the close coordination between BOEM and the Interagency Arctic Research Policy Committee to help develop the Arctic Research Plan for FY 2013–2017, and BOEM scientists are working with the National Science Foundation on the "Arctic Science, Engineering, and Education for Sustainability" initiative to ensure that BOEM/National Science Foundation science efforts are closely integrated and complementary. BOEM also recently developed a partnership with the National Academies of Sciences, Engineering, and Medicine to provide independent information on environmental studies and assessment activities. The committee includes members with a broad range of expertise in the natural and social sciences including ecology, sea ice, economics, noise, the application of science to policy, and other topics.

BOEM has the ability to include new information at all stages of development of the Program and lease sale planning process through its own research and that of other Federal agencies and non-Federal entities. BOEM also considers comments received from the public during each of the public comment periods. In developing a Program, BOEM acknowledges the ever-expanding availability of scientific information. The 2017–2022 Program includes, and will continue to include, new scientific information and stakeholder feedback to proactively determine potential conflicts. The Programmatic EIS provides a comprehensive analysis of the environmental information under consideration in the Program decision.

While the majority of this research is driven by the possibility of oil and gas operations and conducted to inform decisionmakers, the knowledge gained is largely "independent" learning. This follows Fisher and Hanemann's (1987) suggestion that needed information about environmental impacts can sometimes be obtained by research separate from drilling. To that extent, there could be option value in waiting to drill while the research is being conducted. It is conceivable that the wait for information could extend beyond the 5-year timeframe of a given leasing program, and the pyramidal structure of the Program development process allows for more refined research and analysis at the specific lease sale stage. Because the process from Program development to lease sale contains multiple steps, BOEM has several opportunities to incorporate new information and revise decisions. In particular, before a lease sale is held, an EIS is

[65] *Evaluation of the Science Needs to Inform Decisions on the Outer Continental Shelf Energy Development in the Chukchi and Beaufort Seas, Alaska* (USGS 2011)

completed and additional environmental and social costs are studied in part based on new information from ongoing research.

BOEM continues to investigate social and environmental issues and to consider the relevant factual information that is currently available. In the meantime, BOEM provides qualitative information to the Secretary to consider the existing uncertainties and how new information could become available for consideration in the decisions on size, timing, and location. Detailed information on the environmental impacts of each program area is provided in the Programmatic EIS.

Environmental and social costs are an important component in the net benefits analysis. As such, the estimated benefits for a program area could change with new information. However, as discussed in Section 5.3, it is important to consider the incremental aspects of the net benefits analysis. In the absence of lease sales in any of the OCS program areas, substitute sources of energy would be necessary to fulfill U.S. demand for energy. These substitute energy sources have their own environmental and social costs, which are also uncertain. More information on the environmental and social costs of these energy substitutes is included in *Forecasting Environmental and Social Externalities Associated with Outer Continental Shelf (OCS) Oil and Gas Development – Volume 2* (BOEM 2015). As shown in Section 5.3, these substitute sources are estimated to have higher environmental and social costs than energy production from the OCS.

Though the hurdle price analysis calculated in Section 10.1.2 does not consider the uncertainty of environmental and social costs, it does incorporate estimates of environmental and social costs into the hurdle price calculation. New for this Proposed Program analysis, BOEM added an estimate of the known environmental and social costs into the hurdle price calculation and now considers both the private and social costs of exploration and development in determining the hurdle price.

#### *10.1.1.6 Regulatory and Legal Environment Uncertainty*

An objective of both the Government and industry is to manage the risks associated with OCS oil and gas operations. Operators manage these risks through use of industry best practices and prudent risk management. The Government uses legal liability, and the promulgation and enforcement of safety and environmental laws and regulations.

The ability to maintain a stable and transparent regulatory and legal environment for oil and gas industry operations is an important factor considered by lessees and operators on the OCS in choosing whether, when, and how much to invest in OCS tracts and related drilling and development activities. The legal and regulatory environment for OCS exploration and development can greatly impact project profitability. As the offshore program evolves, new regulations may need to be promulgated and existing regulations revised, and occasionally new statutory requirements and legal precedents are inevitable in the interest of ensuring safe and environmentally sound OCS operations. The goal of BOEM and BSEE is to communicate and coordinate with the industry and other stakeholders on the content and rationale of regulatory approaches and requirements. The bureaus encourage feedback, input, and suggestions for alternatives to the regulatory proposals before they are finalized.

#### *10.1.1.7 Price Uncertainty*

While the value promised by a lease sale is related to the resource endowment and the likelihood of finding economic hydrocarbon deposits, it also is heavily influenced by forecasts of future oil and natural gas prices. Mean reversion is one of several possible models that could be used to simulate oil and gas prices. The simplest model, used by Black and Scholes for valuing financial options, assumes geometric Brownian motion, which has the volatility of a mean-reversion model without the tendency to revert to a single long-run mean. In addition to the economic logic that implies that oil and gas prices tend to revert to a long-run cost, statistical tests can be applied to determine whether the oil or gas price series has a mean-reverting tendency or not. In one paper, Pindyck concluded that "over the long run, price behavior seems consistent with a model of slow mean reversion" (Pindyck 2001). Under a mean-reversion framework, uncertainty stabilizes over time as prices revert back to a long-run mean. As such, under the mean-reversion assumption there is little benefit to waiting as the uncertainty band narrows around the long-run average. However, should prices progress below the long-term trend, there could be benefit in waiting for prices to rebound.

To consider the option value of the resources related to resource price uncertainty and optimal timing decisions, the current Program includes a hurdle price analysis. It is intended to show that every area included in the Program is expected to offer rights to at least one geologic field where prompt exploration during this Program is consistent with an optimal intertemporal allocation of resources. The hurdle prices are calculated assuming a mean reverting price model. The hurdle prices are calculated for each program area in this Program and are considered again during the lease sale planning process.

### *10.1.2 Hurdle Prices*

To formally assess the timeliness of offering program areas at the Program stage, BOEM subjected the assessment of undiscovered fields in each program area to an appropriate economic analysis to determine an area "hurdle" weighted average (i.e., BOE) price. The hurdle price is equated with the actual market price below which delaying exploration for the largest fields in the sale area is more valuable than immediate exploration.[66] So, when market prices are at or above the hurdle price, immediate exploration for these large prospects is optimal, and full value could be realized by leasing that prospect now. At the Program development stage, BOEM identifies areas that show current economic promise of at least one geologic field, while deferring other timing, composition, and sale design decisions to the lease sale stage.

This hurdle price analysis builds on the work that was conducted in the DPP decision document. It provides a more refined analysis of the resources available in each program area and the future price trend and considers different aspects of value including environmental and social costs. These revisions provide the Secretary with more information on the importance of timing consideration in maximizing social value. Once the Program is approved, the lease sale design stage can focus on deciding whether to hold or delay a sale that is included in the Program, which OCS blocks to offer, and how to set the sale terms. Accordingly, deferring these issues to the lease sale stage rather than the earlier Program formulation stage provides more flexibility (i.e., option value) and allows decisions to be made closer to the time when economic and other conditions that influence sale decisions are better known and

[66] All else being equal, the large fields tend to have the highest net value per equivalent barrel of resources, making it the least likely field to benefit from a delay in being offered for lease in anticipation of increasing resource prices. BOEM used the 90th percentile field size as the approximate largest field size available in each program area.

somewhat easier to forecast. Given the iterative process of Program development and lease sale design, there are benefits from including areas in the Program even if their hurdle prices are below current prices as further analysis can be conducted at a later stage (i.e., individual lease sale stage). Section 10.3.2 provides more discussion of how BOEM incorporates option value considerations into its lease sale fiscal terms procedures.

For the Proposed Program analysis, BOEM calculated hurdle prices for each of the five program areas. Given the differences within the GOM Program Area, the hurdle price is calculated separately for GOM shallow and deep water. The hurdle price analysis is conducted considering the NSV of each program area and whether the value from leasing in the current Program is greater than waiting to lease an area until a future Five-Year Program. For this calculation, BOEM considers both the private and social costs of exploration and development. More information on how the hurdle price was expanded for this Program analysis to incorporate environmental and social costs is included in the supplemental paper *Draft Economic Analysis Methodology for the OCS Oil and Gas Leasing Program for 2017–2022* (BOEM 2016b; herein referred to as the Draft Economic Analysis Methodology paper).

Within each program area, BOEM selected for use in the hurdle price analysis an approximation of the largest undiscovered field size, which was identified by our statistical resource estimation model as containing at least one undiscovered field. As described in the Draft Economic Analysis Methodology paper, BOEM used the 90th percentile field size as the approximate largest field size available in each program area. This field size was then used for conducting the hurdle price analysis in each program area in conjunction with private and social cost estimates appropriate for the applicable water depths and field sizes. These factors were input into an in-house dynamic programming model called WEB2 (When Exploration Begins, version 2) to generate the hurdle prices.

Table 10-1 shows the NSV for each of the program areas/locations that have been analyzed. Column B in Table 10-1 shows the input field sizes for each area. Columns C and D show the assumptions made about natural gas-oil ratios for each area along with the relative proportion of oil and natural gas associated with each area as implied by that ratio. For example, in the Cook Inlet there are 1.19 mcf of natural gas for every barrel of oil. This, on a BOE basis[67] means that on average, approximately 83 percent of a field is oil, and 17 percent is natural gas. WEB2 then estimates the BOE hurdle prices shown in Column E of Table 10-1, below which delaying exploration of an undiscovered field of the size shown in Column B is more valuable than immediate exploration. The hurdle prices are per BOE and shown in 2017 dollars. More details on the calculation of applicable oil and natural gas prices that derive from the BOE hurdle prices are included in the Draft Economic Analysis Methodology paper.

[67] On a thermal basis, 5.62 mcf of natural gas provides the same heat content as a barrel of oil.

**Table 10-1: NSV Hurdle Prices**

| *A* | *B* | *C* | *D* | | *E* |
|---|---|---|---|---|---|
| Program Area or Location | Largest Undiscovered Field (million BOE) | Natural Gas-Oil Ratio | Portion of Field BOE | | NSV Hurdle Price |
| | | | Oil | Natural Gas | Price per BOE |
| Beaufort Sea | 113 | * | 100% | * | $35 |
| Chukchi Sea | 190 | * | 100% | * | $33 |
| Cook Inlet | 175 | 1.19 | 83% | 17% | $20 |
| Shallow GOM | 45 | 13.98 | 29% | 71% | $21 |
| Deep GOM | 134 | 2.16 | 72% | 28% | $28 |
| Atlantic | 88 | 6.81 | 45% | 55% | $32 |

**Notes**: The largest undiscovered field size is approximated as the 90th percentile field from the 2011 National Assessment field size distribution. The 90th percentile is used to avoid extreme values created by the statistical process used to generate the distribution of field sizes. For the Chukchi Sea and Beaufort Sea Program Areas, the resulting designated field size represents only the oil portion of the largest field given that gas prospects are not projected to be economic. See the Draft Economic Analysis Methodology paper (BOEM 2016b) for further elaboration.
**Key**: The asterisks (*) indicate that natural gas transportation costs exceed the *prorata* natural gas hurdle price, meaning oil would have to subsidize the sale of natural gas. Instead, the natural gas share of BOE likely would be re-injected. Accordingly, the hurdle price was calculated in these cases assuming only the oil portion would be produced.

To compare the calculated BOE hurdle prices with expectations of future prices during the 2017–2022 Program, BOEM compared the BOE hurdle prices with its own internal forecasts as well as those from the EIA's *Annual Energy Outlook* and the Office of Management and Budget. Table 10-2 shows the forecasted oil and natural gas prices for 2017 (in 2017 dollars) from each of these forecasts as well as the calculated BOE price associated with each program area. The forecasted oil and gas prices are consistent across all program areas, but each relates to a unique BOE price given the specific natural gas-oil ratio in each area. The BOE prices in each area represent the expected 2017 value of the resources in that program area given the average composition of oil and natural gas. The BOE prices from Table 10-2 are to be compared with the BOE hurdle prices shown in Table 10-1.

**Table 10-2: Forecast BOE Prices in 2017**

| **Program Area/ Location** | **BOEM's 2017 Forecast** | | | **EIA's 2017 Forecast** | | | **OMB's 2017 Forecast** | | |
|---|---|---|---|---|---|---|---|---|---|
| | Oil | Gas | BOE | Oil | Gas | BOE | Oil | Gas | BOE |
| Beaufort Sea | $65.54 | $3.60 | $65.54 | $70.14 | $4.09 | $70.14 | $53.03 | $2.84 | $53.03 |
| Chukchi Sea | | | $65.54 | | | $70.14 | | | $53.03 |
| Cook Inlet | | | $57.63 | | | $61.90 | | | $46.55 |
| Shallow GOM | | | $33.23 | | | $36.49 | | | $26.59 |
| Deep GOM | | | $52.96 | | | $57.04 | | | $42.74 |
| Atlantic | | | $40.72 | | | $44.29 | | | $32.72 |

**Notes**: The oil and gas prices given for the three different 2017 forecasts apply to all program areas. They have been converted into the program area-specific BOE price based on the gas-oil ratio in each area. These BOE prices are to be compared with the BOE hurdle prices given in Table 10-1. For the Chukchi Sea and Beaufort Sea Program Areas, only the oil portion of the field is expected to be produced. Thus, the BOE price is equivalent to the oil price in these program areas. All prices shown in this table are in 2017 dollars.
**Key**: OMB = Office of Management and Budget

The weighted BOE forecast prices for 2017 under all of the price forecasts are above the NSV hurdle prices shown in Table 10-1 for all of the program areas. As such, in terms of price, this analysis suggests that there is no reason to exclude any of the proposed program areas based purely on the price of oil and gas. The range in hurdle prices is largely dependent on the relevant exploration and development costs in each region. For example, costs in the shallow water portion of the GOM Program Area and in the relatively shallow Cook Inlet Program Area are lower than in the other deepwater or Arctic areas. Therefore, these areas have lower hurdle prices. Further refinements and analysis will be conducted at both the PFP stage and at the individual lease sale stage for each sale within the Program. Revised assumptions or price trends could affect the decision of whether to offer an area at any of those stages.

BOEM notes that the calculation of hurdle prices is highly dependent on the assumptions about the future price trend of oil and natural gas and on the rate at which prices revert to that trend. More detail on these assumptions and the sensitivities of the hurdle prices are included in the Draft Economic Analysis Methodology paper.

As discussed, option value is merely one component of BOEM's FMV analyses and Program formulation. Moreover, in this analysis, option value only considers uncertainty related to resource prices. Accordingly, in the Program stage the hurdle price findings should be taken as a guide only for price-based option value. Additional and more robust analysis could be conducted at later stages. This is especially important as new information becomes available that could affect the resource estimates or private or social costs for any of the program areas. To capture the option value of new information becoming available that could make an area more or less profitable to lease, the Secretary may choose to include or exclude areas regardless of the relationship between the hurdle prices and current prices.

In addition to the other considerations discussed in this chapter and throughout this document, another factor for the Secretary to take into account is the value of a predictable lease sale schedule. The creation of a 5-year lease sale schedule allows companies the opportunity to plan expenditures and future prospects. Choosing to cancel sales based purely on the hurdle price could possibly have an adverse impact on company interest in the region and the value received by the public. As such, the Secretary considers many other factors in the decision of whether to include an area in the program and ultimately hold a sale.

## 10.2 LEASING FRAMEWORK

The size of a lease sale and the frequency of sales within a program area are other FMV considerations within the Program framework.

### *10.2.1 Size of a Lease Sale*

With regard to the size of a lease sale, BOEM considers whether all acreage within a program area should be included in the sale, or whether a more focused area should be made available for leasing. Since 1983, GOM lease sales have been conducted under the area-wide leasing format. Area-wide leasing means that all available (unleased and not restricted) acreage in the program area is offered in the sale auction. Prior to 1983, BOEM used an industry nomination/agency tract selection process in which companies nominated acreage or BOEM selected specific acreage for lease, and only that acreage was offered. The tract selection lease sales would tend to sell fewer leases and allow more focused environmental analyses.

The State of Louisiana has requested on several occasions the use of schemes other than area-wide leasing, similar to industry nomination/agency tract selection. In 2010, BOEM contracted a study analyzing area-wide leasing. The study, *Policies to Affect the Pace of Leasing and Revenues in the Gulf of Mexico*, evaluated the efficacy of alternative leasing schemes to the area-wide leasing model (BOEMRE 2011; hereinafter referred to as "Area-wide Leasing Study").

The Area-wide Leasing Study suggests that Government revenues in the form of increased cash bonus bids per block leased under the nomination/ tract selection format would be largely offset by fewer blocks leased, less drilling, a reduced pace of discovery, lower rentals and royalties, and less annual future production of OCS oil and natural gas from newly issued leases. Further, in the process of considering alternative leasing approaches and fiscal systems that could enhance Government revenue and assure receipt of FMV, BOEM must be cognizant of the effects any policy changes might have on the achievement of other statutory goals of the Program. Among these are expeditious and orderly development and maintaining a diverse and competitive industry. Area-wide leasing allows smaller companies to expeditiously acquire, explore, and produce low-resource, low-risk fields, while providing larger companies an incentive to pursue technological development in deep water. Area-wide leasing also encourages innovative exploration strategies and is consistent with maintaining financially sound geophysical contracting and processing industries. In addition, the bidding system, minimum bid, and fiscal terms for a given lease sale will influence the number and value of leases sold in the sale.

BOEM has adopted a more focused approach in some program areas. In particular, a more targeted leasing approach has been used for the Alaskan Arctic, given that the Chukchi Sea and Beaufort Sea areas are less explored than GOM areas and require extensive environmental analysis and coordination with other Federal agencies, Alaska Natives, the scientific community, industry, and state and local governments before leasing decisions are made. More focused leasing is geographically targeted in scope and could be used in any OCS region to achieve an appropriate balance between making resources available and limiting conflicts with states' CZM Plans, environmentally or militarily-sensitive areas, and subsistence use by making certain determinations from the outset about which blocks within the planning area are most suitable for leasing. In the PFP and in the sale design for specific lease sales, BOEM will continue to analyze the use of area-wide leasing and focused leasing. BOEM will consider both FMV and other concerns such as environmental and subsistence issues when determining whether to hold area-wide or more focused lease sales in a particular area.

### *10.2.2 Frequency of Lease Sales*

Another consideration at the program stage is the frequency of lease sales within the Five-Year Program window. Historically, Programs have included separate, annual sales in both the Western and Central GOM, with less frequent sales in other planning areas.

When deciding the frequency of sales to be held in a particular area, an important consideration is the potential for new information (e.g., geologic information, revised price forecasts, new technology) to become available between sales. In the GOM region, seismic activity, exploration well drilling, and lease relinquishments are occurring almost continuously. Thus, in the GOM region, the emerging information and tract availability could impact a company's bidding strategy as well as the Government's evaluation of blocks. Accordingly, and partly in response to demand, an efficient GOM sale schedule tends to

involve more frequent sales. In frontier areas, there is less activity and resulting new information between sales and it is therefore more appropriate to have a sale schedule with less frequent sales.

A Proposed Program option is to hold area-wide GOM sales in the entire GOM Program Area twice annually. This option essentially doubles the opportunities for companies to purchase acreage in the Western and Central GOM Program Areas. As acreage is offered more often, additional value can be created between the sales as information becomes available. This information (e.g., a revised price trend, information about neighboring leases, technology) can affect the value of potential blocks. Under this design, rejected blocks or newly relinquished blocks would be reoffered more frequently until they are leased again. However, for newly available blocks, or blocks recently made attractive by new information about resources or other developments, it is conceivable that there could be less competition for them initially, as fewer bidders would be able to collect data and formulate bids in the shortened time. This option moves federal lease sales to be more aligned with state-level policies. For example, Texas and Louisiana have traditionally held state sales for offshore acreage more frequently than annually. These more frequent sales would reduce the time available for companies to update their information and develop improved value estimates for the remaining available tracts. In addition, as acreage is available more often, this approach could reduce competition and lead to a slight decline in the aggregate value of bonus bids received.

## 10.3 OTHER COMPONENTS OF FMV

After an area's inclusion in the Program is affirmed, and following the determination of the lease sale size and timing, the next decision is the selection of the bidding system and lease terms to be used for the sale offering. These terms are evaluated prior to each sale to ensure the terms provide the public with FMV for the rights conveyed. After the sale and before acceptance, each bid is evaluated for bid adequacy. The bidding system, lease terms, and bid adequacy review together comprise the lease sale components for ensuring receipt of FMV.

### *10.3.1 Bidding Systems*

In designing a lease sale, BOEM determines the appropriate bidding system. The specific competitive bidding systems available under the OCS Lands Act are codified in 30 CFR § 560.110. The OCS Lands Act requires the use of a sealed bid auction format with a single bid variable on tracts no larger than 5,760 acres, "unless the Secretary finds that a larger area is necessary to comprise a reasonable economic production unit" (43 U.S.C. § 1337(b)(1)). The OCS Lands Act allows for different competitive bidding variables including royalty rates, bonus bids, work commitments, or profit sharing rates.

When Congress amended the OCS Lands Act in 1978, it instructed USDOI to experiment with alternative bidding systems for OCS leasing, primarily to encourage participation of small companies by reducing upfront costs associated with the traditional cash-bonus bid system. USDOI used four alternative bidding systems from 1978 through 1982. Almost all of the tested systems maintained the cash bonus bid, but varied the contingency variable with use of a sliding scale royalty, which varied depending on the rate of production; a fixed net profit share; and a 12.5 and 33 percent royalty rates. These systems were not found to enhance program performance compared to the then-prevalent 16.67 percent fixed royalty rate system in shallow water. Among other things, they did not increase participation by small companies; were significantly more complex to administer; distorted bids, which made it more difficult to identify the

high bid; and often were not beneficial to the taxpayer. As a result, since 1983, BOEM has chosen to use the cash-bonus bidding system subject primarily to a mid-range fixed royalty rate.

In evaluating which competitive bidding terms to use, BOEM considers the goals of the OCS Lands Act, the costs and complications of implementing the selected approach, the ability of the bidding variables to accurately identify the bidder offering the highest value, and the economic efficiency of the selected approach.

BOEM largely expects to continue using a single round sealed bid auction format with a cash-bonus competitive bidding system in the GOM and Alaska program areas, but continues to study alternative arrangements. In preparation for specific lease sales, BOEM analyzes alternative fiscal terms to offer in conjunction with the current bidding systems. These are described in Section 10.3.2.

In preparation for a possible lease sale in the Atlantic, BOEM has begun analyzing whether alternative bidding systems would be desirable. BOEM recognizes that, as a program area without any current oil and gas leases, the Atlantic offers a unique opportunity to consider an alternative bidding system for an entire region.

### *10.3.2 Fiscal and Lease Terms*

After deciding to hold a sale and the bidding system to be used, the next set of decisions deal with the sale terms to be offered, largely the fiscal terms and duration of the initial period of the lease. The fiscal terms include an upfront cash bonus, rental payments, and royalties, with the rental and royalty terms set by BOEM and the upfront cash bonus offered by bidders subject to BOEM's minimum bid level. All of the financial obligations (bonus, rentals, and royalties) reflect the value of the lessor's (i.e., Federal Government) property interest in the leased minerals and are fiscal components of FMV. In determining the appropriate lease terms for a sale, BOEM must balance the need to receive FMV with the other policy goals in the OCS Lands Act, such as expeditious and orderly development of OCS resources. BOEM evaluates fiscal and lease terms on a sale-by-sale basis and has adjusted these in recent sales in response to emerging market and resource conditions, competition, and the prospective nature of available OCS acreage.

BOEM recently adopted formalized procedures for evaluating fiscal terms before lease sales. These annual procedures consider the effectiveness of the status quo fiscal terms in comparison to international fiscal systems and recent program performance. During these procedures, BOEM updates its in-house analytical models, conducts additional statistical analysis, reviews international fiscal system trends, and recommends either a continuation of the current policies (i.e., the status quo) or other alternative fiscal terms. BOEM's procedures include use of both discounted cash flow and real option methods for deciding the set of fiscal terms that will maximize the potential value of future leasing and production while ensuring receipt of FMV.

BOEM's procedures are informed by two recent studies that consider both international fiscal systems and alternative fiscal terms. BOEM, jointly with the Bureau of Land Management, completed a study with IHS-Cambridge Energy Research Associates entitled *Comparative Assessment of the Federal Oil and Gas Fiscal Systems* (BOEM/BLM 2011). The study compared other countries' petroleum extraction fiscal systems and terms to the U.S. Federal system and found that, from a Government perspective, the

current GOM lease fiscal terms rank very favorably with the fiscal terms employed by other countries that compete with the United States for upstream oil and gas investment. As discussed previously, BOEM also conducted the 2010 Area-wide Leasing Study to consider a range of alternative fiscal terms. The study was not able to identify alternative leasing and fiscal policies that would lead to significant increases in Federal revenues.

After lease sales are held, the bidding on blocks is analyzed to determine whether the lease terms offered have enhanced bidding and competition for leases and to evaluate the necessity for additional changes or adjustments. Existing lease terms are generally evaluated annually and adjusted if market conditions warrant a change. The practice of making incremental adjustments allows BOEM to evaluate the results of a lease sale that was held with new sale terms and to further refine terms if necessary in future sales without incurring undue risk to the program. Each of the sale terms contributes to the assurance of FMV for the public's resources. BOEM holds the option to reconsider minimum bid levels, rental, and royalty rates on a sale-by-sale basis and can establish alternative rates in the event that changing conditions no longer assure FMV or are inhibiting expeditious and orderly development of OCS acreage.

#### *10.3.2.1 Minimum Bid and Bonus Bid Amounts*

For many years, the bid variable of the auction has been the bonus bid. This signature bonus is a cash payment required at the time of lease execution. A bonus bid is formulated by the bidder based on its perception of expected profit, net of other payments. A minimum bid is set as a floor value for acquiring the rights to OCS acreage. Historically, its primary utility has been to ensure receipt of FMV on blocks for which there are insufficient data to make a tract evaluation, or existing geologic or economic potential of the blocks is inadequate to support a positive tract value. BOEM increased the minimum bid in the deepwater GOM in 2011 to encourage optimal timing of leasing and drilling for low-valued blocks in deep water.

The bonus bid is paid at the outset regardless of future activity or production, if any, so the lessee bears the risk of paying more than the lease is eventually worth, while the Government bears the risk of accepting less than it is eventually worth. In contrast, the royalty has neither risk because it is based on actual production. A fiscal advantage of the bonus, nonetheless, is that it is received by the Government immediately; there is no delay of, possibly, a decade or more as with the royalty.

A higher minimum bid results in a greater proportion of offered blocks being passed over (i.e., not bid on) by bidders. To the extent these passed-over blocks are marginally valued, their retention in the Government's inventory and reoffering at the next sale could enhance the efficiency of the lease sale process and generate option value and higher bonus bids for the retained blocks. A higher minimum bid level can also serve to narrow bidder interest to the more valuable blocks offered in the sale, thereby enhancing competition on the better blocks and encouraging bidders to focus their bidding on those blocks that they are most likely to explore and develop. As discussed in Section 8.1, the minimum bid can be adjusted to improve timing of activities where option value is found to be significant. While higher minimum bid levels can have a significant effect on decreasing the number of blocks leased, aggregate cash bonuses may be little affected or could even increase, since raising the minimum bid level can push bids to higher levels.

Though the minimum bid stipulates the lowest level a bid can be, actual bids submitted are based on the expected profitability of the field and evaluated based on geology and economic viability (as described in Section 10.3.2.5). Bidders develop the actual amount of their bonus bid in consideration of the expected profit, net of other payments. Accordingly, the fiscal terms in effect in a sale can affect the amount of the bonus bid of a lease and changes in other fiscal terms can affect the revenues collected through bonuses. For example, a higher expected royalty or rental rate will induce bidders to formulate lower bonus bids, and vice versa. Rentals and royalties are discussed in Sections 10.3.2.2 and 10.3.2.3.

#### *10.3.2.2 Rentals*

During the initial period of a lease and before commencement of royalty-bearing production, the lessee pays annual rentals that generally are either fixed or escalating. Rentals compensate the public for value of holding the lease during the initial period and encourage diligent development. BOEM has used escalating rentals for leases in the GOM and Alaska for the Chukchi and Beaufort Seas to encourage timely exploration and development or earlier relinquishment. The primary use of escalating rentals is to encourage swift exploration and development of leases, and earlier relinquishment when exploration is unlikely to be undertaken by the current lessee. Escalating rentals have also been used when the initial lease period is extended following the spudding of a well, which in some cases in the GOM must be targeted to a drill depth of at least 25,000 feet subsea.

Rental payments serve to discourage lessees from purchasing marginally valued tracts too soon since companies are hesitant to pay the annual holding cost to keep a low-valued or currently uneconomic leases in their inventory. Rental payments provide an incentive for the lessee to either timely drill the lease or relinquish it before the end of the initial lease period, thereby giving other market participants an opportunity to acquire these blocks in a more timely fashion.

#### *10.3.2.3 Royalties*

The Government reserves a royalty interest for all OCS production. Leases issued in recent years have a fixed royalty rate; by law, it must be no lower than 12.5 percent. The rate is applied to the value of oil and gas sold, net of certain transportation and processing costs. The amount collected per barrel is greater or lesser as the oil price changes, but the rate itself does not vary. It is also the lease fiscal term in which the Government shares in the risk of the lease (i.e., the Government only receives royalty revenues if production has commenced).

Royalty rates can have a significant impact on bidder interest and are a key fiscal parameter in the calculation of the underlying economic value for a block. BOEM increased the GOM royalty rate in sales held in 2007 and 2008 to capture a greater portion of revenue as oil and gas prices had risen substantially above levels that prevailed for virtually all previous years. Alternative royalty arrangements are possible in which the rate varies or no royalty is paid for certain periods. Additional royalty rate analysis is conducted when designing specific lease sales.

#### *10.3.2.4 Initial Period of the Lease*

In cases where a high bid meets the FMV requirements, the lease rights are issued to the lessee for a limited term called the initial period (also known as the "primary term"). The OCS Lands Act sets the initial period at 5 years, or up to 10 years, "where the Secretary finds that such longer period is necessary

to encourage exploration and development in areas because of unusually deep water or other unusually adverse conditions…." The initial period promotes expeditious exploration while still providing sufficient time to commence development. In evaluating the initial period of the lease, BOEM considers technology and the time necessary for exploration and infrastructure development. When designing specific lease sales BOEM considers the length of the initial lease period and whether it remains appropriate given current exploration time frames. For example, in 2010 BOEM reduced the initial period of the lease in water depths of 800 meters to 1,600 meters to reflect the shorter time deemed necessary to explore for economic prospects.

#### *10.3.2.5 Bid Adequacy*

Following a lease sale, the high bids on each block are evaluated to determine whether they satisfy the FMV requirements for acceptance. The bid adequacy process, originally instituted in 1983, uses a two-phased system to assess the adequacy of bids received in lease sales. The first phase involves BOEM's assessment of the block's geologic and economic viability. The high bids that are not accepted during this first phase are evaluated in the second phase using detailed analytical assessment procedures to generate an independent evaluation of each remaining block's value. This procedure is employed in conjunction with the distribution of the losing bids on each block and with an adjustment for the delay cost, if any, from not selling the block in the current sale to determine each block's ultimate "reservation price." This price cannot be lower than the minimum bid set for the auction, but it may be higher for particular blocks. If the high bid does not exceed the reservation price, the bid is rejected and the block is available to be reoffered at the next lease sale in that area. Thus, BOEM reviews all high bids received and evaluates all blocks using some combination of block-specific bidding factors and detailed block-specific resource and economic evaluation factors to ensure that FMV is received for each OCS lease issued.

Since 1984, bid adequacy reviews and fair market value determinations have resulted in an average rejection rate of bids of approximately 3.7 percent. One effect of bid rejection is to encourage bidders to submit bids that will exceed the government's reservation price and thereby promote receipt of FMV. Moreover, rejection of high bids under the existing BOEM bid adequacy procedures has consistently resulted in higher average returns in subsequent sales for the same tracts, even when those tracts not receiving subsequent bids were included in the calculation of the average returns. In the GOM from 1984 through 2015, BOEM rejected total high bids of $630 million, but when the blocks were reoffered, they drew subsequent high bids of $1.8 billion, for a total net gain of $1.2 billion, or an increase of 189 percent. These results indicate that BOEM's bid adequacy assessments and procedures have performed well in identifying blocks with high bids below FMV. With the possibility of bid rejection from the government and competition from other bidders, lease sale participants are encouraged to submit bids that will tend to reflect or exceed the government's reservation price. When bids exceed the reservation price, the government is confident it is receiving FMV.

BOEM occasionally conducts look-back studies to evaluate bid evaluations and actual development. These studies show that the majority of OCS leases with profitable hydrocarbon discoveries were assigned a positive value at the time of sale. However, in some cases BOEM issued leases where it estimated the block values to be negative, the blocks were issued for near minimum bid, and the lessees made discoveries of substantial size. In these cases, BOEM has documented that either new information

became available after the lease was awarded, prompting a company to drill a specific target different than what was originally evaluated, or the internal evaluation of the potential oil and gas accumulation target did not coincide with that of the lessee company. In those cases where new information became available after the lease was awarded, the information tends to be either new or reprocessed geophysical data unavailable at the time of sale, or new subsurface well data acquired as a result of drilling on a nearby lease that may indicate the possibility of material hydrocarbon deposits on the subject lease. Since it is quite common for exploration companies to acquire new or reprocessed geophysical data on leases after award but prior to exploratory drilling, these look-back studies tend to identify those wells that have been drilled to a target that sometimes is not coincident with the target that was evaluated pre-sale.

Bid adequacy procedures are dynamic; as conditions change, BOEM looks for opportunities to improve the process. The original form of the bid adequacy procedures was instituted in 1983 in conjunction with the implementation of the area-wide leasing policy, but these procedures have undergone several refinements to address FMV concerns as conditions changed. The bid adequacy procedures were recently revised to eliminate the Number of Bids Rule. The Number of Bids Rule was used in the first phase of bid adequacy to help determine whether to accept a block's high bid as representative of FMV without requiring the block to undergo a discounted cash flow analysis, and thereby producing a measure of estimated block value. According to BOEM's previous bid adequacy guidelines, certain categories of blocks that received three or more qualified bids and satisfied several other conditions were accepted at this stage of the bid evaluation process. However, BOEM identified a couple of problems with the Number of Bids Rule, the most important being that it precluded BOEM from independently evaluating certain blocks about which it might have had substantial information relating to the block's underlying value. Importantly, this restriction applied even in cases where BOEM might have thought that this underlying value was greater than the block's high bid. In addition, by eliminating the Number of Bids Rule, BOEM reduces the incentive for bidders to engage in undesirable forms of bidding practices and strategies to obtain acceptance of their bids seeking to avoid a full-scale block evaluation being conducted by BOEM.

BOEM continues to look for opportunities to improve the process and is currently refining the tract evaluation model used in bid adequacy determinations. Moreover, in implementing the new Program, there may be revisions to the bid adequacy procedures to incorporate knowledge or to accommodate structural changes to the leasing process.

## 10.4 CONCLUSION

BOEM evaluates market conditions, available resources, bidding patterns, and the status of production on OCS acreage when establishing terms and conditions for each lease sale. While some components of FMV are initially discussed at the Program stage (i.e., optimal timing and leasing framework), other components (i.e., fiscal and lease terms, bidding systems, and bid adequacy) are considered on a sale-by-sale basis to incorporate new information and assure FMV is received. The program area hurdle price analysis found that, based on calculated BOE hurdle prices in comparison to current expectations of future prices for oil and gas, there is no reason to exclude any of the proposed program areas in the Proposed Program Options based purely on the price of oil and gas. Of course, this is only one consideration in the Program development process and the Secretary may remove areas based on other factors (e.g., environmental considerations, industry interest). In the event that BOEM changes any of the

sale terms, bidding system, or bid adequacy procedures, the changes are announced to the public and industry through the PNOS or other notification in the *Federal Register*, typically prior to publication of the FNOS.

# Chapter 11 Description of Programmatic EIS Environmentally Important Areas

## 11.1 INTRODUCTION

In the Programmatic EIS, part of Alternative B (Reduced Proposed Action) analyzes reductions in available leasing acreage through the exclusion of, or adoption of mitigation to minimize impacts within, specified environmentally important areas within the Beaufort Sea, Chukchi Sea, Cook Inlet, and Atlantic Program Areas. These areas were chosen through a process of stakeholder engagement and are based on rich scientific evidence. See the Programmatic EIS for more information on how BOEM developed and categorized these environmentally important areas as well as BOEM's environmental analysis of these areas under Alternative B (Programmatic EIS Figure 1.4.5-1 and related text). The Programmatic EIS provides the Secretary of the Interior with initial information to determine, at her discretion, how to carry out any further analysis and related decisions under the OCS Lands Act for these environmentally important areas that may affect the size, timing, or location of lease sales in the 2017–2022 Program.

This section provides a broad comparative discussion on how excluding, or adopting programmatic mitigation within, the environmentally important areas may affect each of the Section 18 factors. BOEM invites comments on additional information the Secretary should consider with regard to potential future decisions on protecting all, some, or none of these environmentally important areas as components of the PFP.

## 11.2 SECTION 18 CONSIDERATIONS OF THE ENVIRONMENTALLY IMPORTANT AREAS

### *11.2.1 Geographical, Geological, and Ecological Characteristics*

The Programmatic EIS provides information on the geographical, geological, and ecological characteristics of the environmentally important areas. Table 11-1 summarizes the defining environmental characteristics of each of the environmentally important areas. A brief description of the acreage overlap of the environmentally important areas with potential hydrocarbon resources (geologic plays) is presented in Table 11-2. Background information on geologic plays and hydrocarbon resources is included in Chapter 5 of this Proposed Program decision document.

**Table 11-1: Description of Environmentally Important Areas Analyzed in the Programmatic EIS**

| Environmentally Important Area | Description |
|---|---|
| **Beaufort Sea Program Area: Alternative B(1)b** | |
| Barrow Canyon | This is an important migration and foraging area for beluga, bowhead whales, gray whales, and seabirds. This environmentally important area includes the core area of the Barrow Canyon complex, which has high benthic biomass and high biological productivity. The canyon area is in the vicinity of the North Slope Borough, is at the nexus of the Chukchi and Beaufort seas, and is an important area for subsistence hunting. |
| Camden Bay | Several stakeholders provided data and studies supporting the importance of this EIA for ecological and subsistence purposes. The Camden Bay area is important to bowhead, beluga, and seal feeding, and is also an important bowhead whale subsistence hunting area in the fall. |
| Cross Island | This is an important and historically significant subsistence hunting area. The larger Cross Island area is important to the bowhead whale migration, beluga whales, pinnipeds, and as a feeding and denning area for polar bears. This area was highlighted by several stakeholders during scoping; stakeholders provided testimony, data, and studies to demonstrate its ecological and cultural importance. |
| Kaktovik | This area is subject to subsistence use around the existing Presidential withdrawal and was also highlighted during public scoping as important ecologically and for subsistence use with data and studies supporting both aspects. This area is important to feeding bowhead and beluga whales (especially in the fall), seabirds, pinnipeds, and feeding and denning polar bears. |
| **Chukchi Sea Program Area: Alternative B(2)b** | |
| Hanna Shoal Walrus Foraging Area and Movement Corridor | This area surrounds the current Hanna Shoal Presidential withdrawal and includes a corridor from Hanna Shoal to the existing Chukchi Corridor Presidential withdrawal. These areas include important habitat for the Pacific walrus, including areas of high benthic biomass within shallow waters where sea ice persists into the summer, providing habitat for foraging walrus. |
| **Cook Inlet Program Area: Alternative B(3)b** | |
| Beluga Whale Critical Habitat | This is critical habitat for the Cook Inlet Distinct Population Segment (DPS) of beluga whales and is federally designated under the Endangered Species Act (ESA). The Cook Inlet beluga DPS, which is listed as endangered under the ESA, has declined by approximately 74 percent since 1979 and numbers in the vicinity of 300 animals. |
| **Atlantic Program Area: Alternative B(5)b** | |
| Washington and Norfolk Canyons | These submarine canyons support high levels of benthic and pelagic biodiversity. Each area serves as important habitat for fishes and corals and is associated with important foraging habitat for whales and seabirds. |

**Table 11-2: Overlap of Programmatic EIS Environmentally Important Areas with Geologic Plays and Potential Impacts on Net Benefits**

| Programmatic EIS Environmentally Important Area | Environmentally Important Area (acres) | Percent of Program Area Acreage | Percent of Geologic Plays Acreage | Number of Geologic Plays Overlapping Environmentally Important Areas | Potential impact on Net Benefits from Excluding or Mitigating Environmentally Important Areas from the 2017–2022 Program |
|---|---|---|---|---|---|
| **Beaufort Sea Program Area: Alternative B(1)b** | | | | | |
| Barrow Canyon | 971,249 | 1.5 | 8.5 | 8 | Relatively small incremental changes; potential substantial aggregate impacts if multiple environmentally important areas were excluded or mitigated. |
| Camden Bay | 127,657 | 0.2 | 1.1 | 5 | |
| Cross Island | 1,396,164 | 2.8 | 12.2 | 10 | |
| Kaktovik | 484,436 | 0.8 | 4.2 | 4 | |
| **Chukchi Sea Program Area: Alternative B(2)b** | | | | | |
| Overlap of Walrus Foraging Area and Movement Corridor | 5,180,862 | 9.7 | 15.3 | 15 | Relatively small incremental changes; potential substantial aggregate impacts if multiple environmentally important areas were excluded or mitigated. |
| Walrus Foraging Area | 4,936,975 | 9.3 | 14.6 | 15 | |
| Walrus Movement Corridor | 1,383,286 | 2.6 | 4.1 | 6 | |
| **Cook Inlet Program Area: Alternative B(3)b** | | | | | |
| Beluga Whale Critical Habitat | 17,520 | 1.6 | 1.6 | 4 | Insignificant effect |
| **Atlantic Program Area: Alternative B(5)b** | | | | | |
| Washington and Norfolk Canyons | 36,454 | 0.03 | 0.09 | 1 | Insignificant effect |

**Note**: Geologic play acreage overlap is not a direct proxy for oil and gas resource potential.

### *11.2.2 Equitable Sharing of Developmental Benefits and Environmental Risks*

Chapter 8 analyzes the equitable sharing of developmental benefits and environmental risks associated with oil and gas leasing in those portions of the OCS chosen for inclusion in the DPP, including those OCS areas where environmentally important areas are located. Adoption of mitigation measures within, or exclusion of, environmentally important areas would likely have an insignificant effect on the equitable sharing of developmental benefits and environmental risks as compared to that presented in Chapter 8. However, if multiple environmentally important areas in the Arctic program areas are excluded or mitigations are adopted within multiple environmentally important areas, moderate aggregate effects on equitable sharing could be experienced. For example, the exclusion or mitigation of several environmentally important areas could result in a potentially substantial reduction in available hydrocarbons. Given that multiple oil and gas fields will likely be required in the Arctic to warrant the construction of the necessary infrastructure to develop the region, this could result in no activity and a

situation similar to the No Sale Option. The difference in the sharing of developmental risks and environmental benefits from the options to have a sale and to not have the sale is discussed in detail in Chapter 8. The selection of the multiple environmentally important areas in the Arctic program areas could shift the benefits and risks from those considered in the sale option to those considered in the No Sale Option.

### *11.2.3 Location with Respect to Regional and National Energy Markets and Needs*

The analyses in Chapter 6 focus on recent developments in energy markets, including recent low oil and gas prices and an increase in domestic onshore production. Adoption of mitigation measures within, or exclusion of, an individual environmentally important area would likely have an insignificant effect on the resources that would be available to meet the needs of regional and national energy markets compared to what is already presented in Chapter 6. However, if multiple environmentally important areas in the Arctic program areas are excluded or mitigations are adopted, then the remaining resources in the area may not be developed. Multiple oil and gas fields will likely be required to warrant the infrastructure construction necessary for Arctic development. If a substantial portion of the resources are removed through selection of exclusions or mitigations in multiple environmentally important areas, the result could be equivalent to the No Sale Option in the Arctic program areas. Production from the Arctic program areas would be fed into the TAPS. If exclusion or mitigation of multiple environmentally important areas were selected and it led to reduced production from the region, Arctic offshore production would be unlikely to contribute to TAPS. As discussed above, if TAPS is unable to meet the required throughput, its decline would affect the Alaskan economy. More information on the Alaska Regional Energy Markets is included in Section 6.3.4.

### *11.2.4 Location with Respect to Other Uses of the Sea and Seabed*

Section 6.6 discusses competing uses of the OCS. Adoption of mitigation measures within, or excluding, the environmentally important areas would likely have a negligible to moderate beneficial effect on other uses of the sea and seabed as compared to what is presented in Section 6.6 as well as throughout Chapter 4 of the Draft Programmatic EIS. However, BOEM invites comments on how mitigations within, or exclusion of, the environmentally important areas may impact other uses of the sea and seabed, including the protection and conservation of those non-mineral resources within the environmentally important areas.

### *11.2.5 Interest of Potential Oil and Gas Producers*

Section 9.2 describes industry interest as indicated in response to the DPP. The walrus foraging area within the Chukchi Sea Program Area contains existing Federal oil and gas leases and other environmentally important areas that do overlay with geologic plays and potential oil and gas resources (see Table 11-2). BOEM invites comments on how adoption of mitigation measures within, or excluding, the environmentally important areas may impact industry interest in the program areas included in this Proposed Program.

### 11.2.6 Laws, Goals, and Policies of Affected States Identified by Governors

Section 9.1 includes summaries of the relevant laws, goals, and policies—including federally approved CZM programs and policies—that state governments identified when responding to BOEM's request for comments. BOEM invites comments on how adoption of mitigation measures within or excluding the environmentally important areas may impact the laws, goals, and policies of affected states.

### 11.2.7 Relative Environmental Sensitivity and Marine Productivity

Section 7.2 contains an analysis of the environmental sensitivity and marine productivity for the program areas. BOEM estimates that adoption of mitigation measures within or exclusion of the environmentally important areas could have an insignificant to moderate effect on the relative environmental sensitivity and marine productivity as compared to what is already presented in Section 7.2 but further analysis would be needed.

### 11.2.8 Environmental and Predictive Information

The 2017–2022 Draft Programmatic EIS describes the environmental setting and potential impacts on environmental and socioeconomic resources, focusing on moderate to major impacts that could occur in each program area and how adoption of mitigation measures within or excluding the environmentally important areas would affect those impacts. As discussed in the 2017–2022 Draft Programmatic EIS, mitigation or excluding the environmentally important areas would have a minor to significant beneficial impact on environmental and socioeconomic resources as compared to the proposed action.

### 11.2.9 Net Benefits

The net benefits analysis is presented in Section 5.3. The net benefits analysis is based on anticipated production in entire program areas—not particular locations within the areas—and operators can focus their interest on the available resources within the program areas. BOEM estimates that there will be relatively small changes to the net benefits as a result of adopting mitigation measures within, or excluding, any of the individual environmentally important areas. Any changes would likely still fall within the range of estimates presented in Chapter 5. However, adopting mitigation measures within, and/or excluding multiple environmentally important areas could have substantial aggregate impacts on the net benefits analysis. Depending on the number and extent of exclusion areas and/or mitigations imposed, the impacts could be equivalent to the No Sale Option. In the Beaufort Sea and Chukchi Sea Program Areas, the exclusion of, or adoption of mitigation measures within any one of the individual environmentally important areas would likely have minimal impacts on the net benefits estimates for the respective program area. However, in these areas, multiple oil and gas fields will likely be necessary to warrant the construction of the necessary pipelines and development or expansion of infrastructure. The selection of multiple environmentally important areas for mitigation or exclusion could result in substantial hydrocarbon resources being unavailable in the program areas. In this situation, it is possible that not enough hydrocarbon resources would be available for leasing to make development in the region economic, but more analysis would be needed.

In the Cook Inlet Program Area, the exclusion or mitigation of the Beluga Whale Critical Habitat environmentally important area from the program area will likely have an insignificant effect on the net benefits analysis. Given the small acreage of the possible exclusion or mitigation area, companies will likely be able to develop other resources in the region with relatively minimal impacts to the net benefits estimates presented in Chapter 5.

In the Atlantic Program Area, the mitigation or exclusion of the Washington and Norfolk Canyons environmentally important area from the program area will have an insignificant effect on the net benefits analysis. Given the small fraction of acreage included in the possible exclusion area, companies will be able to develop other resources in the region with negligible change in the net benefits estimates presented in Chapter 5.

# PART III:
# LEASE SALE OPTIONS

# Chapter 12 Proposed Program and Leasing Options

In accordance with the OCS Lands Act, and as discussed throughout this Proposed Program document, the Secretary of the Interior is required to balance the potential for environmental damage, the discovery of oil and gas, and adverse impacts on the coastal zone while preparing the 2017–2022 Program. In addition, the OCS Lands Act states that the leasing program will consist of a schedule of proposed lease sales indicating, as precisely as possible, the size, timing, and location of leasing activities.

The following Program Options have been identified for the Secretary's consideration. Other refinements of these Program Options may be included and analyzed during the PFP phase. In particular, portions of the program areas that have been identified as environmentally important areas in the Draft Programmatic EIS (see chapters 1 and 4 of that document) and discussed in Chapter 11 of this Proposed Program will be further considered for mitigation or exclusion in the PFP and/or lease sale process. Any options considered at the PFP phase would not be greater in geographic scope or frequency of lease sale offering than the options presented in this chapter. The chosen Program Option(s) for each planning area is indicated by **bold font**. The Summary of the Proposed Program Decision in the beginning of this document explains the Secretary's decision rationale and framework for her 2017–2022 Proposed Program decision, which is based on the OCS Lands Act Section 18 analysis contained within chapters 1–10 of this document.

## 12.1 Alaska Region

The Proposed Program evaluates Program options for the Alaska Region that take into account a balanced and careful approach to potential leasing, including targeted leasing that considers environmental impacts, subsistence uses, and industry interest. BOEM has developed tools that will facilitate the identification and design of the targeted lease sale strategy for areas offshore Alaska. These tools include the use of ongoing scientific analyses and information gathered through activity on existing leases, during the lease sale planning process, and through consultations and collaborations with other Federal agencies and entities such as the North Pacific Research Board and the Arctic Research Council. Based on all information gathered and analyzed, a more definitive set of decisions about which blocks to offer, the terms of the sale, and specific lease stipulations and conditions can be made at the lease sale planning stage. The chosen Program Options for the three Alaska program areas considered in the Proposed Program include a schedule of one potential sale in each program area—a Beaufort Sea sale in 2020, a Cook Inlet sale in 2021, and a Chukchi Sea sale in 2022.

For the two Alaskan Arctic program areas included in the Proposed Program, the area for consideration is the same as in the DPP and does not include those areas withdrawn from future oil and gas leasing by President Obama on January 27, 2015, pursuant to Section 12 of the OCS Lands Act. These Presidential withdrawals included a 25-mile coastal buffer, subsistence use area, and the Hanna Shoal region of the Chukchi Sea Planning Area lying within the contours of the 40-meter isobath in the Chukchi Sea; and the Barrow and Kaktovik whaling areas in the Beaufort Sea. Other areas have been analyzed as environmentally important areas in the Draft Programmatic EIS and will be considered for mitigation or

deferral in the next stage of the Program development process, the PFP, and the lease sale process. See Chapters 1 and 11 for information on the environmentally important areas.

The Governor of Alaska requested that the lease sale date for the Beaufort Sea be advanced to 2018 in recognition that the Beaufort Sea Lease Sale scheduled for the current Program, Sale 242, was unlikely to be held. Sale 242 was cancelled by the Secretary on October 16, 2015. However, that timeframe would not allow BOEM to complete the lease sale process. BOEM included this Program option by advancing the lease sale to 2019, which allows BOEM to complete the lease sale process.

In Cook Inlet, the area included in the Proposed Program is limited to the northern portion of the planning area, which balances the need to protect endangered species against the areas with highest resource potential and industry interest. This is the same area that was considered in the DPP. Deferrals related to the protection of beluga whale and sea otter critical habitat have been analyzed in the Draft Programmatic EIS as environmentally important areas and will be considered in subsequent steps of the Program development and lease sales processes.

### *12.1.1 Beaufort Sea*

- **Option 1: One sale in 2020, in the entire program area as depicted in Figure 12-1, offering available unleased acreage not subject to Presidential withdrawal.**

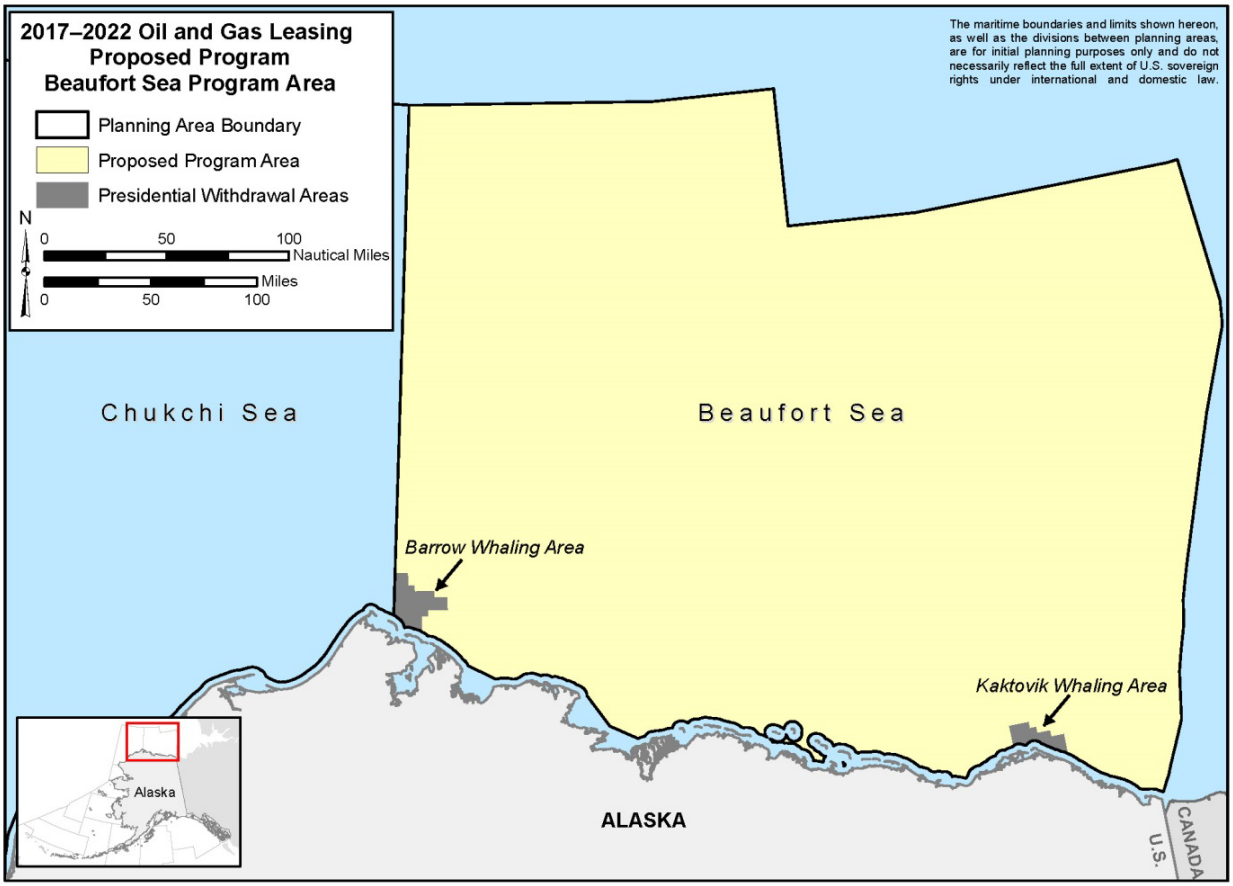
  Portions of the program area identified as environmentally important areas in the Draft Programmatic EIS will be further considered for mitigation or exclusion in the PFP and /or lease sale process.

- Option 2: One sale in 2019, in the same area as Option 1.

- Option 3: No sale.

- Option 4: Other.

**Figure 12-1: Beaufort Sea Program Area**



### *12.1.2 Chukchi Sea*

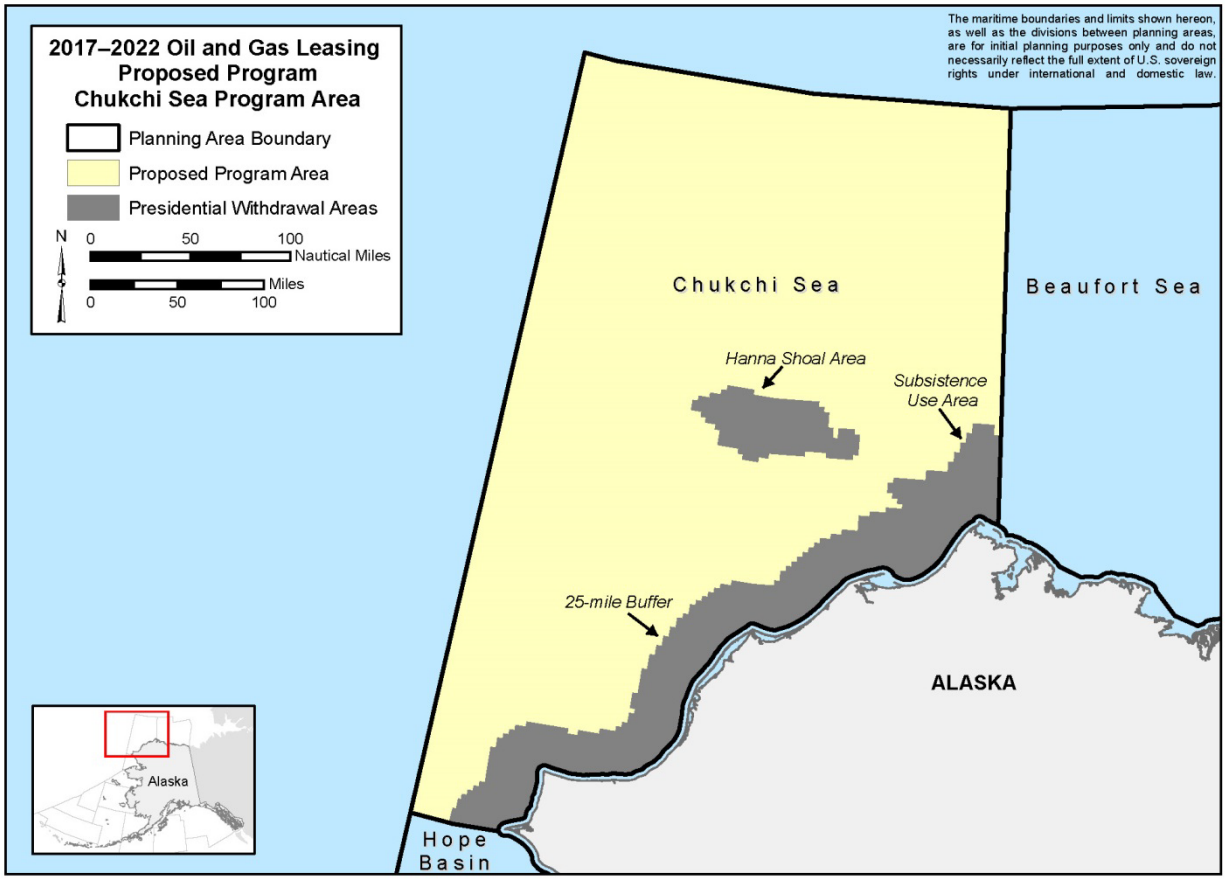
- **Option 1: One sale in 2022, in the entire program area as depicted in Figure 12-2, offering available unleased acreage not subject to Presidential withdrawal.**

  Portions of the program area identified as environmentally important areas in the Draft Programmatic EIS will be further considered for mitigation or exclusion in the PFP and /or lease sale process.

- Option 2: No sale.

- Option 3: Other.

**Figure 12-2: Chukchi Sea Program Area**



### *12.1.3 Cook Inlet*

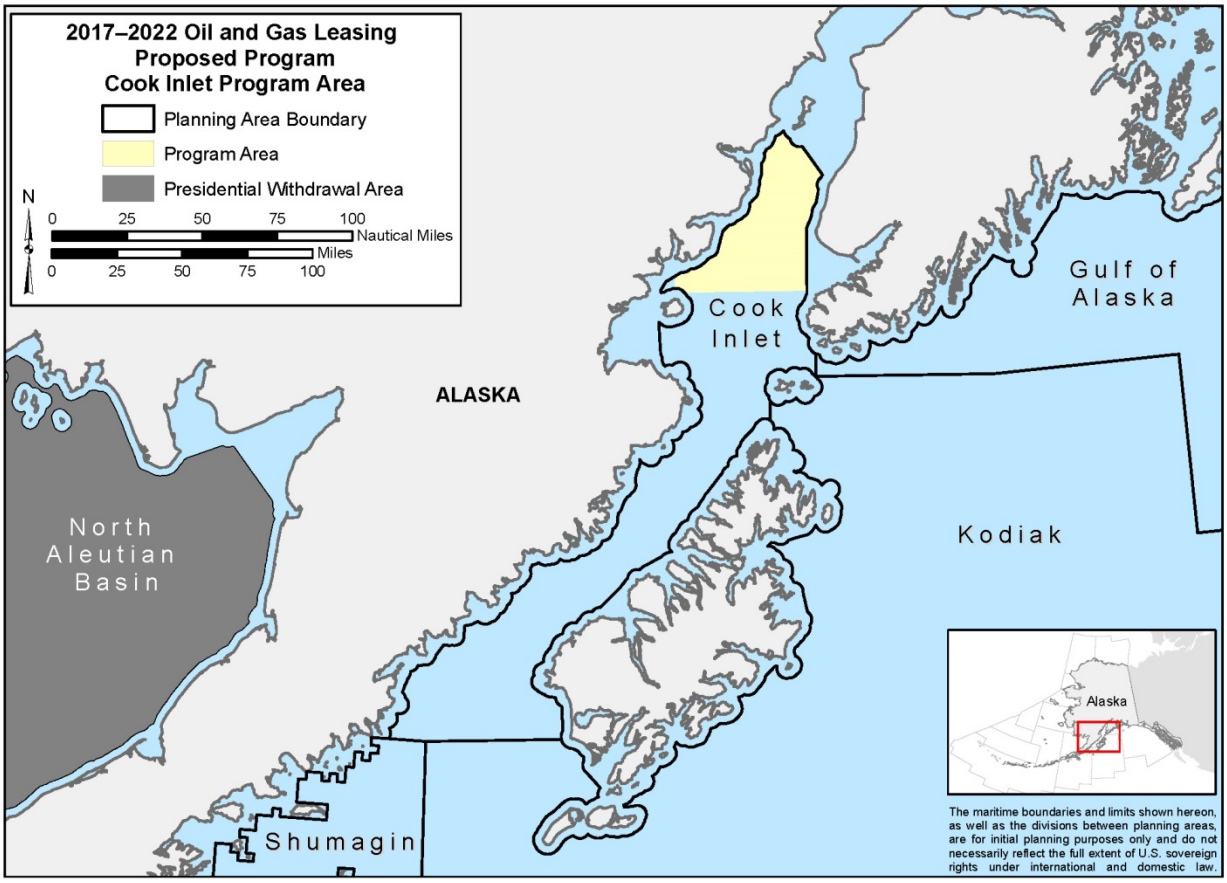
- **Option 1: One sale in 2021, in the northern portion of the program area as depicted in Figure 12-3.**

  Portions of the program area identified as environmentally important areas in the Draft Programmatic EIS will be further considered for mitigation or exclusion in the PFP and /or lease sale process.

- Option 2: No sale.

- Option 3: Other.

**Figure 12-3: Cook Inlet Program Area**



## 12.2 GULF OF MEXICO REGION

For the GOM planning areas, the Proposed Program schedules 10 region-wide lease sales in the areas of the GOM not under Congressional moratorium. The Proposed Program also continues to analyze a 15-mile no-leasing buffer south of Baldwin County, Alabama, as requested by the OCS Governors Coalition in a letter to which the Governor of Alabama was a signatory. The State of Alabama has requested a similar buffer for many years, siting visual impacts. Since Lease Sale 169 in 1998, to limit visual impacts BOEM has required that leases within 15-miles south of Baldwin County, Alabama, be subject to a lease sale stipulation that has been in use in Central GOM lease sales for many years. That stipulation requires that there be no new surface structures south and within 15 miles of Baldwin County. The lease stipulation minimizes the visual impacts of oil and gas operations off the coast of Baldwin County while allowing leasing and oil and gas operations in the area, which could not occur with the no-leasing buffer.

- **Option 1: Ten sales total during the 2017–2022 Program, with one sale in 2017; two sales each year in 2018, 2019, 2020, and 2021; and one sale in 2022; offering available unleased acreage not subject to Congressional moratorium in the combined Western, Central, and Eastern GOM Planning Areas in each sale. See Figure 12-4.**

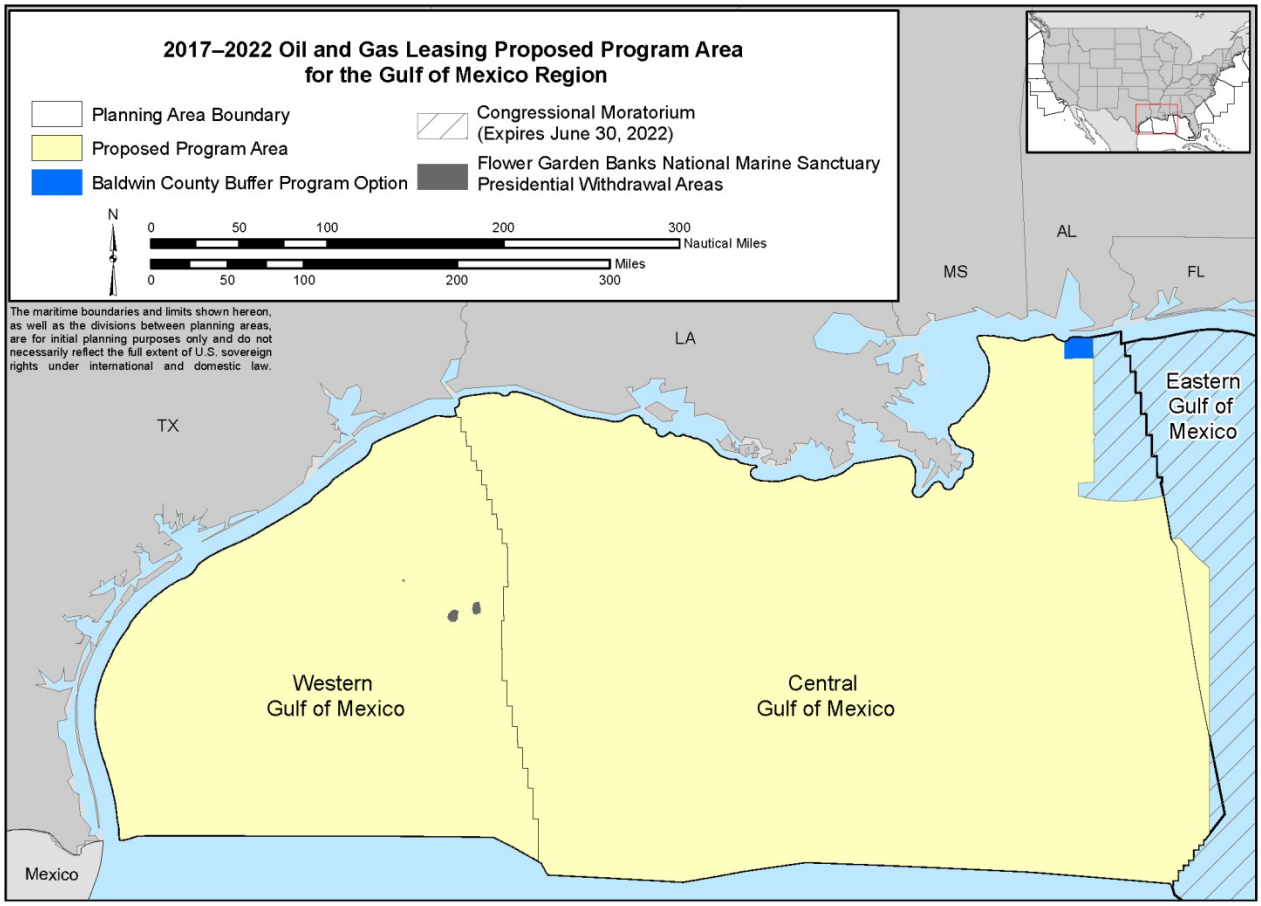
- Option 2: Maintain an approach similar to the 2012–2017 Program, with ten sales, including five annual sales beginning in 2017 in the Western GOM offering all available unleased acreage and five annual sales beginning in 2018 in the combined Central and Eastern GOM Planning Areas offering all available unleased acreage. See Figure 12-4. No Central or Eastern GOM Planning Area blocks that are subject to Congressional moratorium pursuant to GOMESA would be included for leasing consideration.

- Option 3: Option 1 or Option 2 with a 15-mile no-leasing buffer south of Baldwin County, Alabama, as requested in the comment letter from the OCS Governors Coalition on which the Governor of Alabama was a signatory.

- Option 4: No sale(s).

- Option 5: Other.

**Figure 12-4: GOM Region Program Area**



## 12.3 SECRETARIAL PROPOSED PROGRAM DECISION

The lease sale schedule below reflects the lease sales resulting from the Program options selected to create the 2017–2022 Proposed Program. Those selections result in a schedule of 13 potential lease sales in portions of six OCS planning areas: ten sales in the three GOM planning areas; and one sale each in the Chukchi Sea, Beaufort Sea, and Cook Inlet Program Areas, offshore Alaska (see Table 12-1). No lease sales are proposed for the Pacific or Atlantic Regions.

**Table 12-1: 2017–2022 Proposed Program Lease Sale Schedule**

| | Year | Program Area | Sale Number |
|---|---|---|---|
| **14.** | 2017 | Gulf of Mexico | 249 |
| **15.** | 2018 | Gulf of Mexico | 250 |
| **16.** | 2018 | Gulf of Mexico | 251 |
| **17.** | 2019 | Gulf of Mexico | 252 |
| **18.** | 2019 | Gulf of Mexico | 253 |
| **19.** | 2020 | Gulf of Mexico | 254 |
| **20.** | 2020 | Beaufort Sea | 255 |
| **21.** | 2020 | Gulf of Mexico | 256 |
| **22.** | 2021 | Gulf of Mexico | 257 |
| **23.** | 2021 | Cook Inlet | 258 |
| **24.** | 2021 | Gulf of Mexico | 259 |
| **25.** | 2022 | Gulf of Mexico | 261 |
| **26.** | 2022 | Chukchi Sea | 262 |

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## Chapter 11: Description of Programmatic EIS Environmentally Important Areas

No references.

## Chapter 12: Proposed Program and Leasing Options

No references.

# Glossary

**2-D Seismic** — A seismic survey where a line of geophones captures enough information to generate a two-dimensional (height and length) image of the Earth's subsurface directly below the line.

**3-D Seismic** — A seismic survey where a three-dimensional image of the subsurface is developed by combining numerous energy sources and multiple lines of geophones. The image consists of height, length, and side-to-side information that gives better resolution to the subsurface.

**Area Identification (Area ID)** — The Area ID is an administrative pre-lease step that describes the geographical area of the proposed actions (proposed lease sale areas) and identifies the alternatives, mitigating measures, and issues to be analyzed in the corresponding NEPA document.

**area-wide leasing** — All available (unleased and not withdrawn) acreage in the program area will be offered in the lease sale.

**barrel** — The standard unit of measurement of liquids in the petroleum industry, which is 42 U.S. standard gallons.

**barrel of oil equivalent (BOE)** — The amount of energy resource (in this document, natural gas) that is equal to one barrel of oil on an energy basis. The conversion is based on the assumption that one barrel of oil produces the same amount of energy when burned as 5,620 cubic feet of natural gas.

**basin** — A depression in the earth's surface where sediments are deposited, usually characterized by sediment accumulation over a long interval; a broad area of the earth beneath which layers of rock are inclined, usually from the sides toward the center.

**benthic** — Ecological zone at the bottom of a body of water; in this document, the seafloor surface and subsurface.

**benthos** — Organisms that dwell in or on the seafloor; the organisms living in or associated with the benthic (or bottom) environment.

**bid** — An offer for an OCS lease submitted by a potential lessee in the form of a cash bonus dollar amount or other commitments responding to a variable fiscal term as specified in the final notice of sale.

**block** — A numbered area on an OCS leasing map or official protraction diagram (OPD). Blocks are portions of OCS leasing maps and OPDs that are themselves portions of planning areas. Blocks vary in size, but are typically 5,000 to 5,760 acres (about 9 square miles or 2,304 hectares). Each block has a specific identifying number, area, and latitude and longitude coordinates that can be pinpointed on a leasing map of OPD.

**bonus bid** — The cash consideration paid to the United States by the successful bidder for a mineral lease. The payment is made in addition to the rent and royalty obligations specified in the lease.

**Bureau of Ocean Energy Management** — On October 1, 2011, the Bureau of Ocean Energy Management (BOEM) was created. BOEM is responsible for managing development of the Nation's offshore resources in an environmentally and economically responsible way. Functions include: Leasing,

Plan Administration, Environmental Studies, National Environmental Policy Act (NEPA) Analysis, Resource Evaluation, Economic Analysis, and the Renewable Energy Program.

**Bureau of Safety and Environmental Enforcement** — On October 1, 2011, the Bureau of Safety and Environmental Enforcement (BSEE) was created. BSEE is responsible for enforcing safety and environmental regulations. Functions include: all field operations including Permitting and Inspections, Research Offshore Regulatory Programs, Oil Spill Response, and Training, and Environmental Compliance functions.

**caprock** — An impermeable rock overlying an oil or gas reservoir that tends to prevent migration of fluids from the reservoir.

**catastrophic discharge event** — A low-probability, unexpected, and unauthorized large discharge of oil into the environment that could cause long-term and widespread effects on marine and coastal environments.

**conceptual play** — Geologic plays in which hydrocarbons have not been detected, but for which geological and geophysical data, integrated with regional geologic knowledge, suggest that hydrocarbon accumulations may exist.

**continental shelf** — A broad, gently sloping, shallow feature extending from the shore to the continental slope, generally considered to exist to the depth of 200 meters (656 feet).

**continental slope** — A relatively steep, narrow feature paralleling the continental shelf, the region in which the steepest descent to the ocean bottom occurs.

**conventional reservoir** — A hydrocarbon accumulation in which reservoir and fluid characteristics typically allow oil or natural gas to flow readily into a well. This distinguishes the resources apart from unconventional reservoirs where there is little to no significant force driving the migration of resources to a wellbore.

**conventional resources** — Oil and gas resources in conventional reservoirs where buoyant forces keep resources in place beneath a caprock.

**conventional recovery methods** — Producing oil and gas resources using traditional extraction methods, such as natural pressure, pumping, or by using secondary methods such as gas or water injection.

**critical habitat** — A designated area that is essential to the conservation of an endangered or threatened species that may require special management considerations or protection.

**crude oil** — Petroleum in its natural state as it emerges from a well, or after it passes through a gas-oil separator, but before refining or distillation.

**Department of the Interior (Department, USDOI)** — The Department of the Interior is a Cabinet-level agency that manages America's vast natural and cultural resources. Under the direction of the Secretary of the Interior, BOEM works to promote energy independence, environmental protection, and economic development through responsible, science-based management of OCS conventional and renewable energy and marine mineral resources.

**development** — Activities following exploration including the installation of facilities and the drilling and completion of wells for production purposes.

**Development and Production Plan** — A plan describing the specific work to be performed on an offshore lease after a successful discovery, including all development and production activities that the lessee proposes to undertake during the time period covered by the plan and all actions to be undertaken up to and including the commencement of sustained production. The plan also includes descriptions of facilities and operations to be used, well locations, current geological and geophysical information, environmental safeguards, safety standards and features, schedules, and other relevant information. All lease operators are required to formulate and obtain approval of such plans by BOEM before development and production activities may begin; requirements for submittal of the plan are identified in 30 CFR 550.241.

**Draft Proposed Program (DPP)** — Section 18 of the OCS Lands Act requires the Secretary of the Interior to prepare and maintain a schedule of proposed OCS oil and gas lease sales determined to "best meet national energy needs for the five-year period following its approval or reapproval." Preparation and approval of a Program is based on a consideration of principles and factors specified by Section 18 to determine the size, timing, and location of lease sales. The DPP is the first of three proposals to be issued for public review before a new Program may be approved.

**endangered species** — Any species that is in danger of extinction throughout all or a significant portion of its range and has been officially listed by the appropriate Federal Agency (either the National Oceanic and Atmospheric Administration [NOAA] or U.S. Fish and Wildlife Service) under the authority of the Endangered Species Act; a species is determined to be endangered (or threatened) because of any of the following factors: (1) the present or threatened destruction, modification, or curtailment of its habitat or range; (2) over utilization for commercial, sporting, scientific, or educational purposes; (3) disease or predation; (4) the inadequacy of existing regulatory mechanisms; or (5) other natural or man-made factors affecting its continued existence.

**environmental assessment** — A concise public document prepared pursuant to NEPA and the Council on Environmental Quality regulations. In the document, a Federal Agency proposing (or reviewing) an action provides evidence and analysis for determining whether it must prepare an environmental impact statement or whether it finds there is no significant impact (i.e., Finding of No Significant Impact).

**environmental impact statement (EIS)** — A concise, clear, and to the point public document prepared pursuant to NEPA and Council on Environmental Quality regulations for a major Federal action significantly affecting the environment. EISs provide a full and fair discussion of significant environmental impacts to inform decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts. The document is used by Federal officials, in conjunction with other relevant material, to plan actions and make decisions.

**environmental sensitivity** — A measure of the vulnerability and resilience of a region's ecological components to potential adverse impacts of offshore oil and gas exploration and development activities in the context of existing conditions.

**established play** — Geologic plays in which hydrocarbons have been discovered and a petroleum system has been proven to exist.

**Exclusive Economic Zone (EEZ)** — The maritime region adjacent to the territorial sea, extending 200 nautical miles (nm) from the baseline of the territorial sea, in which the United States has exclusive rights and jurisdiction over living and nonliving natural resources.

**exploration** — The process of searching for minerals preliminary to development. Exploration activities include: (1) geophysical surveys, (2) any drilling to locate an oil or gas reservoir, and (3) the drilling of additional wells after a discovery to delineate a reservoir. It enables the lessee to determine whether to proceed with development and production.

**Exploration Plan** — A plan submitted by a lessee (30 CFR 250.33) that identifies all the potential hydrocarbon accumulations and wells that the lessee proposes to drill to evaluate the accumulations within the lease or unit area covered by the plan. All lease operators are required to obtain approval of such a plan by a BOEM Regional Supervisor before exploration activities may commence.

**field** — Area consisting of a single reservoir or multiple reservoirs all grouped on, or related to, a shared geologic structural feature and/or stratigraphic trap.

**formation** — A bed or deposit sufficiently homogeneous to be distinctive as a unit. Each different formation is given a name, frequently as a result of the study of the formation outcrop at the surface and sometimes based on fossils found in the formation.

**geological data** — Information derived from rocks of the seabed to provide information on the geological character of rock strata.

**geological surveys** — Geological surveying on the Outer Continental Shelf consists of bottom sampling, shallow coring, and deep stratigraphic tests. These data are useful in determining the general geology of an area and whether the right types of rocks exist for petroleum formation and accumulation.

**geophysical data** — Facts, statistics, or samples that have not been analyzed or processed, pertaining to gravity, magnetic, seismic, or other surveys/systems.

**geophysical surveys** — Geophysical surveys on the OCS provide data about the seafloor and the subsurface. Comprised of 2-D and 3-D seismic surveys, as well as multi-component, high-resolution, wide-azimuth, and other advanced types of seismic surveys, the surveys obtain data for hydrocarbon exploration and production, identify possible seafloor or shallow depth geologic hazards, and locate potential archaeological resources and hard-bottom habitats that should be avoided.

**hurdle price** — The price below which delaying exploration for the largest potential undiscovered field in the sale area is more valuable than immediate exploration.

**hydrocarbon** — Any of a large class of organic compounds containing primarily carbon and hydrogen; comprising paraffins, olefins, members of the acetylene series, alicyclic hydrocarbons, and aromatic hydrocarbons; and occurring, in many cases, in petroleum, natural gas, coal, and bitumens.

**isobath** — A contour line on a map that connects points of equal underwater depth.

**lease** — A legal document executed between a landowner, as lessor, and a company or individual (as lessee) that conveys the right to explore the leased area for minerals or other resources on the OCS for a specified period of time. The term also means the area covered by that authorization, whichever the context requires.

**lease sale** — A BOEM proceeding by which leases of certain OCS tracts are offered for lease by competitive sealed bidding and during which bids are received, announced, and recorded.

**lease period** — Duration of an OCS lease. Oil and gas leases are issued for an initial period of between 5 and 10 years. After that, the term continues as long as there is production in paying quantities.

**lessee** — An entity, person, or persons to whom a lease is awarded; the recipient of a lease.

**liquefied natural gas (LNG)** — Natural gas is converted to LNG by cooling it to a temperature of -256°F, at which point it becomes a liquid. This simple process allows natural gas to be transported from an area of abundance to an area where it is needed. Once the LNG arrives at its destination, it is either stored as a liquid, or is converted back to natural gas and delivered to end-users.

**marine productivity** — Productivity is a term used to indicate the amount of biomass produced over a period of time. Primary productivity is the production of biomass using carbon dioxide and water through photosynthesis. The primary productivity of the marine community is its capacity to produce energy for its component species, which thus sets limits on the overall biological production in marine ecosystems.

**marine protected area** — Any area of the marine environment that has been reserved by Federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein.

**minerals** — Minerals include oil, gas, sulfur, and associated resources, and all other minerals authorized by an Act of Congress to be produced from public lands, as defined in Section 103 of the Federal Land Policy and Management Act of 1976.

**moratorium** — Restriction on what areas BOEM can offer for OCS oil and gas leasing.

**natural gas** — A mixture of hydrocarbon compounds and small quantities of various non-hydrocarbons existing in gaseous phase at the surface or in solution with crude oil in natural underground reservoirs at reservoir conditions.

**nearshore waters** — Offshore open waters that extend from the shoreline out to the limit of the territorial seas (12 nm).

**net social value** — The net social value equals the discounted gross revenues from the produced oil an d natural gas minus the private, environmental, and social costs required to realize the economic value of the resources.

**net economic value (NEV)** — The value to society that is derived from the resources in the ground. The NEV equals the discounted gross revenues from the produced oil and natural gas minus the private costs required to realize the economic value of the resources.

**Oil Spill Response Plan** — A plan submitted by the lease or unit operator prior to using a facility covered by the plan and that details provisions for fully defined specific actions to be taken following discovery and notification of an oil spill occurrence (30 CFR 254).

**Outer Continental Shelf (OCS)** — All submerged lands seaward and outside the area of lands beneath navigable waters. Lands beneath navigable waters are interpreted as extending from the coastline to 3 nm into the Atlantic Ocean, the Pacific Ocean, the Arctic Ocean, Cook Inlet, and the Gulf of Mexico, excluding the coastal waters off Texas and western Florida. Lands beneath navigable waters are interpreted as extending from the coastline to 3 marine leagues into the Gulf of Mexico off Texas and western Florida.

**operator** — The person or company engaged in the business of drilling for, producing, or processing oil, gas, or other minerals and recognized by BOEM as the official contact and responsible for the lease activities or operations.

**pelagic** — Pertaining to the part of the open sea or ocean comprising the water column.

**petroleum** — An oily, flammable, bituminous liquid that occurs in many places in the upper strata of the earth, either in seepages or in reservoirs; essentially a complex mixture of hydrocarbons of different types with small amounts of other substances; any of various substances (as natural gas or shale oil) similar in composition to petroleum.

**petroleum system** — All of the geologic components and processes which create a suitable environment to generate, accumulate, and preserve oil and gas. Elements such as source rock, reservoir rock, and the trapping mechanism, along with how the fluids migrate are necessary for the creation of a suitable hydrocarbon reservoir.

**planning area** — An administrative subdivision of an OCS area used as the initial basis for considering blocks to be offered for lease.

**play (geologic play)** — A group of known and/or postulated pools that share common geologic, geographic, and temporal properties, such as history of hydrocarbon generation, migration, reservoir development, and entrapment.

**pool** — A discovered or undiscovered accumulation of hydrocarbons.

**production** — Activities that take place after the successful completion of a well, including removal of minerals, field operations, transfer of minerals to shore, operation monitoring, maintenance, and workover drilling.

**primary production** — The production of biomass from inorganic carbon and water through photosynthesis or chemosynthesis.

**Proposed Program** — The second in a series of three mandated proposed leasing schedules to be issued for public review before a new Program may be approved. The Proposed Program takes into account, among other things, the comments received concerning the DPP.

**Proposed Final Program (PFP)** — The third in a series of three mandated leasing proposals developed for public review before the Secretary of the Interior may take final action to approve the new Program. The PFP is submitted to the President and Congress, along with copies of the comments received on the Proposed Program, and responses to recommendations from the Governors.

**Record of Decision (ROD)** — The final step in the EIS process. The ROD identifies the selected alternative, presents the basis for the decision, identifies alternatives considered, specifies the environmentally preferable alternative, and provides information on appropriate mitigation measures.

**recoverable resources** — Portion of the identified oil or gas resources that can be economically extracted under current technological constraints.

**rent** — Periodic payments made by the holder of a lease, during the primary lease term prior to a discovery in paying quantities for the right to use the land or resources for purposes established in the lease.

**Request for Information and Comments (RFI)** — The first step in the development of a Program. BOEM publishes a Federal Register notice to request information and comments from states and local governments, tribal governments, Native American and Alaska Native organizations, Federal agencies, environmental and fish and wildlife organizations, the oil and gas industry, non-energy industries, other interested organizations and entities, and the general public for use in the preparation of the Program. BOEM seeks a wide array of information including information associated with the economic, social, and environmental values of all OCS resources, as well as the potential impact of oil and gas exploration and development on other resource values of the OCS and the marine, coastal, and human environments.

**reservoir** — Subsurface, porous, permeable rock body in which oil or gas or both may have accumulated.

**resource** — Concentrations in the earth's crust of naturally occurring liquid or gaseous hydrocarbons that can conceivably be discovered and recovered. Normal use encompasses both discovered and undiscovered resources.

**royalty** — Payment, in value (money) or in kind, of a stated proportionate interest in production from mineral deposits by the lessees to the lessor.

**secondary production** — Generation of biomass of consumer (heterotrophic) organisms. Its definition may be limited to include the consumption of primary producers by herbivorous consumers, but is more commonly defined to include all biomass generation by heterotrophs.

**seismic** — Pertaining to, characteristic of, or produced by, earthquakes or Earth vibrations; having to do with elastic waves in the Earth.

**seismic survey** — A method of geophysical prospecting using the generation, reflection, refraction, detection, and analysis of elastic waves in the Earth. Seismic surveys use sound waves that are sent through the ocean floor to map the subsurface.

**spudding** — To begin drilling a well.

**stipulation** — Specific measures imposed upon a lessee that apply to a lease. Stipulations are attached as a provision of a lease; they may apply to some or all tracts in a sale. For example, a stipulation might limit drilling to a certain time period of the year or certain areas.

**tract** — An area of the seabed that may be offered for lease. It is a designation assigned, for administrative and statutory purposes, to a block or combination of blocks that are identified by an official protraction diagram prepared by BOEM. A tract may not exceed 5,760 acres unless it is determined that a larger area is necessary to comprise a reasonable economic production unit.

**trap** — A geologic feature that permits the accumulation and prevents the escape of accumulated fluids (hydrocarbons) from the reservoir.

**unconventional recovery methods** — Enhanced technological and engineering techniques used to produce oil and gas resources, such as horizontal drilling and hydraulic fracturing.

**unconventional resources** — Oil and gas resources trapped in formations that have lower permeability and/or porosity than the rocks that have typically produced oi land gas resources in the past. These formations are commonly referred to as shale or tight formations. In recent years, these types of formations have been increasingly produced using hydraulic fracturing.

**Undiscovered Economically Recoverable Resources (UERR)** — The portion of the undiscovered technically recoverable resources that are economically recoverable under specified economic and technologic conditions, including prevailing prices and costs.

**Undiscovered Technically Recoverable Resources (UTRR)** — Oil and gas that may be produced from the subsurface using conventional extraction techniques without any consideration of economic viability.

**well** — A hole drilled or bored into the earth, usually cased with metal pipe, for the production of gas or oil. A hole for the injection under pressure of water or gas into a subsurface rock formation.

# APPENDIX A
# SUMMARIES OF SUBSTANTIVE PUBLIC COMMENTS

# Table of Contents

# Abbreviations and Acronyms

| | |
|---|---|
| BOEM | Bureau of Ocean Energy Management |
| DPP | Draft Proposed Program |
| EIS | environmental impact statement |
| FR | *Federal Register* |
| G&G | geological and geophysical |
| GOM | Gulf of Mexico |
| GOMESA | Gulf of Mexico Energy Security Act of 2006 |
| ID | Identification |
| NASA | National Aeronautics and Space Administration |
| NEPA | National Environmental Policy Act of 1969 |
| NMFS | National Marine Fisheries Service |
| NOA | Notice of Availability |
| NOI | Notice of Intent |
| NPS | National Park Service |
| OCS | Outer Continental Shelf |
| Programmatic EIS | *2017–2022 OCS Oil and Gas Leasing Program Draft Programmatic Environmental Impact Statement* |
| TAPS | Trans-Alaska Pipeline System |
| USDOI | U.S. Department of the Interior |

# Appendix A Summaries of Substantive Public Comments by Commenter Category

## A.1 Request for Comments on the Draft Proposed Program

The Bureau of Ocean Energy Management (BOEM) announced the availability of and requested comments on the 2017–2022 Outer Continental Shelf (OCS) Oil and Gas Leasing Draft Proposed Program (DPP) in the Federal Register (FR) on January 29, 2015 (80 FR 4941). The DPP was distributed to interested and affected parties, including Governors and Federal agency leaders, for a 60-day comment period. BOEM received more than 1 million comments on the DPP (see www.regulations.gov document ID BOEM-2014-0096). Simultaneously, BOEM published the Notice of Intent (NOI) to prepare an environmental impact statement (EIS) (80 FR 4939), and approximately 250,000 comments on the NOI were submitted (see www.regulations.gov document ID BOEM-2014-0085). A summary of comments received on the DPP is provided below.

## A.2 Summary of Comments Received

BOEM received more than 1 million comments in response to the January 29, 2015, Notice of Availability (NOA) of the DPP. Comments were received from several different types of stakeholders (see Table A-1). Of the 22 coastal states, BOEM received 5 comment letters from Governors (Alaska, Maryland, North Carolina, Virginia, and Washington) and a comment letter from the OCS Governors Coalition signed by five Governors (Alabama, Maine, Mississippi, North Carolina, and Virginia), and 5 comments from state agencies (Alaska, Delaware, Maryland, New Jersey, South Carolina). Table A-2 provides a list of organizations that submitted comment letters.

Several form letter campaigns stated support for the DPP decision, while several were opposed. Support of, or opposition to, expanded OCS leasing is influenced by current political, environmental, and socioeconomic trends and is therefore fluid and can be difficult to predict. Each commenter summary contains a Document ID. The Document ID refers to the comment docket number in the Federal Government's online comment website, www.regulations.gov, where the full comment can be accessed.

**Table A-1: Unique Comments Received by Commenter Type**

| Commenter Type | Number of Comments Received |
|---|---|
| Governors and State Agencies | 12 |
| Local Governments | 67 |
| Public Interest Groups | 64 |
| Federal Agencies | 6 |
| Energy Industry and Associations | 16 |
| Non-energy Industry and Associations | 56 |
| State-level Elected Officials | 23 |
| Members of Congress | 12 |
| Tribes and Tribal Organizations | 1 |
| General Public | 1,384 |
| **Total** | **1,640** |

**Note**: The number of comments received reflects the number of unique letters received; form letters and duplicate letters are not shown in this table.

**Table A-2: Comments Received by Commenter Type**

| Commenter Type | Organization |
|---|---|
| Governors and State Agencies | Alabama Governor Bentley |
| | Alaska Governor Walker |
| | Alaska Department of Natural Resources |
| | Washington Governor Inslee |
| | New Jersey Department of Environmental Protection |
| | Delaware Department of Natural Resources and Environmental Control |
| | Maryland Governor Hogan |
| | Maryland Department of Natural Resources |
| | Virginia Governor McAuliffe |
| | North Carolina Governor McCrory |
| | North Carolina Lieutenant Governor Forest |
| | South Carolina Department of Health and Environmental Control |
| | OCS Governors Coalition (AK, AL, LA, ME, MS, NC, SC, VA) |
| Local Governments | Alaska Kenai Peninsula Borough Mayor Navarre |
| | Alaska Mayor of North Slope Borough, Mayor Brower |
| | Florida St. Johns County Board of Commissioners |
| | Florida Atlantic Beach |
| | Florida City of Cape Canaveral |
| | Florida City of Cocoa Beach |
| | Florida City of Fernandina Beach |
| | Florida Town of Indialantic |
| | Florida Town of Indialantic, Mayor Berkman |
| | Florida City of Indian Harbour Beach |
| | Florida City of Jacksonville Mayor Brown |
| | Florida City of Marco Island |
| | Florida City of Melbourne |
| | Florida Town of Melbourne Beach |
| | Florida City of Neptune Beach |
| | Florida City of New Smyrna Beach |
| | Florida City of Satellite Beach |
| | Florida City of St. Augustine, Mayor Samuels |
| | Florida City of St. Augustine, Vice Mayor Commissioner Sikes-Kline |
| | Florida City of St. Augustine |
| | Florida City of St. Petersburg |
| | City of West Melbourne |
| | Florida Space Coast League of Cities |
| | Florida Ponte Vedra Beach - Municipal Service District Chairman Jurenovich |
| | Georgia City of St. Mary's |
| | Georgia City of Tybee Island |
| | New Jersey Township of Barnegat |
| | New Jersey Borough of Beach Haven |
| | New Jersey Borough of Beachwood |
| | New Jersey Borough of Bradley Beach |
| Local Governments | New Jersey City of Brigantine Mayor and City Council |
| | New Jersey Borough of Red Bank |

| Commenter Type | Organization |
|---|---|
| (continued) | New Jersey League of Municipalities - Mayors Wahler, Walters, Howard, Kelaher, Kelly, Guardian, and Mehaney |
| | New Jersey Willigboro Township, Mayor Emeritus Johnson |
| | North Carolina Bald Head Island Resolution |
| | North Carolina Town of Carolina Beach |
| | North Carolina Carteret County Board |
| | North Carolina Town of Caswell Beach |
| | North Carolina Dare County Board of Commissioners |
| | North Carolina Town of Duck |
| | North Carolina Town of Kill Devil Hills |
| | North Carolina Town of Manteo |
| | North Carolina Town of Nags Head |
| | North Carolina Town of Oak Island, Town Council |
| | North Carolina Town of Oak Island, Mayor Wallace |
| | North Carolina Town of Southport |
| | North Carolina Town of St. James |
| | North Carolina Town of Sunset Beach |
| | North Carolina Town of Topsail Beach |
| | North Carolina Town of Wrightsville Beach |
| | South Carolina Town of Beaufort |
| | South Carolina Town of Beaufort, Mayor Keyserling |
| | South Carolina Town of Beaufort, Councilman Murray |
| | South Carolina City of Charleston |
| | South Carolina Town of James Island |
| | South Carolina James Island Public Service District |
| | South Carolina Town of James Island, Councilman Milliken |
| | South Carolina Town of James Island, Councilman Mulliniax |
| | South Carolina Town of Edisto Beach |
| | South Carolina City of Folly Beach |
| | South Carolina Town of Hilton Head Island, Mayor Bennett and Town Council |
| | South Carolina Horry County Councilman Vaught |
| | South Carolina City of Isle of Palms |
| | South Carolina Town of Port Royal |
| | South Carolina Town of Sullivan's Island |
| | South Carolina Town of Surfside Beach Councilman Childs |
| | Virginia City of Virginia Beach, Mayor Sessoms, Jr. |
| Public Interest Groups | Alaska Wilderness League (Petition) |
| | Alaska Wilderness League, Center for Biological Diversity, Earthjustice, Environmental Investigation Agency, Friends of the Earth, Greenpeace, League of Conservation Voters, Oceana, Ocean Conservation Research, Oil Change International, Northern Alaska Environmental Center, Sierra Club, the Wilderness Society |
| | Americans for Prosperity |
| | Assateague Coastal League |
| Public Interest Groups | Audubon, Oceana, Ocean Conservancy, the PEW Charitable Trusts, World Wildlife Foundation |

| Commenter Type | Organization |
|---|---|
| (continued) | Center for Biological Diversity |
| | Center for Sustainable Coasts |
| | Chesapeake Climate Action Network (Petition) |
| | Citizens for Alternatives to Chemical Contamination |
| | Clean Water Action NJ |
| | Clean Ocean Action |
| | Consumer Energy Alliance 1 (Petition) |
| | Consumer Energy Alliance 2 (Petition) |
| | Earthjustice, Southern Environmental Law Center, Natural Resources Defense Council, Center for Biological Diversity, Oceana |
| | Earthjustice (Petition) |
| | Edisto Island Preservation Alliance |
| | Environmental North Carolina (Petition) |
| | Environmental Investigation Agency |
| | Fisheries Survival Fund |
| | Georgia Conservancy |
| | Greenpeace |
| | International Fund for Animal Welfare 1 (Petition) |
| | International Fund for Animal Welfare 2 (Petition) |
| | Little Cumberland Island Sea Turtle Project |
| | Manasquan Boardriders Club |
| | Marine Conservation Institute |
| | Marine Education, Research & Rehabilitation Institute, Inc. (MERR) |
| | National Parks Conservation Association |
| | Natural Resources Defense Council 1 |
| | Natural Resources Defense Council 2 (Petition) |
| | Natural Resources Defense Council 3 (Petition) |
| | Natural Resources Defense Council 4 (Petition) |
| | NY/NJ Baykeeper |
| | New York University Institute for Policy Integrity |
| | North Carolina Coastal Federation |
| | Northern Alaska Environmental Center |
| | Oceana 1 |
| | Oceana 2 (Petition) |
| | Oceana 3 (Petition) |
| | Oceana 4 (Petition and Resolutions) |
| | Oceana--Southeast Campaign |
| | Ocean Conservation Research |
| | Ocean Foundation, Coastal Coordination Program |
| | OffshoreAlabama.com |
| | Oil Change International 1 (Petition) |
| | Oil Change International 2 (Petition) |
| | One Hundred Miles, Inc |
| | Our Children's Trust |
| Public Interest Groups (continued) | Public Trust Environmental Legal Institute of Florida |
| | Sabin Center for Climate Change Law |
| | Sierra Club, Virginia Chapter (2 comments) |
| | South Carolina Wildlife Federation |

| Commenter Type | Organization |
|---|---|
| | Southern Alliance for Clean Energy (Petition) |
| | Southern Environmental Law Center |
| | St. Johns Riverkeeper |
| | St. Mary's Earthkeepers |
| | Surfrider California |
| | Surfrider Florida - Sebastian Inlet Chapter |
| | Surfrider (Petition/form letter) |
| | The Nature Conservancy |
| | Waterkeepers-Chesapeake |
| | Waterwatch International |
| | World Wildlife Federation 1 |
| | World Wildlife Federation 2 (Petition) |
| Federal Agencies | Department of State, John Kerry |
| | Department of Defense, Daniel P.C. Feehan |
| | Department of Energy, Amy Bodette |
| | Department of Transportation, Anthony Foxx |
| | Marine Mammal Commission, Rebecca Lent |
| | National Park Service, Brenda Pierce |
| Energy Industry and Associations | Alaska Oil and Gas Association |
| | American Petroleum Institute (API) et al. |
| | API |
| | Chevron U.S.A. Inc. |
| | ConocoPhillips |
| | Deep Gulf Energy |
| | Diamond Offshore |
| | ExxonMobile |
| | International Association of Geophysical Contractors (IAGC) |
| | Louisiana Mid-Continent Oil and Gas Association |
| | Louisiana Oil and Gas Association |
| | Noble Energy |
| | Shell Offshore, Inc. Energy Resources Company |
| | Statoil, Foster Wade |
| | Statoil, Jeremey Averty |
| | Tennessee Oil and Gas Association |
| Non-energy Industry and Associations | Air Liquide America |
| | Alaska Chamber of Commerce |
| | Alaska Trucking Association |
| | Alliance for Economic Development of Georgetown County, South Carolina |
| | American Chemistry Council |
| | American Trucking Associations |
| | Aries Marine Corporation |
| | Associated Industries of Florida |
| | Axistrade |
| Non-energy Industry and Associations (continued) | Bald Head Association/BHI Stage II Association |
| | Bayou Industrial Group |
| | Bidarka |
| | Cape May Chamber of Commerce |

| Commenter Type | Organization |
|---|---|
| | Clay County Chamber of Commerce, Florida |
| | Coleman Holdings |
| | Communications Workers of America |
| | Conservation Cooperative of Gulf Fishermen |
| | D&M Photo |
| | Dare County Tourism Board, North Carolina |
| | Dittman Research and Communications |
| | Dominion Resources |
| | Georgia Chamber of Commerce |
| | Georgia Agribusiness Council |
| | Greater New Orleans, Inc., Louisiana |
| | Jesperson Sales & Management Consulting - Alaska |
| | Kiewit Offshore Services, Ltd. |
| | LA 1 Coalition |
| | Laborers' International Union of North America Local 341 |
| | Louisiana Association of Business & Industry |
| | Louisiana Oil Marketers Convenience Store Association |
| | Marine Exchange of Alaska |
| | MatSu Business Alliance |
| | National Association of Charterboat Operators |
| | National Association of Manufacturers |
| | North American Submarine Cable Association |
| | North Carolina Farm Bureau Federation |
| | Northern Gas Pipelines |
| | Northstar Terminal and Stevedore Co |
| | Outer Banks Association of Realtors |
| | Outer Banks Chamber of Commerce, North Carolina |
| | Palmetto Agribusiness Council, South Carolina |
| | Panama City Boatmen Association, Florida |
| | Perennial Environmental Services |
| | Ports Association of Louisiana |
| | PT Capital |
| | Rock Acres Consulting |
| | Solten XP |
| | South Carolina Small Business Chamber of Commerce |
| | South Central Industrial Association, Louisiana |
| | Spectrum Geo, Inc. |
| | Texas Association of Business |
| | Texas Association of Manufacturers |
| | U.S. Chamber of Commerce Institute for 21st Century Energy |
| | Virginia Chamber of Commerce |
| | Virginia Beach Restaurant Association |
| | W.D. Scott Group |
| State-level Elected Officials | Alaska Senator John Coghill |
| | Georgia Representative Charles Martin, Jr. |
| | Georgia Senator Frank Ginn |
| | Idaho Senator and Chair of the Energy Production States Coalition Chuck |

| Commenter Type | Organization |
|---|---|
| | Winder |
| | Kentucky Representative Dean Schamore |
| | Maryland Attorney General Brian E. Frosh |
| | Maine Representative Joan Welsh |
| | North Carolina Representative Paul Tine |
| | North Carolina Representative Ken Waddell |
| | North Carolina Representative Pricey Harrison |
| | North Carolina Senator Phil Berger |
| | North Carolina Senator Bill Cook |
| | Nevada State Assemblyman John Ellison |
| | South Carolina Representative Heather Crawford |
| | South Carolina Representative Stephen Goldfinch |
| | South Carolina Representative Kevin Hardee |
| | South Carolina Representative Alan Clemmons |
| | South Carolina Senator Gregory Hembree |
| | South Carolina Senator Paul Cambell |
| | Wyoming Senator Eli Debout |
| | Utah Senator Ralph Okerlund |
| | Virginia Delegate Scott Surovell |
| | Virginia Senator Donald McEachlin |
| Members of Congress | Senator Murkowski (AK) |
| | Representative Castor (FL) |
| | Representative LoBiondo (NJ) |
| | Representative Tom Rice (SC) |
| | 3 NJ Members: Robert Menendez, Cory Booker, Frank Pallone |
| | 3 VA Representatives: Gerald Connolly, Bobby Scott, Donald Beyer |
| | 3 VA Senators: Mark Warner, Tim Kaine |
| | 12 Representatives: Cedric Richmond (LA), Gene Green (TX), Jim Costa (CA), Ruben Hinojosa (TX), Bennie Thompson (MS), Brad Ashford (NE), Filemon Vela (TX), Al Green (TX), Marc Veasey (TX), Sanford Bishop (GA), Collin Peterson (MN), Terri Sewell (AL) |
| | 12 Senators: Edward Markey (MA), Barbara Mikulski (MD), Robert Menendez (NJ), Benjamin Cardin (MD), Sheldon Whitehouse (RI), Jack Reed (RI), Elizabeth Warren (MA), Richard Blumenthal (CT), Cory Booker (NJ), Bernie Sanders (VT), Kirsten Gillibrand (NY), Bill Nelson (FL) |
| | Atlantic Congressional Caucus (33 members) |
| | 53 Representatives |
| | 161 Congressional members |
| Tribes and Tribal Organizations | NANA Regional Corporation |

## A.2.1 Governors and State Agencies

### A.2.1.1 OCS Governors Coalition

**The OCS Governors Coalition**
**Document ID: BOEM-2014-0096-14357**

The Coalition submitted a letter signed by Governors McCrory of North Carolina, Bentley of Alabama, Bryant of Mississippi, McAuliffe of Virginia, and LePage of Maine, stating support for safe exploration and expansion of offshore drilling off the coast of the Atlantic, as well as revenue sharing to all participating coastal states. The Governors state support for lease sales in the Gulf of Mexico (GOM), Beaufort Sea, Cook Inlet, and Chukchi Sea in Alaska, and Mid-Atlantic and South Atlantic Program Areas, and request earlier leasing dates for the Alaska and Atlantic lease sales. Further, the Governors state that tapping into these markets will create new jobs and generate money for the local economy. The commenter argues that revenue sharing will help local governments establish the proper infrastructure to support oil and gas drilling and exploration, as well as revamp coastal management programs. The commenters also request a 15-mile no-leasing buffer off Baldwin County, Alabama.

### A.2.1.2 Alaska Region

**Alaska Governor Walker**
**Document ID: BOEM-2014-0096-14363**

The Governor requests that lease sale in the Beaufort Sea, Alaska, be placed into the 2018 time slot instead of 2020 if the current program's sale is not held in 2017. The commenter suggests either carrying the current sale into the new program for 2018 or move the new program sale up from 2020 to 2018. The commenter notes the State of Alaska wants to encourage this potential development.

**Alaska Department of Natural Resources**
**Document ID: BOEM-2014-0096-14356**

The commenter requests making leases in the Beaufort Sea, Cook Inlet, and Chukchi Sea available as soon as possible. The commenter suggests that the current plan is limiting economic opportunity for the region and the United States. The commenter requests a plan that ensures timely and predictable access to Alaska's highly prospective OCS lands.

### A.2.1.3 Pacific Region

**Washington Governor Inslee**
**Document ID: BOEM-2014-0096-14562**

The Governor states opposition to opening up areas of the Arctic coastline to oil and gas drilling. The Governor argues that drilling in this area poses a huge potential ecological threat, should there be a spill, and that new oil and gas development is limiting the progress of development of cleaner energy.

### A.2.1.4 Gulf of Mexico Region

There were no separate submissions. The Governors of Alabama and Mississippi commented as part of the OCS Governors Coalition (see Section A.2.1.1).

### *A.2.1.5 Atlantic Region*

**Delaware Department of Natural Resources and Environmental Control**
**Document ID: BOEM-2014-0096-14499**

The commenter expresses concern that oil and gas production elsewhere in the Mid-Atlantic could have cumulative and secondary impacts on the coast of Delaware, as well as on marine habitats throughout the Atlantic. The commenter adds that development of gas and oil would also mean development of industry, including pipelines and increased traffic, causing increased carbon emissions and contributing to effects of climate change.

**Maryland Governor Hogan**
**Document ID: BOEM-2014-0096-15972**

Governor Hogan directed the Maryland Department of Natural Resources to provide assistance to the U.S. Department of the Interior (USDOI) in determining potential issues to be considered when developing the Environmental Impact Statement (EIS) and Proposed Program associated with including the lease sale proposed in 2021 in the area offshore Virginia, North Carolina, South Carolina, and Georgia.

**Maryland Department of Natural Resources**
**Document ID: BOEM-2014-0096-15971**

The commenter requests that when assessing foreseeable opportunities associated with the oil and gas leases, the full range of oil and gas activities (i.e., geological and geophysical [G&G] surveys, exploration and production, development of infrastructure, accidents and intentional acts, and decommissioning) and possible risks to marine, estuarine, and coastal resources (i.e., impacts on ocean resources, bays, estuaries, coastal communities, ports and other shore-side infrastructure, and other coastal uses) be considered over at least a 50-year time horizon. The commenter suggests that the analysis recognize and consider interconnections across marine ecosystems, species and habitats, human uses and interests, and coastal communities and economies. With regard to these issues and interactions, the commenter requests that USDOI consider in the *2017–2022 OCS Oil and Gas Leasing Program Draft Programmatic Environmental Impact Statement* (Programmatic EIS): 1) environmental and economic issues (i.e., oil spills, ocean-dependent industries, ports and coastal communities, and environmental protection); and 2) tools for developing scenarios and engaging stakeholders (i.e., techniques and collaborative planning and communication tools to develop and assess alternate scenarios for energy development in the Atlantic OCS).

**New Jersey Department of Environmental Protection**
**Document ID: BOEM-2014-0096-14557**

The commenter expresses concern that oil and gas development in the Mid-Atlantic and South Atlantic could affect the marine and coastal environment in New Jersey. The commenter offers that potential effects on transient and migratory species associated with oil drilling could be permanent and should be further investigated. Further, the commenter suggests potential effects from seismic activity could impact New Jersey's coastal resources and should also be investigated.

**North Carolina Governor McCrory**
**Document ID: BOEM-2014-0096-14357**

The Governor states support for including the North Carolina OCS in the proposed Atlantic lease sale, and requests moving the date of proposed sale to earlier in the program as well as adding a second lease sale at the end of the program. The Governor estimates that offshore energy development could provide 55,000 jobs and $3 billion in annual spending to North Carolina. The Governor also states support for revenue sharing and does not believe offshore oil and gas can be developed responsibly without revenue for coastal energy states The Governor also suggests decreasing the buffer from 50 miles to 30 miles. The Governor suggests that advances in drilling technology would lead to a reduced risk of spill and better techniques to access oil reserves.

**North Carolina Lieutenant Governor Forest**
**Document ID: BOEM-2014-0096-9422**

Lieutenant Governor Forest states support for the inclusion of the North Carolina OCS in the Proposed Program and states support for revenue sharing with coastal energy states to support the proper infrastructure. The Governor suggests this lease sale provides the opportunity to support domestic energy and decrease dependence on imports.

**South Carolina Department of Health and Environmental Control**
**Document ID: BOEM-2014-0096-14563**

The commenter states the Mid-Atlantic and South Atlantic Planning Areas of the OCS are of equal concern and interest to the State of South Carolina. The commenter requests narrowing the scope of planned leasing areas because the consequences in a broader area are more difficult to predict. The commenter requests the effects on commercial fishing, fish and marine habitat, coastal tourism, and upland coastal resources be considered when developing the Proposed Program and Draft Programmatic EIS.

**Virginia Governor McAuliffe**
**Document ID: BOEM-2014-0096-14397**

The Governor states support for the inclusion of the Virginia OCS in the proposed Atlantic lease sale. The commenter adds that responsible and environmentally safe exploration and development of offshore resources is a key recommendation in Virginia's energy plan. The Governor also urges the Obama Administration to support legislation that would expand revenue sharing to Virginia.

### *A.2.2 Local Governments*

**Alaska's Kenai Peninsula Borough Mayor Navarre**
**Document ID: BOEM-2014-0096-15965**

The Mayor states support for OCS lease sales in the Alaska Arctic and Cook Inlet and requests adequate lease acreage in these areas in the five-year plan to support Alaska's economy and provide sufficient oil and gas to residents and businesses for heat, power, and motor vehicles. The Mayor adds that fishing, tourism, and recreation have coexisted with oil and gas development for decades in Cook Inlet, helping to ensure a viable and diverse economy.

**Alaska's North Slope Borough Mayor Brower**
**Document ID: BOEM-2014-0096-14386**

The Mayor states support for the proposed deferral areas in the Proposed Program and also seeks an additional 50-mile deferral zone around Cross Island in the Beaufort Sea to protect the Nuiqsut whaling territory, as well as deferral of the Hanna Shoal area in the Chukchi Sea, due to the area's ice-dependent species. The Mayor requests expansion of the buffer zone around the Chukchi Sea to 60 from 25 miles. Furthermore, the Mayor requests any additional deferrals be made in consultation with the Alaska Eskimo Whaling Commission and other marine mammal user groups.

**Florida's Town of Indialantic Mayor Berkman**
**Document ID: BOEM-2014-0096-14388**

The Mayor states opposition to seismic airgun testing off the coast of the Atlantic.

**Florida's City of Jacksonville Mayor Brown**
**Document ID: BOEM-2014-0096-14351**

The Mayor asks that USDOI extend the comment period for the Programmatic EIS for at least 30 days due to the potentially destructive impacts on the economy, environmental resources, and communities. In addition, the commenter states opposition to seismic testing due to the National Oceanic and Atmospheric Administration's incomplete process of updating critical information pertinent to testing.

**Florida's Municipal Service District of Ponte Vedra Beach Chairman Jurenovich**
**Document ID: BOEM-2014-0096-15994**

On behalf of the residents of the community, the Chairman states opposition to oil and gas drilling and any pending G&G surveys in the South Atlantic region. The commenter states that, given the low probability for presence of oil or gas resources in the South Atlantic Planning Area and the environmental sensitivity of the area, the risks associated with seismic testing to attempt to locate potential areas for drilling, and drilling itself, greatly outweigh the potential benefits.

**Florida's City of St. Augustine Mayor Samuels**
**Document ID: BOEM-2014-0096-14351**

The Mayor states opposition to seismic airgun surveying due to the potential detrimental effects on marine wildlife. On behalf of the City Commission and the citizens of St. Augustine Beach, the commenter asks USDOI to not issue permits to the oil and natural gas industry, but to require that industry find ways to conduct surveying that will not be harmful to wildlife.

**Florida's City of St. Augustine Vice Mayor-Commissioner Sikes-Kline**
**Document ID: BOEM-2014-0096-14351**

On behalf of the City of Augustine, the Vice Mayor-Commissioner states opposition to oil and gas drilling in the Atlantic Ocean and requests that USDOI deny the G&G survey applications and any application for oil and gas drilling in the Atlantic Ocean. The commenter requests the comment period for the Programmatic EIS be extended by 30 days. In addition, the commenter provided two resolutions of the City of St. Augustine, Florida, opposing seismic airgun testing in the Atlantic Ocean and the approval of oil drilling in Florida's waters in areas other than those already approved for oil leasing and oil exploration. The commenter urges elected officials to take immediate steps to encourage and assist in the development of alternative sources of energy.

**Florida's St. John's County Board of Commissioners**
**Document ID: BOEM-2014-0096-14351**

The Board of Commissioners restates the opposition of St. Johns County, Florida, for the use of exploratory seismic airgun surveys and reaffirms opposition to oil and gas drilling in the South Atlantic Planning Area. The commenter states the environmental risks associated with the proposed activities outweigh potential economic returns, and the potential for adverse impacts is significant from these activities.

**Florida Space Coast League of Cities**
**Document ID: BOEM-2014-0096-14351**

The Florida Space Coast League of Cities submits a resolution opposing seismic air-gun testing in the Atlantic and urging the President's Administration and Congress to focus on protecting coastal natural resources and ensuring the vitality of local economies along the Atlantic Coast and GOM.

**New Jersey's City of Brigantine Mayor Guenther and City Council**
**Document ID: BOEM-2014-0096-15993**

The commenters state opposition to the inclusion of the Mid-Atlantic and South Atlantic in the proposed leasing program. The commenters express concern that little has been done to ensure safer offshore drilling since the *Deepwater Horizon* disaster and states that any potential spill would devastate the tourism and fishing economies of North and South Carolina and Georgia. The commenters also state that money put into oil should be reallocated to developing clean wind energy. A resolution by the Mayor, Council, and City of Brigantine, New Jersey, opposes seismic airgun blasting off the coast of New Jersey.

**New Jersey's League of Municipalities (Mayors Wahler, Walters, Howard, Kelaher, Kelly, Guardian, and Mahaney)**
**Document ID: BOEM-2014-0096-1906**

The League of Municipalities states opposition to the proposal of oil and gas exploration off the Atlantic Coast. In addition, the commenter states the coastal ecosystems of New Jersey and other coastal states are invaluable, and drilling could threaten the multibillion dollar tourism industry. The commenter believes that with recovery efforts still ongoing from Hurricane Sandy, the east coast cannot afford to risk anything that might stunt those recovery efforts.

**North Carolina's Carteret County Board Chair Comer**
**Document ID: BOEM-2014-0096-4425**

The Board Chair requests that the oil and gas leasing plan for the South Atlantic only be moved forward if a revenue sharing program similar to that codified in the Gulf of Mexico Energy Security Act of 2006 (GOMESA) is enacted. The commenter requests a 37.5 percent royalty to the State of North Carolina and a bill detailing how royalties and lease payments would be allocated.

**North Carolina's Dare County Board of Commissioners**
**Document ID: BOEM-2014-0096-14367**

The Board of Commissioners submits a 2006 resolution that reaffirms their opposition to any exploration for gas or oil on the Continental Shelf or elsewhere off the coast of North Carolina or Virginia, and urges the inclusion of waters off of North Carolina and Virginia in the long-term moratorium on offshore exploration. Dare County supports research and development of non-fossil fuel alternatives for energy

production and measures to promote energy conservation, and urges Congress and the United States to require that vehicular and industrial use of fossil fuels be cut in half by the year 2020. In addition, Dare County urges Government representatives to instruct the Minerals Management Service (predecessor to BOEM) to take no further action to open additional offshore sites to leases for gas or oil exploration.

**North Carolina's Town of Nags Head**
**Document ID: BOEM-2014-0096-14367**

The Town states opposition to exploration and production of petroleum resources on the Continental Shelf or elsewhere off the coast of North Carolina and urges government representatives to oppose offshore petroleum production policies that risk the proven tourism-driven economy of coastal North Carolina.

**North Carolina's Town of Oak Island**
**Document ID: BOEM-2014-0096-14367**

The Town provides a correspondence to North Carolina Governor McCrory that states revenue sharing should be a priority in the lease conditions pertaining to the Atlantic Planning Areas, and a 37.5 percent share of OCS revenues should be codified for North Carolina in the same manner provided in the GOMESA. Oak Island will oppose any lease sale that does not have an OCS revenue sharing program. A Resolution of the Town Council of Oak Island, North Carolina, states that they remain concerned about the potential effects of seismic testing, as proposed in Alternative A and Alternative B of BOEM's Programmatic EIS until all testing options are evaluated and proper assurances are established for the protection of marine life.

**North Carolina's Town of Oak Island Mayor Wallace**
**Document ID: BOEM-2014-0096-14561**

The Mayor requests that South Atlantic oil and gas drilling plans only be moved forward if a revenue sharing program similar to that codified in the GOMESA is enacted.

**South Carolina's Town of Beaufort Mayor Keyserling**
**Document ID: BOEM-2014-0096-14521**

The Mayor states opposition to the inclusion of the Mid-Atlantic and South Atlantic in the proposed leasing program. The commenter suggests the proposed drilling could adversely impact South Carolina's beaches, jeopardizing tourism, fishing, recreation, and ultimately harming the economy. Seismic airguns could also have harmful effects on marine habitats and fisheries. The commenter asserts that this gamble is not worth the risk of a large oil spill anywhere along the Atlantic, and a repeat of the BP oil disaster cannot be afforded.

**South Carolina's Town of Beaufort Councilman Murray**
**Document ID: BOEM-2014-0096-14376**

The Councilman states opposition to offshore energy exploration along the Atlantic Coast, notably along the coast of South Carolina. The commenter believes that the small potential for energy is not worth risking the integrity of the pristine coastline.

**South Carolina's Town of Hilton Head Island Mayor Bennett and Town Council**
**Document ID: BOEM-2014-0096-14367**

The Mayor and Town Council unanimously voted against seismic testing due to risks associated with seismic surveys, conflicts with South Carolina's coastal management program, and their commitment to current and future generations. The commenters note the Town Council heard from many residents opposed to seismic testing, and the Town, which is heavily dependent on tourism, is concerned with potential impacts from opening the Mid-Atlantic Ocean to seismic surveying and believes more research should be done to understand potential impacts and options for mitigating impacts before exploration begins. In addition, the commenters state that the future impacts of activities that will be facilitated by seismic surveys should be considered as part of the cumulative impacts analysis. The Town Council voted to oppose all seismic survey applications to the State of South Carolina whenever they arise.

**South Carolina's Horry County Councilman Vaught**
**Document ID: BOEM-2014-0096-15981**

The Councilman expresses support for the inclusion of the Mid-Atlantic Continental Shelf in BOEM's five-year program noting the following incentives by 2035: a net gain of 35,000 jobs generated from offshore development; the generation of $200 million in annual spending from private sector investments; and an increase of $3.7 billion in Government revenues that could be used to improve road, school, and hospital infrastructure.

**South Carolina's Town of James Island Councilman Milliken**
**Document ID: BOEM-2014-0096-15979**

The Councilman states opposition to the inclusion of the Mid-Atlantic and South Atlantic Planning Areas in the Proposed Program and urges that these areas be removed due to potential adverse impacts from seismic blasting to environmental resources that the town is dependent upon for recreation, fishing, tourism, economy, and culture. The commenter estimates that the amount of oil and gas supply in the Atlantic OCS only meets oil demands for 132 days and gas demand for 283 days at current consumption rates. The commenter expresses concerns for risks from oil spills, risks to wildlife from exploration activities, and potential impacts on the Atlantic Coast from an incident similar to the BP *Deepwater Horizon* disaster. The commenter states that the risk to oceans, economies, and local communities vastly outweigh any potential benefits from offshore oil and gas development. In addition, the commenter attached a Resolution of the Town of James Island opposing seismic testing and offshore drilling activities off the coast of South Carolina.

**South Carolina's Town of James Island Councilman Mulliniax**
**Document ID: BOEM-2014-0096-14377**

The Councilman states opposition to drilling off the Atlantic coast of South Carolina and suggests that offshore drilling poses far greater risk than onshore drilling, and compounding tides, currents, and weather events increases the risk of accidents. The commenter believes the risk is not worth sacrificing the coast.

**South Carolina's Town of Surfside Beach Councilman Childs**
**Document ID: BOEM-2014-0096-15987**

The Councilman expresses support for the inclusion of the Mid-Atlantic region in BOEM's five-year program, noting that offshore energy development will help the community of Surfside Beach through the following: creating high-paying jobs with increases in Government revenues that could help fund essential maintenance and infrastructure upgrades; lowering of household energy prices and consumer goods from the production of oil; and enhancing purchasing power and raising the standard of living in the Mid-Atlantic region. The commenter states hazards can be significantly minimized with organizations like the Center for Offshore Safety and the enhancement of regulatory standards. In addition, the commenter requests the lease sale be moved to a date earlier than 2021.

**Virginia's City of Virginia Beach Mayor Sessoms, Jr.**
**Document ID: BOEM-2014-0096-1693**

The Mayor states support for the development of oil and gas off the coast of Virginia. This would generate millions of dollars' worth of revenue for the Commonwealth and local governments. Oil and gas development is currently the most suitable path for energy development in the Commonwealth until offshore wind energy becomes more accessible. The commenter requests a royalties program be established to ensure states can receive revenue from oil and gas development.

### *A.2.2.1 Resolutions*

Commenters submitted or cited resolutions passed by the following areas opposing seismic airgun testing and/or offshore oil and gas development:

**Florida:**
Atlantic Beach
Cape Canaveral
Cocoa Beach
Fernandina Beach
Indialantic
Indian Harbour Beach
Marco Island
Melbourne
Neptune Beach
New Smyrna Beach
Satellite Beach
St. Petersburg
West Melbourne

**Georgia:**
St. Mary's
Tybee Island

**New Jersey:**
Barnegat
Beach Haven
Beachwood
Bradley Beach
Red Bank

**North Carolina:**
Bald Head Island
Carolina Beach
Caswell Beach
Duck
Kill Devil Hills
Manteo
Southport
St. James
Sunset Beach
Topsail Beach
Wrightsville Beach

**South Carolina:**
Beaufort
Charleston
Edisto Beach
Folly Beach
Isle of Palms
James Island
James Island Public Service District
Port Royal
Sullivan's Island

### A.2.3 Tribes and Tribal Organizations

**Alaska's NANA Regional Corporation (Lance Miller)**
**Document ID: BOEM-2014-0096-14547**

The commenter states support for development of oil and gas off the shore of Alaska, and states opposition to any additional restrictions for the Beaufort and Chukchi Seas. The commenter suggests that development in these areas will help provide jobs to the area and locals can incorporate traditional knowledge of the land and water to help carry out monitoring. The commenter encourages collaboration between the Bureau and native Alaskan populations in any further plans for exploration or development in the Arctic Sea.

### A.2.4 State-level Elected Officials

**Eighty-one State Representatives (Connecticut-4, Florida-1, Massachusetts-2, Maryland-3, Maine-10, New Hampshire-3, New York-3, North Carolina-46, Rhode Island-2, Virginia-7).**
**Document ID: BOEM-2014-0096-14367**

Representative Harrison of the North Carolina General Assembly and other east coast state representatives express opposition to including Mid-Atlantic and South Atlantic Planning Areas in the 2017–2022 OCS Oil and Gas Leasing Program and request that USDOI remove the areas from the program. The commenters recommend instead that USDOI commit to developing cleaner, renewable energy, and state that an oil spill in the east coast would devastate communities economically and environmentally.

**Alaska State Senator Coghill**
**Document ID: BOEM-2014-0096-0043**

The State Senator requests the restriction placed on the Hanna Shoal area be withdrawn. The commenter expresses concern that areas adjacent to Hanna Shoal support 15 leases, and there could be costly mitigation requirements should these contracts be impacted by this restriction.

**Georgia State Representative Martin**
**Document ID: BOEM-2014-0096-14539**

The State Representative states support for the DPP to bring oil and gas leasing to the Atlantic OCS. The commenter argues that a significant amount of oil is estimated to be found in the OCS, and this could mean hundreds of thousands of jobs and billions in revenue and spending in the next few decades. According to the commenter, Atlantic OCS development can be done safely and coexist with other industries along the coast.

**Georgia State Senator Ginn**
**Document ID: BOEM-2014-0096-0453**

The State Senator states support for the proposed Atlantic leasing area and urges BOEM not to add further exclusions, deferrals, or unreasonable mitigation measures that would prevent efficient, effective, and safe OCS development.

**Idaho State Senator Winder, Chair of the Energy Production States Coalition**
**Document ID: BOEM-2014-0096-14523**

The commenter states opposition to the current proposed lease program, noting the current program neglects to include the full potential of the Atlantic and Arctic Oceans as well as the GOM. Additionally, the commenter states opposition to the recent withdrawal of acreage from the Beaufort and Chukchi Seas, stating that Alaskans are being denied the benefit and use of this resource-rich land. The commenter requests scaling back on Administrative interference with tapping America's energy potential.

**Kentucky State Representative Schamore**
**Document ID: BOEM-2014-0096-15970**

The State Representative states support for oil and gas lease sales in the Atlantic, Arctic, and GOM, noting the significant reserves of oil and gas estimated to exist in the Atlantic OCS, and the commenter states support for seismic testing to determine how much oil and gas exist. In addition, the commenter suggests that robust leasing in the Atlantic, GOM, and Arctic will help increase domestic energy security for years to come.

**Maine State Representative Welsh**
**Document ID: BOEM-2014-0096-14373**

The State Representative states opposition to drilling for oil off the coast of Maine in the Atlantic. The commenter expresses concern that any oil spill would threaten both the fishing and tourism industries.

**Maryland Attorney General Frosh**
**Document ID: BOEM-2014-0096-14392**

The Attorney General states opposition to the lease sale of the Atlantic Region of the OCS. The commenter states that drilling activity would threaten the already fragile Chesapeake Bay, tourism associated with Maryland's beaches, the seafood economy, and migratory bird habitat. The commenter adds that due to the threat posed to the state's waterways, coastline, and economy, a series of regulatory enforcements will likely be triggered should this rule move forward.

**Nevada State Assemblyman Ellison**
**Document ID: BOEM-2014-0096-15975**

The State Assemblyman states support for the expansions in the 2017–2022 DPP, and opening up a portion of the Atlantic OCS will help diversify America's energy resources and grow the east coast economy. The commenter asserts that the GOM continues to be a critical energy source for the United States, and robust leasing should be continued. In addition, the commenter notes that Alaska remains the largest untapped resource of oil and gas, and development can coexist with sustainable environmental activities.

**North Carolina State Representative Tine**
**Document ID: BOEM-2014-0096-14663**

The State Representative requests an additional public scoping meeting be held for the Outer Banks of North Carolina. The commenter adds that the location of the scheduled meeting in Wilmington makes travel difficult because it is in the southeastern corner of the state and many with input on drilling off the North Carolina coast will not be able to attend due to geographic distance.

**North Carolina State Representative Waddell**
**Document ID: BOEM-2014-0096-15973**

The State Representative requests another public hearing on the Outer Banks of North Carolina. The commenter states that the public is very interested in participating in the comment process, because the coastline of North Carolina is so long and so many of its residents would be impacted should lease sales occur.

**North Carolina State Senator Berger**
**Document ID: BOEM-2014-0096-14348**

The State Senator states support for the leasing of North Carolina's OCS in the Atlantic, and requests the removal of the 50-mile buffer, because this would restrict the potential extraction of a large amount of natural gas. The commenter states that these lease sales will support jobs and energy security.

**North Carolina State Senator Cook**
**Document ID: BOEM-2014-0096-15998**

The State Senator supports the inclusion of the Mid-Atlantic and South Atlantic OCS in the next stage, the Proposed Program, and requests that revenue-sharing be expanded. He also requests that seismic permits be issued as updated resource information is critical.

**South Carolina State Representative Clemmons**
**Document ID: BOEM-2014-0096-15984**

The State Representative states support for the inclusion of the Mid-Atlantic and South Atlantic OCS in the proposed oil and gas leasing plan. The commenter argues that oil and gas development would generate billions of dollars in Government revenue. The commenter also recommends that seismic surveys should be authorized to gather information on the volume of oil and gas in the Atlantic OCS reserves. In addition, the commenter argues that drilling is much safer than it was four years ago and is confident drilling can occur with little environmental impact.

**South Carolina State Representative Crawford**
**Document ID: BOEM-2014-0096-15982**

The State Representative states support for the inclusion of the Mid-Atlantic and South Atlantic OCS in the proposed oil and gas leasing plan, stating that existing resources should be taken advantage of. The commenter argues that oil and gas development could create tens of thousands of jobs in the next few decades. In addition, the commenter believes it is critical to initiate seismic testing to know how much resource exists to be utilized.

**South Carolina State Representative Goldfinch**
**Document ID: BOEM-2014-0096-14560**

The State Representative states support for offshore development in the South Atlantic. The commenter argues that offshore energy development would mean new jobs and revenue that could fulfill critical infrastructure needs in South Carolina. The commenter suggests proper environmental safeguards have been developed and implemented so drilling would make environmental hazards very unlikely.

**South Carolina State Representative Hardee**
**Document ID: BOEM-2014-0096-15983**

The State Representative states support for the inclusion of the Mid-Atlantic and South Atlantic OCS in the proposed oil and gas leasing plan, stating that oil and gas development could create tens of thousands of jobs in the next few decades. The commenter argues that revenue and infrastructure development that would come with oil and gas development could help the state invest in roads, schools, and more. The commenter concludes that the energy industry has taken great steps to ensure oil and gas development is safe and effective.

**South Carolina State Senator Campbell**
**Document ID: BOEM-2014-0096-15986**

The State Representative supports the inclusion of the Mid- and South Atlantic OCS in the proposed oil and gas leasing plan. Oil and gas development would generate billions of dollars in government revenue. The commenter states seismic surveys should be authorized as soon as possible to provide the most accurate data of the oil and gas reserves in the OCS. The energy industry has taken great steps to ensure oil and gas development is safe and effective.

**South Carolina State Senator Hembree**
**Document ID: BOEM-2014-0096-15985**

The State Senator expresses support for the inclusion of the Mid-Atlantic and South Atlantic OCS in the proposed oil and gas leasing plan, stating that oil and gas development would generate billions of dollars in Government revenue. The commenter argues that seismic surveys should be authorized as soon as possible to provide the most accurate data of the oil and gas reserves in the OCS. The commenter offers that South Carolina has had a long-standing interest in offshore energy development, and this leasing plan would give the state the opportunity for economic development. In addition, the commenter suggests more domestic energy development will mean lower gas prices and lower prices of consumer goods.

**Utah State Senator Okerlund**
**Document ID: BOEM-2014-0096-15990**

The State Senator expresses support for the inclusion of the identified areas in the Atlantic, Arctic, and GOM. The commenter argues there is an immense amount of untapped energy potential that needs to be explored. The commenter adds that Alaska holds some of the largest reserves of oil and gas and those resources should be utilized. The commenter concludes offshore drilling will help bring us one step closer to energy independence.

**Virginia State Representative Surovell**
**Document ID: BOEM-2014-0096-15991**

The State Representative states opposition to the inclusion of the Mid-Atlantic and South Atlantic in the proposed leasing plan. The commenter suggests offshore drilling could risk millions of jobs, recreation, marine ecosystems, and tourism for the entire coast. Further, the commenter offers that the economic and ecological costs that would come with an oil spill are not a gamble worth taking. In addition, the commenter states the United States should be decreasing its dependence on oil and developing clean energy options, not looking to expand oil development.

**Virginia State Senator McEachin**
**Document ID: BOEM-2014-0096-15992**

The State Senator states opposition to the inclusion of the Mid-Atlantic and South Atlantic in the proposed leasing plan. The commenter argues that offshore drilling could risk millions of jobs, recreation, marine ecosystems, and tourism for the entire coast. The commenter states the economic and ecological costs that would come with an oil spill are not a gamble worth taking. In addition, the commenter states the United States should be decreasing its dependence on oil and developing clean energy options, not looking to expand oil development.

**Wyoming State Senator Bebout**
**Document ID: BOEM-2014-0096-14381**

The State Senator expresses support for the inclusion of the Alaskan and Atlantic OCS in the DPP. The Senator states the Arctic Sea holds some of the greatest oil reserves in the country, and this resource should be utilized. The Senator also notes the Beaufort and Chukchi Seas hold ever more oil reserves and should not be so heavily restricted. The Senator suggests developing oil and gas in the Atlantic will generate revenue and create jobs, just as it has in the GOM.

### *A.2.5 Federal Agencies*

**Department of Defense**
**Document ID: BOEM-2014-0096-1907**

Comments will be submitted regarding mission compatibility in the DPP areas.

**Department of Energy**
**Document ID: Not included in Regulations.gov**

The Department of Energy provided a “no comments” letter.

**Department of State**
**Document ID: BOEM-2014-0096-1694**

The Department of State requests consultation on the Beaufort Sea Planning Area before any further action regarding lease sales occurs because the maritime boundary with Canada is unsettled. The commenter also requests consultation over any areas more than 200 miles from the coast that could have foreign policy implications, such as the US-Mexico Transboundary Agreement, maritime boundary delimitations, Arctic issues, and other bilateral or regional issues with other countries.

**Department of Transportation**
**Document ID: BOEM-2014-0096-14665**

The Department of Transportation states support for the region-specific tailored approach. The commenter suggests this approach will help raise and address different perspectives early in the decision making process, as well as increase efficiency.

**Marine Mammal Commission**
**Document ID: BOEM-2014-0096-14395**

The Marine Mammal Commission requests areas of the Cook Inlet that overlap with beluga whale habitat be excluded from leasing, as well as areas to the east and north, to act as a buffer. The commenter

requests the Beaufort and Chukchi Seas be deferred from leasing in the 2017-2022 Program, as these areas are undergoing rapid change due to climate change and marine habitat should be monitored without the presence of oil and gas drilling. In the Atlantic, the commenter states support for a 50-mile buffer zone and requests that no lease sales be held until adequate geological testing has been conducted to determine the amount of oil that exists off the coast of the Atlantic. The commenter recommends surveying the marine mammal species that inhabit the GOM to determine if drilling activities should continue.

**National Park Service**
**Document ID: BOEM-2014-0096-15974**

The National Park Service (Service) formally requests to be a cooperating agency in the preparation of the Programmatic EIS. The Service is deeply concerned that the Atlantic coast is ill-prepared for a possible oil spill and states support for BOEM's decision to institute a 50-mile buffer for the Mid-Atlantic and South Atlantic Planning Areas. The Service argues the risk of a catastrophic spill is inherent and is among the Service's larger concerns for all of its coastal units; the number of potentially affected units may increase to include units outside of the program areas. The Service provides specific suggestions for areas included in or excluded from the DPP; scoping comments on the Programmatic EIS; and scoping comments specific to BOEM planning areas and National Park Service Units.

### *A.2.6 Members of Congress*

**One-hundred sixty-one Members of Congress**
**Document ID: BOEM-2014-0096-14564**

The Members of Congress request expansion of Atlantic lease sales and making additional areas of the OCS available for leasing, and states that the current plan is not robust enough to ensure energy security. Further, the members state more than 85 percent of available OCS area is off-limits to oil and gas drilling. The members also argue that offshore resources must be taken advantage of to ensure economic stability and domestic prosperity.

**Fifty-three Members of Congress**
**Document ID: BOEM-2014-0096-14590**

The Members of Congress states opposition to Atlantic OCS leasing for oil and gas development, stating that the region lacks the infrastructure to support oil and gas development, and it would be an added economic and environmental cost to develop it. The members state the Atlantic OCS holds very limited oil reserves, and the risk of a spill far outweighs potential gains. Further, the members state the east coast is also facing rising sea levels and more extreme storms due to climate change. According to the members, this only increases the risk of disasters, and the focus should be on sustainable job development and economic opportunities.

**Thirty-three Members of Congress**
**Document ID: BOEM-2014-0096-14493**

The Members of Congress state support for leasing areas off the Atlantic coast for oil and gas development without any further restrictions, and encourage removing the 50-mile buffer. The members assert that offshore energy production is as safe as it has ever been, will create good-paying American jobs, provide revenue for the Federal and local government, and enhance the country's energy security as

a nation. The members also encourage geological testing be approved as soon as possible to ensure development can occur quickly.

**Twelve Senators**
**Document ID: BOEM-2014-0096-14589**

The Senators state opposition to leasing portions of the Atlantic OCS for offshore drilling and gas leasing. As seen with the *Deepwater Horizon* disaster, the Senators suggest that oil spills can devastate an entire coastline, and spills don't respect state boundaries. The Senators also argue that it is premature of USDOI to propose leases when a seismic review has not yet been completed. In addition, the Senators state drilling could adversely affect tourism, fishing, and the coastal environment.

**Twelve Members of Congress**
**Document ID: BOEM-2014-0096-14658**

The Members of Congress state support the comprehensive energy plan outlined in the DPP. The members state the plan helps to balance the long-term energy needs of the United States. The members also state that America is the world's largest producer of oil and gas, and this plan will help ensure that the United States remains a leader in energy production.

**Alaska Senator Murkowski**
**Document ID: BOEM-2014-0096-14516**

The Senator requests increasing the number of lease sales in the Cook Inlet and the Beaufort and Chukchi Seas in the Arctic, and to include a minimum of three Alaskan lease sales. The Senator also requests any additional withdrawals not move forward without the support of Alaskans. According to the Senator, utilizing the oil reserves off the coast of Alaska would provide energy security and a bright economic future for Alaska and the Nation.

**Florida Congresswoman Castor**
**Document ID: BOEM-2014-0096-14657**

The Congresswoman states opposition to the inclusion of the Eastern GOM in the proposed lease program, citing that the region is too close to the western coast of Florida and risks destroying Florida's economy and environment. The Congresswoman states the GOM cannot afford to take another hit like the BP oil disaster.

**New Jersey Senators Menendez and Booker and Congressman Pallone**
**Document ID: BOEM-2014-0096-1695**

The Senators and Congressman state opposition to the inclusion of any Atlantic lease sales in the Proposed Program. The commenters suggest that due to the economic and environmental devastation from *Deepwater Horizon*, and the fact that New Jersey is still recovering from the aftermath of Hurricane Sandy, the Atlantic cannot afford another potential disaster. The commenters also state that drilling could risk communities and businesses, including tourism and seafood, all along the coast. Further, the commenters argue development of alternative energy, such as offshore wind power, could create even more jobs.

**New Jersey Congressman LoBiondo**
**Document ID: BOEM-2014-0096-4156**

The Congressman states opposition to any offshore drilling that may occur off the coast of New Jersey. The commenter argues that drilling in the Mid-Atlantic puts some of the most sensitive marine and coastal areas at risk and that clean beaches and clean oceans are critical to the tourism economy. The commenter also opposes authorization of seismic testing off the New Jersey coast.

**South Carolina Congressman Rice**
**Document ID: BOEM-2014-0096-14510**

The Congressman states support for the leasing of areas off the Atlantic Coast and maintaining the 50-mile buffer zone. The Congressman recommends that if any lease sale occurs within 100 miles of the coast, members of that community should be informed and weigh in on the decision to lease. The commenter also recommends that seismic testing remain independent of production and occur prior to lease sales. The commenter suggests pursuing offshore energy and maintaining coastal communities and existing industries are not mutually exclusive goals; both can occur simultaneously.

**Virginia Senators Warren and Kaine**
**Document ID: BOEM-2014-0096-14656**

The Senators state support for inclusion of Atlantic lease sales in the DPP. The Senators suggest offshore exploration can only help to diversify the economy and create jobs in Virginia, as well as increase energy security. The Senators request a similar revenue-sharing program be in place for Atlantic states as it is for the GOM.

**Virginia Congressmen Connolly, Scott, and Beyer**
**Document ID: BOEM-2014-0096-14659**

The Congressmen states opposition to offshore drilling off the coast of the Atlantic. The Congressmen suggest drilling threatens local economics, which depend on clean oceans and healthy marine life. Further the Congressmen express concern that these leasing options could also threaten the military presence in the region, which accounts for hundreds of thousands of jobs and billions in economic revenue. The Congressmen argue the risks of this activity far outweigh the rewards.

### *A.2.7 Public Interest Organizations*

**Alaska Wilderness League**
**Document ID: BOEM-2014-0096-14487**

The petition signed by 15,886 members states opposition to oil and gas lease sales in the Arctic Ocean. The petition states harsh, icy conditions in these areas make the likelihood for spills far greater and cleanup more difficult.

**Alaska Wilderness League, Center for Biological Diversity, Earthjustice, Environmental Investigation Agency, Friends of the Earth, Greenpeace, League of Conservation Voters, Oceana, Ocean Conservation Research, Oil Change International, Northern Alaska Environmental Center, Sierra Club, and The Wilderness Society**
**Document ID: BOEM-2014-0096-14512**

The letter signed by 15,886 signatories states opposition to the lease sales in the Arctic Ocean. The letter states that further development of fossil fuels is countering any action taken to combat climate change. Further, the letter argues that development puts at risk the many fish, bird, and other animal species that are central in traditional Alaskan culture.

**Americans for Prosperity**
**Document ID: BOEM-2014-0096-14486**

Americans for Prosperity state support for the proposed lease sales in Alaska. The commenter states the Beaufort and Chukchi Seas hold billions of barrels of oil and trillions of cubic feet of gas, and it is critical for the vitality of the Alaskan economy and longevity of the Trans-Alaska Pipeline System (TAPS) that these areas be explored to their fullest capabilities.

**Assateague Coastal Trust (Matthew Helm)**
**Document ID: BOEM-2014-0096-14402**

The Assateague Coastal Trust states opposition to opening the Atlantic to oil and gas exploration and drilling. The commenter argues that oil and gas drilling would risk jobs, marine ecosystems, tourism, and recreation.

**Audubon AK, Oceana, Ocean Conservancy, The Pew Charitable Trusts, and World Wildlife Fund**
**Document ID: BOEM-2014-0096-14343**

The commenters request that the Beaufort and Chukchi Seas in the Arctic be excluded from the leasing plan. The commenters also state these Arctic areas lack the infrastructure to handle a large spill, should it occur. If the Arctic areas are included, the commenters request greater safety measures be put into place.

**Center for Biological Diversity (Kristen Monsell)**
**Document ID: BOEM-2014-0096-14338**

The Center for Biological Diversity states opposition to expansion of oil and gas drilling in Alaska, the Atlantic, and the GOM. The commenter states the ecological cost of drilling in these sensitive marine areas far outweighs any potential benefits oil and gas revenue could bring.

**Center for a Sustainable Coast (David Kyler)**
**Document ID: BOEM-2014-0096-14340**

The commenter states opposition to offshore oil and gas leasing in the Atlantic. The commenter argues that long-term implications of continuing offshore oil and gas development and their contribution to climate change are too severe to remain in national interest.

**Chesapeake Climate Action Network**
**Document ID: BOEM-2014-0096-14364**

The commenter submitted a petition signed by 424 members stating opposition to the inclusion of the Virginia coast in the leasing plan and requesting the Atlantic be excluded from consideration. The

commenter suggests time would be better spent advancing offshore wind energy and other renewable energy. In an attached petition, the commenter states opposition to drilling for oil off the Mid-Atlantic coast. The petition states there is no reason to lift the 30-year ban on drilling in the Atlantic because the industry is still not safe enough to place risk on the coastline. Further, the petition suggests that investments should be made in offshore wind energy instead.

**Citizens for Alternatives to Chemical Contamination (Wes Raymond)**
**Document ID: BOEM-2014-0096-14398**

The commenter states opposition to any further offshore oil and gas exploration. The commenter states fossil fuels are a large contributor to atmospheric carbon and further development would only contribute to global warming.

**Clean Ocean Action (Cindy Zipf)**
**Document ID: BOEM-2014-0096-14353**

The commenter states opposition to the inclusion of the Mid-Atlantic in the proposed oil and gas leasing program. The commenter notes New Jersey is still recovering from the impacts of Hurricane Sandy and could not handle the devastation should an oil spill occur. The commenter also adds that oil and gas leasing would hurt the fishing and tourism economies as well.

**Clean Water Action – NJ**
**Document ID: BOEM-2014-0096-14383**

Members state opposition to OCS oil and gas leasing stating that renewable energy would be better for the climate and the economy.

**Consumer Energy Alliance**
**Document ID: BOEM-2014-0096-14517**

The petition signed by 58, 512 U.S. residents states support for offshore oil and gas development. The petition argues that ensuring broad, responsible access to the Nation's resources is in the country's best interest for long-term energy security, and it urges BOEM to conduct a wide-ranging environmental assessment of all areas and to not remove further areas from consideration, particularly in the Arctic and Atlantic. The petition also urges BOEM to move forward with its proposal for a robust leasing plan in the GOM, and should consider evaluating the full Eastern GOM to prepare for future opportunities.

**Consumer Energy Alliance**
**Document ID: BOEM-2014-0096-14518**

The petition signed by 53,372 members states support for oil and gas leasing in the GOM and Arctic. The petition states that ensuring responsible access to the Nation's resources is in the country's best interest for long-term energy security.

**Earthjustice (Zarah Patriana)**
**Document ID: BOEM-2014-0096-14345**

The commenter submitted a petition signed by 45, 239 individuals stating opposition to the inclusion of the Arctic and Atlantic Oceans in the OCS leasing program and requesting they be removed. The commenter states that other areas like the GOM and Prince William Sound have not recovered from oil

spills and these fragile ecosystems cannot risk a spill; investing in more oil and gas development is at odds with fighting climate change.

**Earthjustice, Southern Environmental Law Center, Natural Resources Defense Council, Center for Biological Diversity, and Oceana (Stephen Roady)**
**Document ID: BOEM-2014-0096-14662**

The commenters request that the National Marine Fisheries Service (NMFS) and USDOI reinstate consultation concerning the impacts of the proposed drilling and seismic testing activities in the Mid-Atlantic and South Atlantic, and that NMFS withdraw its July 2013 Biological Opinion concerning seismic testing. The commenters state the proposed drilling areas and seismic testing will threaten endangered species and other marine animals in the Atlantic.

**Edisto Island Preservation Alliance (Lloyd Bray)**
**Document ID: BOEM-2014-0096-1908**

The commenter states opposition to the use of sonic cannons in exploration for oil and gas off the coast of South Carolina, stating this method of exploration could kill or injure hundreds of sea creatures.

**Environment North Carolina**
**Document ID: BOEM-2014-0096-14508**

The 2,535 commenters state opposition to drilling off the coast of North Carolina in the Atlantic. The commenters state the North Carolina coast supports jobs and billions in revenue for the state, and a spill would devastate fisheries, wildlife, and tourism.

**Environmental Investigation Agency (Daniel Hubbell)**
**Document ID: BOEM-2014-0096-14394**

The commenter states opposition to the inclusion of the Chukchi Sea, Beaufort Sea, and Cook Inlet, Alaska, in the proposed oil and gas leasing plan. The commenter also welcomes the removal of Bristol Bay and the Hanna Shoal.

**Fisheries Survival Fund (David Frulla)**
**Document ID: BOEM-2014-0096-14534**

The commenter states opposition to lease sales in the Atlantic that would interfere with historic scallop fishing areas. The commenter states oil and gas leases in productive scallop areas would significantly impact the health of these fisheries and economic value of the resource.

**Georgia Conservancy (Clay Mobley)**
**Document ID: BOEM-2014-0096-14546**

The commenter states opposition to oil and gas drilling off the coast of Georgia, asserting that risks of oil spills and threats to endangered species in Georgia far outweigh the potential benefits of oil.

**Greenpeace USA (Timothy Donaghy)**
**Document ID: BOEM-2014-0096-14368**

The commenter states opposition to the inclusion of areas of the Arctic Ocean in the OCS leasing program and requests that the Beaufort and Chukchi Seas be removed. The commenter states the risks of environmental catastrophe are too great to risk in an area that has not yet been drilled.

**International Fund for Animal Welfare**
**Document ID: BOEM-2014-0096-15980**

The commenter submitted a petition from 41,500 members requesting that offshore oil and gas exploration and development not be permitted in the Atlantic Ocean or Arctic Ocean. The commenter states there would be potential risks to marine species from seismic airgun noise and oil spills, noting that it is impossible for marine mammals to escape the noise from seismic airguns. The commenter states these risks are particularly high for North Atlantic right whales, whose breeding and calving grounds are in Georgia and Florida. The commenter also states that industries that are dependent upon a healthy ocean are also at risk, and the protections to these areas must be retained.

**International Fund for Animal Welfare**
**Document ID: BOEM-2014-0096-15969**

The commenter submitted a petition signed by 31,765 members stating opposition to leasing in the Atlantic and Arctic Oceans. The commenter states offshore drilling risks the lives and habitat of the critically endangered North Atlantic right whale, as well as the marine habitat of other animals.

**Little Cumberland Island Sea Turtle Project**
**Document ID: BOEM-2014-0096-14332**

The commenter states opposition to oil and gas lease sales off the coast of Georgia in the Atlantic Ocean. The commenter states the Atlantic coast is rich in marine wildlife and biodiversity, and that discharge from an oil spill could devastate the environment of these species. The commenter also states infrastructure from offshore development, such as lighting from oil rigs could also disrupt the flight pattern of migratory birds.

**Manasquan Boardriders Club**
**Document ID: BOEM-2014-0096-15667**

The commenter states opposition to the proposed action and any oil or gas drilling anywhere off the east coast of the United States.

**Marine Conservation Institute (Victoria Bell)**
**Document ID: BOEM-2014-0096-14393**

The commenter states opposition to opening the Mid-Atlantic and South Atlantic to offshore oil and gas leasing. The commenter also suggests these areas have never been included before, are considered to be very sensitive marine areas, and host a great amount of biodiversity. The commenter states drilling threatens clean oceans, beaches, and fisheries, and this could negatively impact the economy.

**Marine Education, Research & Rehabilitation Institute, Inc. (Suzanne Thurman)**
**Document ID: BOEM-2014-0096-14542**

The commenter states opposition to the inclusion of the Mid-Atlantic in the proposed oil and gas lease sales, asserting that seismic testing would be damaging to marine wildlife and that large marine organisms would also be impacted should an oil spill like *Deepwater Horizon* occur.

**National Parks Conservation Association (Nicholas Lund)**
**Document ID: BOEM-2014-0096-14369**

The commenter states opposition to lease sales off the coast in the Atlantic Ocean. The commenter notes there are a great number of national parks on the east coast and if a spill occurred, a great number of them could be affected.

**Natural Resources Defense Council**
**Document ID: BOEM-2014-0096-14489**

The commenter submitted a petition signed by 47,093 members stating opposition to opening up the Atlantic and Arctic Oceans to oil and gas drilling and exploration. The commenter states that in a plan amendment, all areas in the Arctic and Atlantic should be removed; stronger safeguards put in place for remaining oil operations, and increased investment in renewable energies.

**Natural Resource Defense Council**
**Document ID: BOEM-2014-0096-14490**

The commenter submitted a petition signed by 9,125 members stating opposition to opening up the Atlantic and Arctic Oceans to oil and gas drilling and exploration. The commenter states that should an oil spill occur like what occurred with *Deepwater Horizon*, the wildlife and economies of the densely populated east coast would be devastated, and that seismic airgun blasting would also harm whale and marine populations.

**Natural Resource Defense Council**
**Document ID: BOEM-2014-0096-14522**

The commenter submitted a petition signed by 90,000 members stating opposition to opening up portions of the Atlantic and Arctic coasts to offshore oil and gas drilling. The commenter requests strengthening safeguards to reduce risk of oil spills and investing in cleaner energy technologies.

**Natural Resources Defense Council (Sarah Chasis)**
**Document ID: BOEM-2014-0096-14347**

The commenter states opposition to oil and gas drilling in the Atlantic, Arctic, and Cook Inlet waters and requests that they be removed from consideration. The commenter states the ocean and its resources are ecologically and economically valuable and too valuable to put at risk.

**North Carolina Coastal Federation (Ladd Bayliss)**
**Document ID: BOEM-2014-0096-14382**

The commenter states opposition to offshore lease sales in the Mid- and South Atlantic, stating that the physical environment, socioeconomic, and policy risks associated with drilling far outweighs any potential benefit.

**Northern Alaska Environmental Center (Jessica Girard)**
**Document ID: BOEM-2014-0096-14536**

The commenter states opposition to lease sales in the Arctic Ocean, because lease sales will put wildlife and people of the region at risk of an oil spill, and this region is always climate-stressed and does not need more industrial activity.

**New York/New Jersey Baykeeper (Sandra Meola)**
**Document ID: BOEM-2014-0096-14384**

The commenter states opposition to oil and gas exploration in the Atlantic, stating that oil spills like *Deepwater Horizon* are disastrous for the environment and economy and the small amount of recoverable oil is not worth it.

**New York University Institute for Policy Integrity (Jaynil Hein)**
**Document ID: BOEM-2014-0096-14553**

The commenter asserts that USDOI take additional steps in considering its option value for the OCS plan, including clarifying in the program how option value will be incorporated into development stages.

**Ocean Conservation Research**
**Document ID: BOEM-2014-0096-15977**

The commenter states opposition to lease sales and seismic testing as proposed in the DPP, stating that the impact seismic surveys would have on marine populations is unaccounted for in the DPP and should be considered. The commenter asserts that the presence of oil rigs would also have an impact on marine populations, including subsea and surface equipment, and that acoustical impacts of all noise sources used in oil and gas development need to be considered.

**Oceana**
**Document ID: BOEM-2014-0096-14514**

The commenter submitted a petition signed by 41,628 members stating opposition to the inclusion of the Atlantic and Arctic Oceans in the proposed OCS leasing rule. The commenter states drilling in the Atlantic would expose marine wildlife and put important ocean dependent industries at risk, the GOM is still feeling the repercussions of *Deepwater Horizon*, and Arctic exploration has previously been too risky to proceed.

**Oceana**
**Document ID: BOEM-2014-0096-14367**

The commenter provided formal resolutions from 23 counties, cities, and towns stating opposition or presenting concerns with offshore exploration, and a petition signed by 3,487 residents opposing offshore drilling in the Atlantic Ocean and Arctic Ocean. The commenter states that drilling in the Atlantic would expose marine wildlife to unprecedented risks, and once drilling begins, an oil spill will inevitably follow. According to the commenter, past efforts to explore in the Arctic Ocean has put oceans at risk and led to controversy, litigation, government investigations, and near disaster; there is no reason to continue down this path.

**Oceana (Jacqueline Savitz)**
**Document ID: BOEM-2014-0096-14511**

The commenter, on behalf of Oceana members and supporters, requests the removal of the Arctic and Atlantic from the proposed leasing program. The commenter states oil spills can destroy coastal communities, and there is no proven technology capable of responding to spills in Arctic conditions. In addition, there is no need to offer additional leases in the Arctic, as other leases exist on which no exploration has been completed. The commenter states regulations governing the process are in need of updates and the agency should revisit the manner in which it evaluates Net Present Value, climate change

effects, accidents, and cumulative impacts. Oceana states opposition to the inclusion of the Atlantic and Arctic in OCS lease sales, stating that the Atlantic hosts a vibrant tourism economy, as well as numerous threatened species, and the Arctic is home to some of the most untouched places left on earth. The commenter affirms that development of oil and gas would threaten all these.

**Oceana (Nancy Pyne)**
**Document ID: BOEM-2014-0096-14351**

The commenter provided the signatories of 52,707 members for a petition stating opposition to the inclusion of the Atlantic and Arctic leasing areas and requests they be removed from consideration. The commenter states an oil spill will impact the entire East Coast, as seen with *Deepwater Horizon*, and drilling would also put marine wildlife at risk.

**Oceana Southeast (Samantha Siegel)**
**Document ID: BOEM-2014-0096-14494**

The commenter states opposition to the inclusion of the Mid- and South Atlantic Planning Areas in the leasing program, stating that seismic exploration and drilling risk species and natural resources, which are depended upon by fishing, tourism, and recreation. The commenter adds that underwater archeology sites and cultural resources occur in South Carolina's coastal zone, and an oil spill would jeopardize the entire east coast.

**OffshoreAlabama.com**
**Document ID: BOEM-2014-0096-0047**

The commenter urges the inclusion of identified areas of the Atlantic, Arctic, and GOM in the final proposed plan and not to further restrict access to areas with potential energy resources. The commenter states that opening the Atlantic to energy exploration can diversify America's energy supplies while growing the east coast economy, and there is a need to continue to advance offshore opportunities in Alaska. The commenter urges BOEM to consider evaluating the full Eastern GOM Planning Area to prepare for future leasing opportunities.

**Oil Change International**
**Document ID: BOEM-2014-0096-14329**

The commenter submitted a petition signed by 8,300 members requesting that the Arctic Ocean be made off limits to offshore drilling. The commenter states that climate risks and environmental impacts of Arctic offshore drilling must be considered in any new plans for offshore drilling. The commenter concludes that more high-risk, high-cost, and high-carbon fossil fuels are not needed, and that instead, renewable energies are needed for the future.

**Oil Change International**
**Document ID: BOEM-2014-0096-14331**

The commenter submitted a petition signed by 4,196 members requesting that leasing be prohibited in any areas that cannot be developed under reasonable scenarios that stay within the 2º Celsius limit to avoid catastrophic climate change. The commenter recommends that direct greenhouse gas emissions associated with oil and gas activities should be considered, along with any direct, indirect, and cumulative environmental impacts of activities that could result from lease sales under the proposed action.

**One Hundred Miles, Inc. (Alice Keyes)**
**Document ID: BOEM-2014-0096-14556**

The commenter states opposition to lease sales off the coast of Virginia, North Carolina, South Carolina, and Georgia in the Atlantic. The commenter states oil and gas development will negatively impact natural resources and communities.

**Our Children's Trust (Elizabeth Brown)**
**Document ID: BOEM-2014-0096-14333**

The commenter states opposition to the leasing program. According to the commenter, the Earth is already warming at a rapid rate and there is no need to continue to support activities that promote the use of carbon-emitting fossil fuels. The commenter recommends that USDOI should look at the best available science to determine if these lease sales should be moved forward. The commenter also believes the Government has an obligation to the public to make decisions in the best interest of the people.

**Sabin Center for Climate Change Law (Michael Burger)**
**Document ID: BOEM-2014-0096-14505**

The commenter applauds the Administration's effort to expand and diversify energy resources, but feels expanded oil and gas lease sales in the Arctic and Atlantic run counter to efforts to combat climate change. The commenter suggests the USDOI should carefully review environmental impacts of expanded oil and gas leasing.

**Sierra Club, Virginia Chapter (William Penniman)**
**Document ID: BOEM-2014-0096-14391**

The commenter states opposition to any offshore oil and gas leasing until proper plans have been made to limit emissions. The commenter anticipates demand for carbon-based energy will likely decline due to increased use of renewable energy.

**Sierra Club, Virginia Chapter (Eileen Levandoski and Bill Penniman)**
**Document ID: BOEM-2014-0096-15999**

The commenter submitted a second letter reiterating their earlier comments and emphasizing their opposition to oil and gas leasing in any new areas in light of the December 2015 Paris Agreement to reduce carbon emissions and combat climate change.

**South Carolina Wildlife Federation (Ben Grigg and Steve Gilbert)**
**Document ID: BOEM-2014-0096-14396**

The commenter states opposition to oil and gas exploration in the Atlantic. The commenter adds that little oil is thought to exist in this area, and the risk of a spill threatens marine life and coastal recourses valuable to tourism and fishing economies.

**Southern Alliance for Clean Energy**
**Document ID: BOEM-2014-0096-14495**

The petition signed by 350 members states opposition to the proposed Atlantic lease sales. The petition expresses concern that environmental impacts of leasing and drilling in the Mid-Atlantic and South Atlantic outweigh any potential benefits. Further, the petition states that oil spills could decimate the

natural environment, which is the driver of the tourism economy and quality of life enjoyed by coastal residents. The petition also argues that any consideration of offshore drilling must examine the impacts of corollary onshore infrastructure, which would compromise the character of the coast and jeopardize the environment, economy, and quality of life.

**Southern Environmental Law Center (Sierra Weaver)**
**Document ID: BOEM-2014-0096-14352**

The commenter states opposition to the inclusion of the Mid- and South Atlantic Planning Areas and requests they be removed from consideration. The commenter states drilling in these areas will adversely impact the natural resources and communities along the coast, such as seen with the *Deepwater Horizon* spill. Further, the commenter adds that seismic airgun testing would have detrimental impacts on the health and habitats of species such as threatened and endangered whales, turtles, and sea birds.

**St. Johns Riverkeeper (Lisa Rinaman)**
**Document ID: BOEM-2014-0096-0050**

The commenter states opposition to opening the Atlantic to offshore drilling. The commenter believes drilling threatens the freshwater estuaries in Florida, which provide habitat for endangered species and the human communities and industry along the river.

**St. Mary's EarthKeepers (Alex Kearns)**
**Document ID: BOEM-2014-0096-14551**

The commenter states opposition to seismic airgun testing off Georgia. The commenter asserts that such activity could have harmful effects on the coast, economy, and quality of life.

**Surfrider Foundation**
**Document ID: BOEM-2014-0096-15988**

The commenter submitted a petition signed by 6,700 members requesting that plans be cancelled to conduct seismic surveys off the Mid- and South Atlantic coasts. The commenter states seismic airgun activity for oil and gas exploration would produce impacts to marine life, potentially injuring marine mammals and disrupting marine mammal feeding, calving, breeding, and other vital activities. The commenter also states airgun noise would affect fish behavior and fisheries, which would displace commercial species of fish.

**Surfrider Foundation (Joanna Malaczynski)**
**Document ID: BOEM-2014-0096-14491**

The commenter states opposition to the inclusion of the Atlantic and Alaska Oceans and Eastern GOM in the OCS lease plan. The commenter suggests oil extraction would put coastal economies, communities, and natural resources at risk. The commenter adds that regulatory oversight has not improved since *Deepwater Horizon* and investment should be made in renewable energy.

**Surfrider Foundation Sebastian Inlet Chapter (Mike Daniel)**
**Document ID: BOEM-2014-0096-14503**

The commenter states opposition to offshore oil and gas exploration near Florida in the Eastern GOM. According to the commenter, Florida's natural capital far outweighs any value of petroleum reserves that may be off the coast.

**The Nature Conservancy (Gwynn Crichton)**
**Document ID: BOEM-2014-0096-14336**

The commenter requests withdrawal of portions of the Mid- and South Atlantic leasing areas and reconsideration of the remaining areas. The commenter suggests there is not adequate research on the impacts offshore drilling would have in the Atlantic, such as on migratory birds and marine habitat, as well as the risk of a spill.

**The Ocean Foundation, Coastal Coordination Program (Richard Charter)**
**Document ID: BOEM-2014-0096-14387**

The commenter states opposition to lease sales in the Atlantic Ocean, Arctic Alaskan waters, including the Beaufort and Chukchi Seas and the Cook Inlet, and the Eastern GOM. The commenter expresses concern that oil and gas exploration, including seismic testing, puts sensitive marine populations at risk. In addition, the commenter suggests inadequate improvements to drilling safety have been made since *Deepwater Horizon* and no further exploration should occur until this is remedied.

**The Public Trust Environmental Legal Institute of Florida (Andrew Miller)**
**Document ID: BOEM-2014-0096-14661**

The commenter states opposition to the inclusion of the Mid- and South Atlantic in the proposed oil and gas leasing plan. The commenter states offshore drilling could risk jobs from fishing, tourism, and recreation, as well as precious ecosystems. Also, the commenter states that an oil spill at any point would impact the entire coast, just as the *Deepwater Horizon* disaster did. Lastly, the commenter argues the United States needs to decrease its dependence on oil and increase use of renewable clean technologies.

**Waterkeepers Chesapeake (Elizabeth Nicholas)**
**Document ID: BOEM-2014-0096-14537**

The commenter states opposition to the inclusion of the Mid- and South Atlantic Planning Areas in the OCS Oil and Gas Leasing Program. The commenter adds that the Chesapeake region is sensitive, and drilling near it could risk billions of dollars in fishing and tourism revenue.

**Waterwatch International (Captain Joel Fogel)**
**Document ID: BOEM-2014-0096-4426**

The commenter states opposition to drilling off the Mid-Atlantic. According to the commenter, the tourism industry does not want it and the public does not need it.

**World Wildlife Fund (Margaret Williams)**
**Document ID: BOEM-2014-0096-14540**

The commenter states opposition to drilling in the Arctic Ocean. The commenter states lack of technology and infrastructure in the Arctic to support oil drilling, along with increasing consequences of climate change, make the Arctic a poor candidate for oil leasing.

**World Wildlife Fund Members**
**Document ID: BOEM-2014-0096-14509**

The commenter submitted a petition signed by 94,712 members stating opposition to oil and gas leasing in the Beaufort and Chukchi Seas. The commenter suggests oil and gas development, increased shipping, and ocean noise could devastate the lives of Arctic whales and walruses.

## *A.2.8 Energy Exploration and Production Companies and Associations*

**Alaska Oil and Gas Association**
**Document ID: BOEM-2014-0096-14346**

The commenter states support for lease sales for the Alaskan Arctic OCS. The commenter suggests the area holds huge reserves of untapped oil and gas and that development means greater energy independence and job creation.

**American Petroleum Institute**
**Document ID: BOEM-2014-0096-15996**

The petition signed by 450,032 organization members states support for continued leasing for oil and natural gas development in the GOM and offshore Alaska and the opening of new areas for exploration in the Atlantic. The petition also states lease sales should remain as is in the Proposed Program and not be further reduced as the process moves forward. The petition argues that greater domestic offshore oil and natural gas will create jobs, grow the economy, and increase America's energy security.

**American Petroleum Institute, National Ocean Industries Association, Independent Petroleum Association of America, U.S. Oil and Gas Association, American Exploration & Production Council, International Association of Geophysical Contractors, Petroleum Equipment and Services Association, and Alaska Oil and Gas Association**
**Document ID: BOEM-2014-0096-14501**

The commenter states support for the DPP for leasing the Atlantic, Eastern GOM, and Alaska. The commenter adds that forecasts show the U.S. energy industry will only grow in the coming years, and investing in these reserves will increase energy security, prospects for job creation, and Government revenue.

**Chevron U.S.A., Inc.**
**Document ID: BOEM-2014-0096-14559**

The commenter states support for the inclusion of all identified lease sales and requests no other areas be excluded. In addition, the commenter states development of an offshore energy program is critical to the Administration's all-of-the-above energy program.

**ConocoPhillips**
**Document ID: BOEM-2014-0096-14535**

The commenter states support for the Proposed Program and requests that BOEM expand the areas offered for leasing to include additional blocks in the Eastern GOM Planning Area and additional areas in the Alaska Region and Atlantic Region. The commenter suggests OCS production is important for maintaining U.S. domestic oil supplies, reducing dependence on foreign oil, and sustaining economic growth and jobs.

**Deep Gulf Energy**
**Document ID: BOEM-2014-0096-14513**

The commenter states support for a robust leasing program of the GOM and Mid- and South Atlantic. The commenter is disappointed in restrictions on the Arctic and states that oil and gas is a huge driver of the American economy and is vital to long-term energy security.

**Diamond Offshore**
**Document ID: BOEM-2014-0096-14504**

The commenter supports additional leases in the Atlantic. The commenter requests analysis on the Eastern GOM and feels it should have been included in the development plan. The commenter suggests OCS development would support jobs; private sector and public sector revenue, and stimulate the U.S. economy.

**ExxonMobil**
**Document ID: BOEM-2014-0096-14549**

The commenter states support for expanded lease areas and the inclusion of portions of the Atlantic in the DPP. The commenter requests removal of the 50-mile buffer and decreased restrictions for Atlantic and Alaska OCS areas and suggests that oil and gas development will address future domestic needs, enhance energy security, and increase employment and public revenue.

**International Association of Geophysical Contractors**
**Document ID: BOEM-2014-0096-15989**

The commenter held workshops to help BOEM staff understand different technologies and techniques utilized in geophysical data acquisition and to educate them on emerging technologies. The commenter offers support for additional training opportunities and are supportive participants in BOEM's outreach efforts with Atlantic coastal communities. The Association released a statement showing support of the five-year leasing plan.

**Louisiana Mid-Continent Oil and Gas Association**
**Document ID: BOEM-2014-0096-14390**

The commenter states support for robust oil and gas leasing in the Eastern GOM and the Mid-and South Atlantic. The commenter suggests increasing access to domestic sources of oil will create good jobs, increase revenue, and reduce America's balance of trade.

**Louisiana Oil and Gas Association**
**Document ID: BOEM-2014-0096-0044**

The commenter states support for robust oil and gas leasing in the GOM and requests that lease sales be added to the Eastern GOM. The commenter asserts that the GOM generates billions of dollars in revenue and jobs and expanding leases will only add to that.

**Noble Energy**
**Document ID: BOEM-2014-0096-14339**

The commenter states support for reasonable oil and gas exploration in the Mid-Atlantic. The commenter requests the Eastern GOM be considered for leasing in this term and states that enhanced safety of operation and regulations make domestic oil production a viable economic move to further the United States toward energy security.

**Shell Offshore, Inc. Energy Resources Company**
**Document ID: BOEM-2014-0096-14399**

The commenter states support for the expanded offshore drilling plans in the Atlantic and Arctic. The commenter states opposition to targeted leasing plans, as it could be costly to the Nation to limit exploration opportunities, and states that development will create good jobs and increase energy security.

**Statoil (Foster Wade)**
**Document ID: BOEM-2014-0096-14341**

The commenter states support for leasing for oil and gas drilling in the Atlantic, GOM, and Alaska. The commenter requests no further areas be removed from consideration.

**Statoil (Jeremy Averty)**
**Document ID: BOEM-2014-0096-14358**

The commenter states support for the Draft Programmatic EIS to begin OCS oil and gas production. The commenter encourages using best available science when considering environmental factors for the proposed Programmatic EIS.

**Tennessee Oil and Gas Association**
**Document ID: BOEM-2014-0096-14541**

The commenter states support for the expansion of oil and gas drilling and exploration in all proposed areas. The commenter notes development in the Atlantic would mean tapping into a previously unused resource. The commenter asserts that the GOM is one of the greatest energy resources and should be developed robustly. The commenter suggests Alaska contains such a large untapped amount of oil that would be valuable to the U.S., and safety regulations have increased and domestic development means increased economic opportunities and energy independence.

### *A.2.9 Non-energy Industry and Associations*

**Air Liquide America**
**Document ID: BOEM-2014-0096-0870**

The commenter states support for leasing and development off the shores of Alaska. The commenter suggests development will bring infrastructure, jobs, and increased opportunity in these regions. The commenter asserts that increasing restrictions will only harm the development this community has been able to experience in the last 40 years, and drilling technology is safe and can be done in an environmentally responsible way.

**Alaska Chamber of Commerce**
**Document ID: BOEM-2014-0096-0018**

The commenter states support for development of offshore oil and gas resources in Alaska's OCS to create jobs and increase Government revenue. The commenter asserts that current and future lessees should be able to explore and develop these resources. The commenter suggests Alaskan offshore development will also extend the longevity of TAPS.

**Alaska Trucking Association**
**Document ID: BOEM-2014-0096-0037**

The commenter states support for all proposed leasing areas in Alaska. The commenter asserts that the Beaufort and Chukchi Seas are rich in oil, and the United States should take advantage of this natural resource to support job creation and increase American energy security. The commenter concludes that advances in drilling technology allow for safe drilling with minimal environmental impact.

**Alliance for Economic Development of Georgetown County, South Carolina**
**Document ID: BOEM-2014-0096-15964**

The commenter states support for the inclusion of the Atlantic. At this time, the Alliance supports seismic testing for locating offshore resources, and the Alliance will reevaluate their position as new information becomes available. The commenter asserts that offshore oil and gas development in the Atlantic will provide economic benefits for coastal states; however, the benefits and risks cannot be adequately determined until there is more up-to-date information related to the location and quantities of offshore resources.

**American Chemistry Council**
**Document ID: BOEM-2014-0096-14378**

The commenter states support for the expanded offshore drilling plans, citing the benefits for chemical and plastics manufacturing in the United States. The commenter suggests oil and gas development can coexist with environmental interests, and developing oil and gas resources in the Arctic will advance geopolitical interests in the region as well.

**American Trucking Association**
**Document ID: BOEM-2014-0096-0017**

The commenter states support for the expansion of oil and gas drilling and exploration in all proposed areas. The commenter asserts that development in the Atlantic would mean tapping into a previously unused resource, and the GOM is one of the greatest energy resources and should be developed robustly. The commenter suggests Alaska contains such a large untapped amount of oil that would be valuable to the United States. The commenter notes safety regulations have increased and domestic development means increased economic opportunities and energy independence.

**Aries Marine Corporation**
**Document ID: BOEM-2014-0096-14515**

The commenter states support for opening of additional areas of the OCS to oil and gas exploration and would support even more areas being included. The commenter asserts that increased expansion in the GOM would help add to the domestic energy supply and create thousands of jobs for the region, and this development can be done in an environmentally responsible way.

**Associated Industries of Florida (Brewster B. Bevis)**
**Document ID: BOEM-2014-0096-14531**

The commenter states support for robust oil and gas leasing in the GOM and requests that lease sales be added to the Eastern GOM. The commenter asserts that the GOM generates billions of dollars in revenue and jobs and expanding leases will only add to that.

**AxisTrade, Inc.**
**Document ID: BOEM-2014-0096-0036**

The commenter states support for the expansion of oil and gas drilling and exploration in all proposed areas. The commenter notes development in the Atlantic would mean tapping into a previously unused resource, and the GOM is one of the greatest energy resources and should be developed robustly. The commenter suggests Alaska contains such a large untapped amount of oil that would be valuable to the United States. The commenter concludes safety regulations have increased and domestic development means increased economic opportunities and energy independence.

**Bald Head Association/BHI Stage II Association**
**Document ID: BOEM-2014-0096-14525**

The commenter states opposition to oil and gas leasing off the coast of North Carolina. The commenter asserts that oil and gas exploration will negatively impact the property value of homes in the region, reduce revenue for tourism, and disrupt the ecology of the region.

**Bayou Industrial Group**
**Document ID: BOEM-2014-0096-14362**

The commenter states support for expanded offshore oil and gas development, citing the economic benefits Louisiana has gained from this industry. The commenter suggests that since the *Deepwater Horizon* incident, the industry has developed new technology and standards to minimize risk. The commenter asserts that revenue sharing established by the GOMESA should remain in place.

**Bidarka, LLC**
**Document ID: BOEM-2014-0096-0038**

The commenter states support for the expansion of oil and gas development in the United States and requests no further restrictions be made. The commenter notes the Beaufort and Chukchi Seas hold a vast amount of oil, and developing these areas would mean increased government revenue and job creation. The commenter suggests expansion in these areas would help support TAPS and support energy security, and increased regulations would mean safe drilling in the Arctic.

**Cape May Chamber of Commerce, New Jersey**
**Document ID: BOEM-2014-0096-14351**

The commenter submitted a resolution opposing any plan by the USDOI to allow offshore drilling in the Atlantic Ocean and encourages the U.S. Government to put its energies and resources into renewable and sustainable energy programs.

**Clay County, Florida, Chamber of Commerce**
**Document ID: BOEM-2014-0096-14532**

The commenter states support for including all identified areas in the Atlantic, Arctic, and GOM. The commenter suggests continued seismic exploration in the Atlantic will allow for a better understanding of what resources exist, and robust leasing of the GOM. The commenter asserts that since the *Deepwater Horizon* incident, operations have improved and state-of-the-art containment systems have been developed. The commenter requests additional leasing restrictions of the Beaufort and Chukchi Seas in Alaska be avoided to allow for maximum development.

**Coleman Holdings, LLC**
**Document ID: BOEM-2014-0096-14379**

The commenter states that USDOI should be investing in clean-up technologies, such as protein manipulators.

**Communications Workers of America Local 1075**
**Document ID: BOEM-2014-0096-14385**

The commenter states opposition to opening the Atlantic to oil and gas exploration. The commenter asserts that drilling for oil and gas puts the coastline in jeopardy, risking jobs and natural resources, and investments should be made in cleaner, renewable technology.

**Conservation Cooperative of Gulf Fishermen**
**Document ID: BOEM-2014-0096-15997**

The commenter states support for robust oil and gas leasing in the GOM and requests that lease sales be added to the Eastern GOM. The commenter asserts that the GOM generates billions of dollars in revenue and jobs and expanding leases will only add to that.

**Dare County Tourism Board, North Carolina**
**Document ID: BOEM-2014-0096-14367**

The commenter states that a resolution was passed opposing oil and gas exploration and seismic airgun testing off the coast of North Carolina in the Atlantic. The commenter asserts that these practices have the potential to negatively impact recreational and commercial fishing. The commenter requests more research be done to ensure that these industries are not unnecessarily damaged.

**D&M Photo**
**Document ID: BOEM-2014-0096-14337**

The commenter states support for oil and gas leasing off the coast of Alaska and requests no further restrictions be made. The commenter asserts that oil and gas development is critical for the longevity of the TAPS, and the tax benefits and royalties will benefit all Alaskans.

**Dittman Communications and Research**
**Document ID: BOEM-2014-0096-0039**

The commenter states support for the expansion of oil and gas development in the United States and requests no further restrictions be made. The commenter asserts that the Beaufort and Chukchi Seas hold a vast amount of oil and developing these areas would mean increased Government revenue and job creation. The commenter suggests expansion in these areas would help support TAPS and support energy security, and increased regulations would mean safe drilling in the Arctic.

**Dominion Resources, Inc**
**Document ID: BOEM-2014-0096-15967**

The commenter states support for the DPP, noting its consistency with the publicly stated views of Virginia's Governor and Senators, as well as the most recent Virginia Energy Plan. The commenter requests that all proposed Atlantic leasing areas be maintained and further exclusions or deferrals or unreasonable mitigation measures be avoided that would prevent efficient, effective, and safe OCS development. The commenter urges equitable revenue sharing for states bordering the Atlantic leasing

area. The commenter notes the proposed Atlantic leasing area offers significant potential energy resources, contributing to domestically produced energy that benefits the state's and Nation's economies. In addition, the commenter notes Atlantic OCS development can be accomplished safely and can coexist with other marine uses.

**Georgia AgriBusiness Council**
**Document ID: BOEM-2014-0096-15968**

The commenter urges USDOI to maintain the proposed Atlantic leasing area and not to add further exclusions or deferrals or unreasonable mitigation measures that would prevent efficient, effective, and safe OCS development. The commenter notes the leasing areas could provide a stable and secure source of domestically produced energy and by 2035 contribute to more than 120,000 jobs, nearly $60 billion in local spending, and over $10 billion in public revenues to Virginia, North Carolina, South Carolina, and Georgia. According to the commenter, from these four states, state leadership and the majority of the public support the inclusion of the region in the leasing program. In addition, the commenter notes that including the Atlantic lease sale is critical to maintaining industry interest in conducting new studies that ultimately enable more economically and environmentally efficient exploration.

**Georgia Chamber of Commerce**
**Document ID: BOEM-2014-0096-4422**

The commenter states support for oil and gas lease sales in the Atlantic and requests no further restrictions be made. The commenter suggests Atlantic OCS development will create jobs and generate local spending and public revenue.

**Greater New Orleans, Inc.**
**Document ID: BOEM-2014-0096-14558**

The commenter states support for robust oil and gas leasing to the GOM and requests expanding lease sales to the Eastern GOM and Mid- and South Atlantic. The commenter asserts that Louisiana has been able to support oil and gas production as well as a flourishing tourism industry and hopes other states can do the same.

**Jesperson Sales & Management Consulting**
**Document ID: BOEM-2014-0096-14403**

The commenter states support for domestic oil and gas development and requests that more areas be opened for leasing in the Arctic OCS and Alaskan waters. The commenter asserts that oil and gas development is the backbone of the Alaskan economy and has been proven to occur safely.

**Kiewit Offshore Services, Ltd (Fuat Sezer)**
**Document ID: BOEM-2014-0096-14538**

The commenter states support for development of OCS resources and requests expansion of lease areas including the Eastern GOM, Pacific, Atlantic, and Alaska. The commenter notes the vast majority of America's offshore resources are off limits to development, and the United States cannot afford to leave this potential for jobs and economic growth on the table.

**LA 1 Coalition (Henri Boulet)**
**Document ID: BOEM-2014-0096-14530**

The commenter states support for the expansion of oil and gas drilling and exploration in all proposed areas. The commenter asserts that development in the Atlantic would mean tapping into a previously unused resource. The commenter suggests the GOM is one of the greatest energy resources and should be developed robustly. The commenter notes Alaska contains such a large untapped amount of oil that would be valuable to the United States. The commenter also notes safety regulations have increased and domestic development means increased economic opportunities and energy independence.

**Laborers International Union of North America Local 341**
**Document ID: BOEM-2014-0096-14344**

The commenter states support for oil and gas lease sales off the coast of Alaska. The commenter suggests oil and gas development is critical to Alaska's economy, providing hundreds of jobs and millions in revenue from the Alaskan Laborer's Union alone.

**Louisiana Association of Business & Industry Energy Council Director (Brian Landry)**
**Document ID: BOEM-2014-0096-14372**

The commenter states support for leasing in the GOM and the continued exploration of other areas available for hydrocarbon production to help the United States move closer to energy in dependence. The commenter states revenue sharing established by the GOMESA should remain and the cap of $500 million lifted, as this funding is critical to Louisiana.

**Louisiana Oil Marketers & Convenience Store Association**
**Document ID: BOEM-2014-0096-4432**

The commenter states support for robust oil and gas leasing in the GOM and requests that lease sales be added to the Eastern GOM. The commenter notes the GOM generates billions of dollars in revenue and jobs and expanding leases will only add to that.

**Marine Exchange of Alaska**
**Document ID: BOEM-2014-0096-14554**

The commenter states support for responsible oil and gas development in the Arctic OCS and requests no further restrictions on the Beaufort and Chukchi Seas areas. The commenter asserts the Arctic OCS is abundant in oil, and development would help create jobs and generate payroll for Alaskans and the entire United States. In addition, the commenter notes development would also bring much-needed infrastructure to rural Alaska.

**MatSu Business Alliance**
**Document ID: BOEM-2014-0096-14555**

The commenter states opposition to the restrictive current lease plan in Alaska. The commenter asserts the OCS areas in question have been maintained without major incidence from oil extraction and safe, monitored production should be of highest priority.

**National Association of Charterboat Operations**
**Document ID: BOEM-2014-0096-14389**

The commenter states support for robust oil and gas leasing in the GOM and requests that lease sales be added to the Eastern GOM. The commenter notes the GOM generates billions of dollars in revenue and jobs and expanding leases will only add to that.

**National Association of Manufacturers (Kelley Raymond)**
**Document ID: BOEM-2014-0096-14543**

The commenter states support for expanding offshore oil and gas leasing and requests that more lease sales be added to the existing proposed leases. The commenter suggests that developing additional oil and gas recourses will create jobs, grow the economy, and increase American energy security.

**North American Submarine Cable Association (Kent Bressie)**
**Document ID: BOEM-2014-0096-14550**

The commenter requests that USDOI consider any existing and planned submarine cable systems as a part of the five year plan. The commenter asserts that submarine cables provide Internet, telephone, and data connectivity, and damaging such cables is a Federal offense.

**North Carolina Farm Bureau Federation (Paul Sherman)**
**Document ID: BOEM-2014-0096-14527**

The commenter states support for including the Atlantic in the DPP, and suggests that lease sales could generate billions of dollars in revenue to the states and Federal Government, as well as create jobs.

**North Star (Alaska) Terminal & Stevedore Co., LLC (Steve Post)**
**Document ID: BOEM-2014-0096-3327**

The commenter states support for oil and gas leasing in the Arctic OCS. The commenter suggests development would create tens of thousands of jobs for Alaskans, generate state and Federal Government revenue, and can be done in an environmentally responsible way.

**Northern Gas Pipelines**
**Document ID: BOEM-2014-0096-0008**

The commenter states support for the expansion of oil and gas development in the United States and requests no further restrictions be made. The commenter notes the Beaufort and Chukchi Seas hold a vast amount of oil and developing these areas would mean increased government revenue and job creation. The commenter states expansion in these areas would help support TAPS and support energy security, and increased regulations would mean safe drilling in the Arctic.

**Outer Banks Association of Realtors, North Carolina**
**Document ID: BOEM-2014-0096-15976**

The commenter states opposition to the inclusion of the OCS off North Carolina's coast in the Oil and Gas Leasing Program. The commenter notes the natural resources of the Outer Banks of North Carolina are critical for tourism, fishing, and outside investment in communities; supports thousands of jobs; and produces millions of dollars in local and state revenue. In addition, the commenter notes the threat of damage to these resources far outweighs any benefit provided by offshore oil and/or natural gas exploration and harvesting.

**Outer Banks Chamber of Commerce Resolution, North Carolina**
**Document ID: BOEM-2014-0096-14367**

The commenter states opposition to offshore gas and oil exploration off the coast of North Carolina, asserting tourism generates billions of dollars in revenue for the state, and a price tag cannot be put on the ocean ecosystems. The commenter states the potential gain in revenue from oil and gas drilling does not make up for the cost of cleanup and damage to the coast.

**Palmetto AgriBusiness Council, South Carolina, (Cathy Novinger)**
**Document ID: BOEM-2014-0096-0452**

The commenter states support for the inclusion of the Atlantic leasing area to develop jobs, increase local spending, and increase public revenue in coastal states. The commenter asserts that developing oil and gas in the Atlantic will increase energy supply and reduce costs for consumers, particularly the agribusiness industry.

**Panama City Boatmen Association, Florida (Captain Robert Zales)**
**Document ID: BOEM-2014-0096-14524**

The commenter states support for robust oil and gas leasing in the GOM and requests that lease sales be added to the Eastern GOM. The commenter states the GOM generates billions of dollars in revenue and jobs and expanding leases will only add to that.

**Perennial Environmental Services**
**Document ID: BOEM-2014-0096-15978**

The commenter states support for the plan for leasing in the GOM and urges BOEM to examine opportunities for future expanded development of the Eastern GOM Planning Area. The commenter asserts continued and expanded access to areas of the GOM will contribute economic gains, jobs, and royalties. The commenter states industries have significantly improved operations and advanced state-of-the-art containment systems to minimize the risk of a catastrophic oil spill.

**Ports Association of Louisiana (Joe Accardo)**
**Document ID: BOEM-2014-0096-14519**

The commenter states support for robust oil and gas leasing in the GOM and requests that lease sales be added to the Eastern GOM. The commenter states the GOM generates billions of dollars in revenue and jobs and expanding leases will only add to that.

**PT Capital**
**Document ID: BOEM-2014-0096-14350**

The commenter states support for maintaining all leasing areas in the Beaufort and Chukchi Seas and requests no further restrictions be made. The commenter states the Arctic OCS holds a great amount of oil and gas and helps support Alaska's economy. The commenter suggests oil and Gas drilling will also support the longevity of TAPS.

**Rock Acres Consulting**
**Document ID: BOEM-2014-0096-0019**

The commenter states support for the expansion of oil and gas development in the United States and requests no further restrictions be made. The commenter states the Beaufort and Chukchi Seas hold a vast

amount of oil and developing these areas would mean increased government revenue and job creation. In addition, the commenter suggests that expansion in these areas would help support TAPS and support energy security, and increased regulations would mean safe drilling in the Arctic.

**Solsten XP, Inc., Alaska**
**Document ID: BOEM-2014-0096-15966**

The commenter states support for the proposed leases in the Arctic Ocean near Alaska. The commenter encourages USDOI to make a final determination to proceed with these lease sales, to shorten the timeline on these sales to make the leases available sooner, to limit the acreage of exclusion zones, and to continue to manage them in their present "deferred" status rather than as proposed permanent exclusion zones.

**South Carolina Small Business Chamber of Commerce**
**Document ID: BOEM-2014-0096-14494**

The commenter states opposition to offshore drilling and gas exploration off the coast of the Atlantic. The commenter suggests seismic airgun blasting could negatively impact marine populations, which in turn would affect fishing industries. The commenter also suggests oil spills could also negatively affect the fishing and tourism industries along the coast.

**South Central Industrial Association, Louisiana (Jane Arnette)**
**Document ID: BOEM-2014-0096-15995**

The commenter states support for development of offshore oil and gas in the GOM, Alaska, and the Mid- and South Atlantic, and requests expansion to the Eastern GOM. The commenter suggests offshore development equates to more jobs, investments, and revenue.

**Spectrum Geo Inc. (Richmond Miller)**
**Document ID: BOEM-2014-0096-14552**

The commenter states support for the inclusion of portions of the East Coast in the DPP and requests USDOI reconsider excluding the Eastern GOM.

**Texas Association of Businesses**
**Document ID: BOEM-2014-0096-3326**

The commenter states support for robust oil and gas leasing in the GOM and requests that lease sales be added to the Eastern GOM. The commenter also states the GOM generates billions of dollars in revenue and jobs and expanding leases will only add to that.

**Texas Association of Manufacturers (Richard A. Bennett)**
**Document ID: BOEM-2014-0096-0872**

The commenter states support for robust oil and gas leasing in the GOM and requests that lease sales be added to the Eastern GOM. The commenter also states the GOM generates billions of dollars in revenue and jobs and expanding leases will only add to that.

**United States Chamber of Commerce, Institute for 21st Century Energy**
**Document ID: BOEM-2014-0096-14365**

The commenter states support for the expansion of drilling the in U.S. OCS and requests that USDOI increase the number of leasing areas. The commenter asserts offshore energy development generates

billions of dollars for the economy in revenue and jobs, increases energy security, and stabilizes geopolitical trade. The commenter also asserts drilling is also the safest it has been in decades.

**Virginia Beach Restaurant Association**
**Document ID: BOEM-2014-0096-14367**

The commenter states opposition to offshore drilling in the Atlantic OCS. The commenter states tourism and related industries support a significant portion of the Virginia economy. The commenter asserts that large oil spills could take years to clean up and even small more common spills could still be damaging to the economy. The commenter also states drilling is a risky move that would provide little benefit to the people of Virginia.

**Virginia Chamber of Commerce (Samantha Quig)**
**Document ID: BOEM-2014-0096-4423**

The commenter states support for oil and gas lease sales in the Atlantic and requests no further restrictions be made. The commenter states developing domestic resources ensures reliable and affordable domestic energy.

**W.D. Scott Group, Louisiana**
**Document ID: BOEM-2014-0096-14380**

The commenter states support for the proposed Atlantic leasing area and urges USDOI to not place any further restrictions that might limit OCS development. The commenter suggests the Atlantic OCS could hold significant amounts of oil and the seismic data is out-of-date. The commenter states new seismic studies need to be done to properly estimate the potential of the Atlantic OCS and further states that oil and gas development can be done safely and should be explored for this region.

### *A.2.10 General Comments from Individuals Not Specific to OCS Program Areas*

Approximately 1,106,095 submissions were received from individuals, of which approximately 1,104,438 were submitted as part of form letter campaigns. Approximately 590,537 form letter submissions from individuals express general support for the 2017–2022 Program, while approximately 513,901 form letter submissions from individuals express general opposition. Of the unique submissions received from individuals, numerous submissions provide general comments with regard to the Five-Year Program and impacts on the environment.

Individuals expressed general environmental concerns that new offshore drilling could result in oil spills, leaks, and air and water pollution resulting in effects on public health, marine resources, and the recreational and tourism industries. An individual commenter states that national policies allow special interests, particularly big oil lobbies, to dictate the path of fossil fuel energy for short-term political and economic gains, resulting in negative impacts of pollution, global climate change, and loss of the environment. Many commenters argue that pollution from drilling, leasing, and oil spills will have a harmful effect on marine and terrestrial wildlife and will damage sensitive marine habitats. Commenters expressed concerns for the effects seismic noise may have on marine wildlife. Many commenters are concerned that drilling fluid discharge will contaminate seafood, negatively impacting the fishing industry. However, one individual asserts that decommissioned oil and gas production platforms could benefit the local ecosystem by serving as the foundations for artificial reefs. This individual argues that

because commercial fishing has coexisted with oil and gas development, the development process does not harm marine life. Several individuals express concern about the risk from oil spills on human health. Many individuals express concern about the consequences to the tourist industry from an oil spill. Commenters state that an oil spill would pollute beaches, devastate tourism and recreation, and could result in a loss of tourist industry jobs in coastal communities.

Many individuals express concern about the consequences leasing will have on climate change due to the resulting carbon and greenhouse gas emissions from increasing fossil fuel usage and production. Individuals express concern that offshore drilling is a deviation from national climate change goals and a short-term solution to national long-term energy needs. Individuals state that BOEM must seriously analyze climate impacts of the draft 2017–2022 offshore drilling program in the Programmatic EIS. Many individuals note the risks of continuing to expand oil and gas development, citing the negative implications from ocean acidification, temperature increase, and sea level rise on low-lying coastal regions. One individual expressed concern that carbon emissions from fossil fuel production contribute to climate change causing extreme weather (e.g., more frequent and damaging storms, severe drought and floods, and more intense tornados, hurricanes, and variations in temperature). Some individuals argue that the data the DPP relies on to calculate various air emissions from oil and gas development is insufficient. A few other individuals argue that burning fossil fuels in the last century has not caused global warming, and that many scientists have explained global climate change as resulting from sun cycles.

Many individuals express concern about the increasing risk of oil spills with further offshore drilling development. Individuals address concerns about oil spills including potential damage to ecosystems, marine life, tourist economies, fishing industries, and human health. Commenters express concern for a lack of adequate oil-spill contingency plans. However, one individual notes that OCS production has a much lower risk of spills than transporting oil via tankers, citing historical incidents as evidence, and notes that less than one percent of all oil released into North America's oceans comes from oil spills, with the remainder due to natural seeps and human runoff.

Regarding regulations and safety, several commenters state that current safety reviews, regulations, inspections, and enforcement are inadequate. Some commenters state that a review should require more stringent policies and safety procedures including specific oil response plans, weather monitoring mechanisms, multiple redundant proven safety controls, and immediate and direct access to spill control equipment and containment for a worst-case scenario. In contrast, many commenters point out that there have been significant technological, operational, regulatory, and legal advances in the past 30 years, which have made OCS oil and gas production very safe. Commenters expressed confidence that the industry is using the best safety practices, standards, and regulations to develop offshore oil and natural gas resources and deal with spill prevention, containment, and response.

Many commenters express concern with the public input process, including the length of the public comment period, the inadequacy of informing and educating the public for them to make comments, the difficulty of submitting a comment on the website, and the weight that public comments receive. Other individuals request public hearings at various locations as part of the public involvement process. One commenter would like to see public comments addressed in an open hearing format. Another commenter

would like to see BOEM include public meetings in the next round of public comment periods following the release of the Draft Programmatic EIS and Proposed Program.

Some commenters address the importance of weighing the risks versus the benefits in terms of the economy, environment, and society when making a decision about expansion of OCS oil and gas development. Commenters generally express concern for risks associated with development of offshore oil and gas such as visual impacts from development of drilling operations, oil transport by tankers, and the installation of platforms, pipelines, and other infrastructure. One individual expresses specific concerns about impacts on the local culture and property values from the development of oil and gas infrastructure. A few commenters state that offshore drilling will be a detriment to the local economy since offshore drilling jobs are temporary and would not provide sustained economic benefit to the area. In contrast, some individuals express support for the development of offshore oil and gas resources, stating that offshore oil rigs provide valuable navigation aids for boats, support marine wildlife, provide coveted scuba diving and marine research locations, improve ocean safety and rescue, and provide unique fishing opportunities. Many commenters state that the monetary and economic benefits from oil and gas development outweigh the environmental risks.

Some commenters argue that offshore oil reserves will only provide a short-term supply of oil considering the current rate of consumption and would not help meet national long-term energy needs. Commenters suggest cleaner renewable energy alternatives, fuel efficiency, carbon emissions standards, and other supply reductions be considered for the Nation's future long-term energy needs. Other commenters support expanding exploration and development opportunities in new planning areas in an effort to secure domestic energy needs.

Individual commenters from the energy industry generally express support for expanding offshore energy exploration and development of the OCS. Specifically, a few commenters state that offshore development would trigger private sector spending that would benefit economic recovery, tax base, job growth, and improve energy security.

The majority of commenters that discussed the topic generally express support for the sharing of Federal revenue with states and local communities, which will provide for coastal protection, needed infrastructure investments, and added incentives to pursue responsible offshore oil and gas development. Many individuals cite the economic benefits of increasing domestic energy production, including increased Federal revenue, creation of jobs, decreased dependence on foreign oil, and lower energy prices. Individuals note the potential Federal, state, and local economic gains that can be realized from increasing development in the OCS program areas. In contrast, many other commenters express concern that the negative impacts on the economy from an established and sustainable tourism industry would outweigh benefits from revenue sharing. Some individuals argue that OCS development will benefit oil companies rather than the general public. One individual suggests BOEM adjust the "fair value" lease price to include an escrowed capital amount equal to or in excess of a worst case scenario cost should an accident occur. The commenter requests some discussion on this "fair value" adjustment in future deliberations for the leasing program. Other general comments oppose the schedule and locations of the development program, and give alternate suggestions for development locations and the lease sale schedule.

### A.2.11 Comments from Individuals Specific to Program Areas

Many individuals provide comments on environmental concerns specific to the Alaska, Atlantic, and GOM program areas. Many individuals express concern that the impacts of seismic testing and offshore drilling in the Atlantic Ocean are not yet fully understood by scientists, the oil and gas industry, BOEM, or the Federal Government. Individuals express concern that airgun blasts in the Atlantic could cause injury or death to marine wildlife, including threatened and endangered species, disturbance to vital behaviors of marine mammals, displacement of whales, and disruption of both sea turtle and fish migration and spawning. However, other individuals state with regard to the 2014 Atlantic G&G Programmatic EIS that there have been no known cases of injury or mortality to marine life from seismic survey activities and note that seismic surveys make offshore energy production safer and more efficient by drilling areas with known reserves.

Individuals express concern that oil spills and resource development activities in the Arctic, Atlantic, and GOM would impact wildlife refuges, marine protected areas, endangered and protected species, critical habitat, and other marine wildlife and fish populations, many of which have not recovered from past oil spill events or are under stress from other activities. An individual states that before leasing occurs in the Arctic, the agency needs additional opportunities to study and evaluate important environmental issues. Other individuals express concern about effects on marine life and disruption of food webs in the Arctic, Atlantic and GOM Program Areas due to the toxicity of oil and dispersants. Another individual expresses concern about the lingering human health effects caused by the Gulf Coast oil spill, which include rapid weight loss, skin disorders, bloody stools, and cancer. In contrast, some individuals are confident that oil and gas resources can be developed in the Arctic and the GOM while protecting the environment.

In statements regarding the Arctic Planning Area, several individuals suggest the environmental analysis include a thorough evaluation of potential impacts and alternatives to the proposed leasing for the various OCS program areas as required under the National Environmental Policy Act (NEPA), and identify needs for leasing, amounts of oil and natural gas versus potential energy generation from other sources, and impacts of spills on the economy and the environment. An individual expresses concern that Congress has expedited much needed environmental and safety reviews in the Arctic without providing the resources to conduct NEPA reviews within an allotted deadline, therefore creating unreasonable pressures to proceed without adequate reviews. Another individual requests that a NEPA analysis be conducted on the Eastern GOM Planning Area in anticipation of the expiration of the statutory moratorium in 2022.

Several individuals express concern about the public comment process and ask for an explanation of how this process is meaningful and adequate. An individual requests that BOEM meet with the residents and current and former workers who have been affected by the 2010 GOM oil spill, and view the affected areas in Louisiana, Mississippi, Alabama, and Florida. Another individual suggests that BOEM consider the requests of the individual Atlantic states favoring offshore activity and properly allow a NEPA review to inform such decisions.

One individual states that a stable regulatory environment is necessary to promote long-term planning and execution by experienced operators in the Arctic. Several individuals cite multiple state-level laws, goals, policies, and programs that should be considered for the Arctic, Atlantic, and GOM Planning Areas. An individual states that BOEM's DPP is at odds with the coastal policy of Georgia.

An individual states that if the Beaufort and Chukchi Seas are not opened to development, demand will be met somewhere else, where safety standards are sub-par at best. Several individuals express concerns about the harsh conditions and extreme weather of the Arctic contributing to accidents. An individual comments that, based on past explosions, fires, leaks, and human deaths, it is impossible for companies to safely drill in the Atlantic Ocean. In contrast, other individuals state that new regulations and technologies will allow for development and environmental protection to coexist in the Arctic; that operators have taken great strides to implement lessons learned and enhance prevention and response capabilities in the Arctic; that drilling has occurred in the Arctic since 1971 without incident; and with regard to the Atlantic and GOM Planning Areas, that improved drilling practices and robust regulatory requirements have made drilling safer. For all program areas, other individuals recommend stringent Federal safety regulations. Several individuals state that no further leasing should occur until safety protocols have been established in the Atlantic. An individual expressed concern from risks from Department of Defense activities combined with risks from oil and gas activities.

Several individuals note that the consequences to fragile ecosystems and wildlife from the *Deepwater Horizon* event are not fully understood and will be felt for decades to come. Some individuals assert that an accident similar to this incident could have a major effect on mid-Atlantic coastal communities and natural resources. Other individuals note concerns about the stormy seas on the Atlantic coast and the increase in volatility and damage of the past decades of storms increasing the likelihood of similar events occurring in the Atlantic. An individual states that the proposed 50-mile buffer will do little to alter spill effects, as was found out with the catastrophic *Deepwater Horizon* spill, and several individuals reference this event as evidence of the riskiness of offshore oil development in the Arctic, Atlantic, and GOM. Other individuals state that the GOM has still not recovered from the *Deepwater Horizon* spill; commercial fisheries and marine populations have not rebounded; exploration and development safety recommendations and improvements in the wake of the event have not yet been implemented; and nearly 25 years later, fisheries and marine mammal populations of Prince William Sound have not recovered from the Exxon Valdez oil spill. One individual comments that the Exxon Valdez accident shows residual environmental impacts almost 30 years later.

Some individuals note that neither the technology nor the infrastructure exists to respond to an oil spill in the icy Arctic conditions. Several individuals stated currents and winds in the Arctic Ocean, Atlantic Ocean, and GOM can be expected to push oil to far-flung points and oil spill clean ups are costly. An individual questions, if offshore development occurs in the Beaufort and Chukchi Seas, who will respond to spills caused by other, less responsible countries?

With regards to deferrals, exclusions, and mitigations in the Alaska OCS program areas, individuals state that the area deferrals so far granted do not fully encompass the areas that these individuals (and their communities) consider to be essential for subsistence hunting and harvesting in the Arctic. Some individuals request complete exclusion of the Atlantic from the DPP, whereas other individuals suggest the use of a mitigation fund or that BOEM maintain the proposed Atlantic lease sale in its entirety and with no further access restrictions. Other individuals state that all of the proposed leasing areas in the Beaufort and Chukchi Seas should be kept open to development and additional restrictions should be denied. One individual expresses concern that the deferral of additional leasing areas in the Arctic could set precedent for additional restrictions and limit opportunities for future generations. One individual states that predictable, frequent sales are necessary for companies to make the long-term decisions

required for offshore exploration and development in Alaska. One individual comments that drilling off of the North Carolina coast will be a welcome enhancement of the knowledge base and offshore assets should be documented similarly to dry land resources.

Regarding cultural and subsistence concerns in Alaska, one individual expresses concern that BOEM failed to properly consider or balance social and cultural consequences of their actions and that the DPP is at odds with traditional coastal values. Other individuals stated that data developed in consultation with Native communities must be used as the basis for establishing appropriate deferrals and protections for subsistence activities, and the industry has a proven track record of conducting operations in cooperation with Alaska's indigenous people.

Individuals note that development will provide the following benefits: jobs and infrastructure; government revenue and tax royalties; assistance in meeting the country's energy demands and achieving energy independence; extension of the longevity of TAPS; reductions in retail gasoline prices, a source of cleaner fuel than coal or diesel; and improved scientific understanding of the Arctic. Other individuals state that allowing Alaskans access to natural resources provides means to pay for essential services such as public education, public safety, and health care systems. Some individuals state that the risks posed by new drilling in the Arctic Ocean and GOM are simply not worth it. One individual expresses concern over societal values and benefits from activities in the Atlantic Planning Area, such as access to clean water, beaches, and marshes. Additionally, some individuals state that the current revenue-sharing structure is inadequate for states, particularly for South Carolina, where much of the state's economic activity is on its coast. These individuals support legislation that would expand revenue sharing to all participating coastal states and modify the existing revenue-sharing structure for the GOM states to ensure a more equitable system. One individual comments that the Alaska OCS area needs continued opportunity for diversification of Alaska's resource market basket to remain a leader in providing oil and gas to world markets. The individual urges BOEM to keep all of the proposed leasing areas in the Beaufort and Chukchi Seas and to deny additional restrictions on leasing in the final program.

Individuals comment that the OCS program areas are especially promising to help meet the country's energy needs, reduce dependence on foreign oil, and establish energy security. Other individuals state that Alaskan offshore development will extend the longevity of TAPS, which plays a critical role in the Nation's energy security. Other individuals express concern that if Atlantic exploration were successful, it would not likely begin for a decade, at a time when the United States has to reduce fossil fuel reliance and enhance efficiency.

Some individuals express concerns that the testing and training ranges of the Eastern GOM are irreplaceable national security assets incompatible with mineral exploration and extraction. Other individuals assert that development activities could disrupt industries, such as fishing, tourism, and recreation, as well as disrupt activities associated with ship traffic, military operations, and National Aeronautics and Space Administration (NASA) in the Atlantic and GOM. In contrast, some individuals argue that offshore oil and gas exploration and development can coexist alongside the military and other ocean users in the Arctic, Atlantic, and GOM Planning Areas. Individuals express confidence that Arctic, Atlantic, and GOM oil and gas development can be compatible with rigorous protection of both environmental resources and subsistence lifestyles, as demonstrated by the coexistence of oil and gas activities with other industries (i.e., fishing and tourism) for more than 50 years in Alaska.

With regard to industry interests, an individual states that industries are exploring new areas of the Arctic, and that such industry presence, along with leasing activity for exploration and development, would provide additional response capabilities to the program areas.

An individual states, with regard to the Arctic planning areas, that the plan is potentially illegal by including the President's wish list for designating wilderness areas in the plan prior to approval by Congress.

## The Department of the Interior Mission

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

## The Bureau of Ocean Energy Management Mission

The Bureau of Ocean Energy Management (BOEM) manages the exploration and development of the nation's offshore resources. It seeks to appropriately balance economic development, energy independence, and environmental protection through oil and gas leases, renewable energy development and environmental reviews and studies.