



2019–2024 National Outer Continental Shelf Oil and Gas Leasing Draft Proposed Program

JANUARY 2018

BOEM
BUREAU OF OCEAN ENERGY MANAGEMENT



**2019–2024
NATIONAL OUTER CONTINENTAL SHELF
OIL AND GAS LEASING**

DRAFT PROPOSED PROGRAM



JANUARY 2018

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Whale bones

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Anemone

Sinclair, James. *Close up of the fire coral (Milepora alaicornis) in the East Flower Garden Bank.* June 9, 2006. Available online at <https://www.flickr.com/photos/boemgov/12002579596/>. Accessed July 5, 2017.

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Oil platform

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Right whale

Nagelkrik. *NARW April 14.* April 14, 2017. National Marine Fisheries Service permit number 19674. Reprinted with permission from the New England Aquarium.

Fish

Boland, Greg S. *Platform Legs often double as Artificial Reefs Drawing Numerous Fish.* June 1, 2003. Available online at <https://www.flickr.com/photos/boemgov/12003914203/>. Accessed July 5, 2017.

Sea turtles

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Sea lion

Sanders, Greg. *Untitled.* No date. Available online at <https://www.flickr.com/photos/boemgov/16103362797/>. Accessed July 5, 2017.

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Abbreviations and Acronyms

§	Section
2-D	two-dimensional
3-D	three-dimensional
2016 National Assessment	Assessment of Undiscovered Oil and Gas Resources of the Nation’s Outer Continental Shelf, 2016
2019–2024 Program	2019–2024 National OCS Oil and Gas Leasing Program
AEO	Annual Energy Outlook
Agreement	<i>Agreement between the United States of America and the United Mexican States Concerning Transboundary Hydrocarbon Reservoirs in the Gulf of Mexico</i>
Area-wide Leasing Study	<i>Policies to Affect the Pace of Leasing and Revenues in the Gulf of Mexico</i>
Area ID	Area Identification
bbbl	barrels of oil
BBO	billion barrels of oil
BBOE	billion barrels of oil equivalent
BOE	barrel of oil equivalent
BOEM	Bureau of Ocean Energy Management
BSEE	Bureau of Safety and Environmental Enforcement
Call	Call for Information and Nominations
<i>California I</i>	<i>California v. Watt, 688 F.2d 1290 (D.C. Cir. 1981)</i>
<i>California II</i>	<i>California v. Watt, 712 F.2d 584 (D.C. Cir. 1983)</i>
CDE	catastrophic discharge event
CSE	Center for Sustainable Economy, 779 F.3d 588 (D.C. Cir. 2015)
CY	calendar year
CZM	Coastal Zone Management
D.C.	District of Columbia
Department	United States Department of the Interior
DMME	Virginia Department of Mines, Minerals, and Energy
DOD	Department of Defense
DPP	Draft Proposed Program
DPS	distinct population segment
E&D	exploration and development scenario
EA	environmental assessment
Economic Inventory Report	<i>Economic Inventory of Environmental and Social Resources Potentially Impacted by a Catastrophic Discharge Event within OCS Regions</i>
EEZ	Exclusive Economic Zone
EIA	Energy Information Administration
EIS	environmental impact statement
ENSO	El Niño-Southern Oscillation
E.O.	Executive Order
ESA	Endangered Species Act of 1973

ESI	environmental sensitivity index
ESP	Environmental Studies Program
ESPIS	Environmental Studies Program Information System
FMV	fair market value
FY	fiscal year
G&G	geological and geophysical
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
IPF	impact-producing factor
LME	Large Marine Ecosystem
LWCF	Land and Water Conservation Fund
MAB	Mid-Atlantic Bight
<i>MarketSim</i>	Market Simulation Model
mcf	thousand cubic feet
MMP	Marine Minerals Program
MMPA	Marine Mammal Protection Act
MMS	Minerals Management Service
MW	megawatt
National OCS Program	OCS Oil and Gas Leasing Program
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
NMS	National Marine Sanctuary
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
Northeast LME	Northeast Continental Shelf LME
NOS	Notice of Sale
NP	national park
NPP	net primary productivity
NS	national seashore
NSV	net social value
NWR	national wildlife refuge
OCS	Outer Continental Shelf
OECM	Offshore Environmental Cost Model
OPAREA	Operational Area
P.L.	Public Law
PADD	Petroleum Administration for Defense District
Programmatic EIS	Programmatic Environmental Impact Statement

PFJ	Proposed Final Program
RCW	Revised Code of Washington
RFI	Request for Information and Comments
ROD	Record of Decision
SAB	South Atlantic Bight
SCB	Southern California Bight
Secretary	Secretary of the Interior
Southeast LME	Southeast Continental Shelf LME
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
USDOJ	United States Department of the Interior
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UTRR	undiscovered technically recoverable resources
VGPM	Vertically Generalized Production Model
WEB3	When Exploration Begins, version 3

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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 (43 U.S.C. 1344) calls for the preparation of a nationwide OCS 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 (USDOl) 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 National OCS Program; also known as the Five-Year Program) for 2019–2024 to replace the current 2017–2022 National OCS Oil and Gas Leasing Program. Throughout this document, you will see the 2019–2024 National OCS Oil and Gas Leasing Program title shortened to the 2019–2024 Program and past National OCS Programs referred to as a variation of this short-hand (e.g., 2007–2012 Program). This Draft Proposed Program (DPP) for OCS oil and gas leasing is the first 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 2019–2024 Program (43 U.S.C. 1331 et seq.).

This DPP phase provides a basis for conducting further analysis and a mechanism for gathering additional information for the Secretary to consider in making future decisions. See Chapter 1, OCS Oil and Gas Leasing Program Development Process, for further information regarding the OCS oil and gas leasing program development process. This DPP consists of the following parts:

Part I: Draft Proposal on the Size, Timing, and Location of OCS Lease Sales presents the lease sale schedule and program areas proposed to be included in the 2019–2024 Program, along with the Program Options that BOEM prepared based on its analysis of the 26 OCS planning areas and OCS Lands Act Section 18 criteria. This section also describes the rationale behind the Secretary’s DPP proposal.

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

Part III: Analysis and Results presents the Section 18 analyses of all 26 OCS planning areas. BOEM prepared and used the Section 18 analyses to develop the Program Options presented to the Secretary.

Appendix A: Summaries of Public Comments contains summaries of the comments BOEM received in response to its July 3, 2017, *Federal Register* Notice (82 FR 30886) requesting comments from all interested parties.

Appendix B: Economic Analysis Methodology provides a further explanation of the analytic approach used for the analyses presented in Part III, including an explanation of the calculations and assumptions in the net social value analysis described in Section 5.3 and the fair market value analysis discussed in Chapter 10.

Part I: Draft Proposal on the Size, Timing, and Location of OCS Lease Sales

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2019–2024 National OCS Oil and Gas Leasing Draft Proposal on the Size, Timing, and Location of Sales

Proposal Framework

Section 18 of the Outer Continental Shelf (OCS) Lands Act charges the Secretary of the Interior (Secretary) to perform a regional comparison between OCS regions and select the timing and location of OCS 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 development of a new National OCS Program at this time is a key aspect of the implementation of President Donald Trump's America-First Offshore Energy Strategy, as outlined in the President's Executive Order (E.O.) 13795 (April 28, 2017), and Secretarial Order 3350 (May 1, 2017). E.O. 13795 states that it is "the policy of the United States to encourage energy exploration and production, including on the Outer Continental Shelf, in order to maintain the Nation's position as a global energy leader and foster energy security and resilience for the benefit of the American people, while ensuring that any such activity is safe and environmentally responsible." Secretarial Order 3350 calls for the enhancement of opportunities for energy exploration, leasing, and development of the OCS, establishment of regulatory certainty for OCS activities, and enhancement of conservation stewardship, thereby providing jobs, energy security, and revenue for the American people.

This Draft Proposed Program (DPP) would make more than 98 percent of the OCS available to consider for oil and gas leasing during the 2019–2024 period. Including at this stage nearly the entire OCS for potential oil and gas discovery is consistent with advancing the goal of moving the United States from simply aspiring for energy independence to attaining energy dominance. This DPP allows for consideration of unprecedented increases in access to America's extensive offshore oil and gas resources, a

critical component of the Nation's energy portfolio, and emphasizes the importance of producing American energy in America.

The potential oil and gas resources that may be made available as a result of this DPP are fundamental to America's energy security in the coming decades. Development of OCS oil and gas is a long-term endeavor. Production from exploration and development in newly available OCS areas will likely not occur for a decade or more, and then will continue for another 30 to 40 years or longer. The 2019–2024 National OCS Oil and Gas Leasing Program (2019–2024 Program) will provide the foundation for the Nation's energy supply well into the middle of this century.

This DPP will enable the Secretary to receive information necessary to conduct a thorough consideration of the Section 18(a)(2) factors to achieve the balance required by Section 18(a)(3) of the OCS Lands Act. Including areas in the 2019–2024 Program will incentivize industry to look to the shores of the United States when considering long-term investment strategies in upstream energy development. It will encourage industry to employ their world-class geological and technical expertise to assess and evaluate America's potential offshore oil and gas resources. By not prematurely restricting or narrowing OCS areas under consideration, this DPP will allow industry the opportunity to further inform the Secretary of their interest in leasing frontier areas and to collect data in areas that have not been explored in decades, if ever. This will, in turn, further our understanding of the resources available on the OCS to meet national energy needs. The Secretary's approach to the DPP lease sale schedule does not prematurely foreclose exploration planning, but fosters it, to allow for the potential discovery of oil and gas on the OCS.

Allowing for the potential discovery of new oil and gas reserves on the OCS is consistent with the Administration's America-First Energy Strategy, which seeks to achieve energy security and resilience by reducing U.S. reliance on imported energy. Additionally, OCS oil and gas production benefits the United States by helping to reinvigorate American manufacturing and job growth, and contributes to the gross domestic product. Many of the jobs in the oil and gas industry earn a significant wage premium; these employees have more purchasing power and can consume more goods and services, increasing their standard of living, and contributing more to the economy.

A vast majority of the revenues from OCS production accrue to the U.S. Treasury to be used as Congress and the President deem appropriate, and a smaller portion is appropriated to the Historic Preservation Fund and Land and Water Conservation Fund. The Historic Preservation Fund provides Federal grants to non-Federal entities for historic preservation projects and to individuals to preserve properties on the National Register of Historic Places. The Land and Water Conservation Fund provides matching grants to state and local governments for the acquisition and development of public outdoor recreation areas and facilities, and funds Federal acquisition of land and water and easements of such, thereby emphasizing recreation and protection of natural treasures, such as parks and forests. Further, under Section 8(g) of the OCS Lands Act and the Gulf of Mexico Energy Security Act, (Pub.L., 109-432 [2006]), significant revenues from OCS oil and gas production go to adjacent coastal states.

Although OCS oil and gas exploration and development will never be totally risk-free, since the 2010 *Deepwater Horizon* blowout and oil spill, the U.S. Department of the Interior (USDOI) has made, and is continuing to make, substantial reforms to improve the safety and reduce the possible adverse environmental impacts of OCS oil and gas activity. Working with many diverse 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.

Grounded in the above principles, and after careful consideration of public input and the OCS Lands Act Section 18(a)(2) factors, the DPP proposes a lease sale schedule of 47 lease sales in all four OCS regions and includes 25 of the 26 planning areas: 19 lease sales in the Alaska Region (3 in the Chukchi Sea, 3 in the Beaufort Sea, 2 in Cook Inlet, and 1 sale each in the 11 other available planning areas in Alaska), 7 lease sales in the Pacific Region (2 each for Northern California, Central California, and Southern California, and 1 for Washington/Oregon), 12 lease sales in the Gulf of Mexico (GOM) Region (10 nationwide lease sales for the portions of the Central, Western, and Eastern GOM planning areas that are not currently under moratorium, and 2 sales for the portions of the Central and Eastern GOM planning areas that will no longer be under moratorium in 2022), and 9 lease sales in the Atlantic Region (3 sales each for the Mid- and South Atlantic, 2 for the North Atlantic, and 1 for the Straits of Florida).

The DPP does not include a sale in the North Aleutian Basin Planning Area. This area was withdrawn on December 16, 2014, from consideration for any oil and gas leasing for a time period without specific expiration.

For each OCS region, these lease sales are described as Option 1 below. Option 1 provides the greatest potential for the discovery of OCS oil and gas resources because almost all of the planning areas would be made available for lease sales. Particularly in the mature GOM Region, Option 1 allows flexibility for industry, including allowing frequent opportunities to bid on rejected, relinquished, or expired blocks.

This DPP allows for maximum flexibility so that areas considered for leasing may be narrowed at later stages of the Section 18 process, after further environmental analysis and important input and coordination with key stakeholders. As of now, trade associations have expressed

interest in leasing in all of the OCS regions and only a few exploration and production companies have responded. This DPP will allow the Secretary to obtain additional information on actual industry interest in obtaining leases in the particular planning areas. Consideration of industry interest in particular planning areas, along with all of the other Section 18(a)(2) factors in the OCS Lands Act, will allow for a more thorough comparison of OCS areas and will assist the Secretary in the Section 18(a)(3) balancing required to finalize his choice of the time, size, and location of the lease sales to be scheduled in the 2019–2024 Program.

The Secretary is committed to enhancing coordination and collaboration with other governmental entities to discover solutions to multiple use challenges so that oil and gas resources can be discovered and extracted, critical military and other ocean uses can continue, and our sensitive physical and biological resources are protected. The Secretary's goal is to increase access to America's energy resources and to provide environmental stewardship based upon the most up-to-date environmental information and analysis.

National OCS Program Decision Process

The Bureau of Ocean Energy Management (BOEM) is responsible for administering the leasing program for oil and gas resources on the OCS and advising the Secretary in the National OCS Program. The three analytical phases required to develop the 2019–2024 Program include the (1) DPP; (2) Proposed Program; and (3) Proposed Final Program (PFP). The 2019–2024 Program, once completed, will replace the 2017–2022 Program.

The National OCS Program development process started with a Request for Information (RFI) that requested information on all 26 OCS planning areas. The RFI for the 2019–2024 Program was announced by President Trump and the Secretary on June 29, 2017. The RFI officially published in the *Federal Register* on July 3, 2017. The comment

period closed on August 17, 2017, and BOEM received approximately 816,000 comments from a host of stakeholders including governors, Federal agencies, state agencies, local agencies, energy and non-energy industries, tribal governments, non-governmental organizations including environmental advocacy groups, and the general public (see Appendix A for more information). Comments received in response to the RFI ranged from supporting exploration and development of the entire OCS to prohibiting any such exploration and development at all.

This DPP is the first in a series of three preliminary proposals made by the Secretary consistent with the OCS Lands Act, before he may take final action to approve a 2019–2024 Program. The OCS Lands Act also requires the Secretary to consider nominations of areas to be excluded from leasing. Inclusion of an area at the DPP phase is not a final indication that it will be included in the approved 2019–2024 Program or offered in a lease sale, because decision points still remain for reducing or completely removing an area or sale. However, any area or sale that is not included in this DPP stage will not be further considered.

The DPP phase also acts as a mechanism to gather additional information for the Secretary to consider in making future decisions in the Section 18 process. Now that the Secretary has proposed this DPP, public comments are being solicited (see Chapter 3). These comments will be considered during the next stage of 2019–2024 Program development process: the Proposed Program. During the Proposed Program stage, only those program areas and Program Options that the Secretary includes in the DPP will be further analyzed in accordance with Section 18. These Program Options will be analyzed in both the Proposed Program document and the associated Draft Programmatic Environmental Impact Statement (Draft Programmatic EIS). The Draft Programmatic EIS will analyze the potential environmental effects of leasing in areas included in the DPP and may identify areas that warrant consideration or exclusion from leasing in the

2019–2024 Program. The program areas identified in the Proposed Program will be analyzed in the PFP and the Final Programmatic EIS.

Once the 2019–2024 Program has been approved, there are additional requirements at the lease sale stage for lease sale size and timing analyses, environmental review, and public comment.

Secretarial Consideration of the Eight OCS Lands Act Section 18(a)(2) Factors

This DPP represents the result of the initial consideration of each of the following eight Section 18(a)(2) factors by the Secretary. The public comments and information received as a result of this DPP will further inform the Secretary's consideration of these factors and the eventual balancing that is performed for choosing the size, timing, and location of the OCS areas that will be considered for the potential discovery of oil and gas reserves.

GEOGRAPHICAL, GEOLOGICAL, AND ECOLOGICAL CHARACTERISTICS

Geographical, geological, and ecological characteristics are taken into account throughout the DPP analytical process. 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. By including all available areas for leasing in the DPP schedule, environmental analysis will be conducted on every area along with information on expected resource potential.

Equitable Sharing

Benefits from the development and production of oil and gas resources accrue primarily to producing regions and nearby onshore populations. These benefits generally include the following:

- Billions of dollars a year in bonus bids, rentals, and royalties to the U.S. Treasury
- Funding for the Historic Preservation Fund and Land and Water Conservation Fund
- Payments to state and local governments pursuant to OCS Lands Act Section 8(g) and other revenue sharing programs
- Contributions to the economy indirectly through employment, wages, and tax payments to state and local governments.

Development and production of oil and gas resources associated with leasing under the National OCS Program involves the risk of harm to the human, coastal, or marine environments. This potential for impacts is often within the waters of the OCS and in the immediate coastal zone. Higher levels of activity often equate to higher level of risk of impact. Additionally, in areas of limited onshore development, new infrastructure might cause significant impacts. These principles of equitable sharing can best be assessed by not prematurely eliminating areas from leasing consideration. By offering leases in every planning area, this DPP more equitably shares benefits and risks among regions than any National OCS Program in the past 30 years.

REGIONAL AND NATIONAL ENERGY MARKETS

The overall need for imported oil has declined over the past several years given increasing domestic onshore production. The increased domestic onshore production is light sweet crude, whereas most oil currently imported is heavy crude oil. The medium-to-heavy crude oil found on the OCS provides a domestic source to replace imports. Forecasts predict that U.S. crude production will increase in 2017 and

that the current production record set in 1970 will be surpassed in 2018 (EIA 2017a). GOM production surpassed its previous 2009 record in 2016, and is expected to increase through 2018. However, decreases in the amount of OCS drilling over the past several years make the increases unlikely to continue. Expanded access to the OCS provides a means for these increases to continue as exploration and development takes place in new areas.

OCS production provides a steady and predictable source of oil and gas for decades and is less susceptible to short-term price changes than onshore production. Therefore, potential future oil and gas production from the planning areas considered in this DPP could help maintain the Nation's position as a global energy leader for 50 or more years into the future. Further, oil and gas production from planning areas considered in this DPP could better meet the energy demands in regional markets that are major energy consumers currently reliant on production imported from other regions or nations (e.g., east and west coast markets).

Additionally, the Energy Information Administration (EIA) projects that the United States will continue to heavily rely on oil and natural gas to meet its energy needs under current laws and regulations. In 2016, 65 percent of energy consumed in the United States came from petroleum, other liquid hydrocarbons, and natural gas, and this percentage is projected to increase through 2050 (EIA 2017b).

The President's energy strategy seeks to encourage energy exploration and production to maintain the United States' position as a global energy leader. Through providing opportunities for exploration, leasing, and development and establishing regulatory certainty, additional domestic energy production provides energy security, jobs, and revenue for the Nation. Through continued and expanded production, the OCS can enhance energy security by reducing dependence on foreign fuel sources. Further, the DPP addresses the need for the United States to continue to pursue traditional sources of energy,

while encouraging development of renewable energy. Although new energy alternatives are gaining market share, they will take decades to displace oil and gas. Additionally, oil and gas are used to make non-fuel products, such as plastics and fertilizer, for which future alternatives will be needed. All current commercial substitutes for oil and gas have market penetration limits, and none provide the prospect of fully replacing the versatility of oil and gas.

OTHER USES OF THE OCS

In general, other uses of the OCS include activities related to military readiness, including critical military training and testing operations; National Aeronautical and Space Administration (NASA) launch operations; commercial and recreational fishing; tourism; subsistence fishing and hunting; renewable energy production; and shipping. USDOL is committed to working with other Federal agencies, state and local governments, and tribal organizations to cooperatively manage other uses of the OCS. This DPP reflects the Secretary's commitment to continue his ongoing consultation efforts and weigh the input received from all interested stakeholders and explore ways to reduce conflicts before prematurely excluding OCS areas from further consideration.

INDUSTRY INTEREST

OCS Lands Act Section 18(a)(2)(E) (see Section 2.2) requires BOEM to consider the interest of potential oil and gas producers. In response to the RFI, BOEM received 10 comment letters from exploration and development companies and associations in the energy industry that explore for and/or produce oil and gas. Of those responses, most supported including all 26 OCS planning areas for further analysis, although few expressed specific interest in all of the planning areas. See Chapter 9 for further information industry input thus far. With this DPP, the Secretary seeks to obtain additional input from industry concerning their interest in acquiring leases in the sales scheduled in this DPP. This information will allow the Secretary to further consider the potential for discovery of oil

and gas resources to inform the decision on the size, time, and location of lease sales to be included in the 2019–2024 Program.

LAWS, GOALS, AND POLICIES OF AFFECTED STATES

For 18 of the 25 planning areas included in the DPP, leasing has the support of at least one adjacent state. The Secretary's DPP provides flexibility for states to provide further input and information about the traditionally offered areas, as well as those that have not been considered in some time during successive program development phases. See Chapter 9 for more information on input received so far from state governments. The input of the states, particularly coastal states, is given specific consideration when deciding which areas of the OCS will be included in the final National OCS Program. By not excluding any coastal state at this point in the decisionmaking, every state can further consider and provide input regarding the potential benefits and costs of leasing off its shore. State laws, goals, and policies may change during the Section 18 process. Therefore, this DPP allows the Secretary to further consider the laws, goals, and policies of coastal states prior to formulating his Proposed Program, without unduly limiting his flexibility by prematurely excluding planning areas from further consideration at the DPP stage.

ENVIRONMENTAL SENSITIVITY AND MARINE PRODUCTIVITY

Environmental sensitivity scores are a composite of scores for vulnerability and resilience of species, habitats, and potential ecosystem change impacts. The results from this analysis indicate similar sensitivities for all OCS regions. The regions with the highest sensitivity scores were the GOM and the Arctic.

In addition, primary production forms the base of the marine food chain. Both the highest (Cook Inlet) and lowest (Arctic) productivity estimates were measured in the Alaska Region. The low values in the Arctic are attributable to seasonably low light availability. Protections of sensitive resources can often be achieved

through mitigation, rather than outright exclusion from the leasing program. Leaving most areas in at this point in the decisionmaking allows the greatest flexibility to consider how high sensitivity or productivity and the potential for oil and gas productivity can best be managed.

ENVIRONMENTAL AND PREDICTIVE INFORMATION

The consideration of stressors and associated potential impacts must also include consideration of the potential severity of impact. The Programmatic EIS that will be prepared in connection with the development of the 2019–2024 Program will evaluate and disclose potential impacts in more detail, and will identify and discuss impacts that could be significant and identify mitigation opportunities. The subsequent National Environmental Policy Act analyses prepared for this program will identify and assess impacts and allow those potential environmental concerns to be weighed against the other Section 18 criteria.

Fair Market Value

The requirement in the OCS Lands Act Section 18(a)(4) to assure receipt of fair market value is met through a multi-phase process at the National OCS Program, lease sale, and lease-level stages.

Components are considered at the Program level, but subject to sale-by-sale reconsideration, including hurdle prices, leasing framework (size and frequency of lease sales), bidding systems, fiscal and lease terms, and bid adequacy.

USDOJ has the *option* to offer OCS areas for lease at any time in the future, and makes the decision whether to exercise the option based on multiple factors.

If expected prices at the start of the 2019–2024 Program (2019 barrel of oil equivalent price) are above the hurdle price, the social value of offering leases for prompt exploration is greater than the value of waiting five years.

With one exception, the expected market prices exceed the hurdle price in all planning areas. The hurdle price in the Central California Planning Area exceeds the expected 2019 market price, indicating that delaying lease sales in this area could be beneficial from an option value perspective. Since market prices can be volatile, inclusion of an area at this early DPP stage provides the opportunity for additional

analysis and consideration as the National OCS Program development process continues.

2019–2024 Draft Proposed Program Lease Sale Schedule

The schedule shown in Table 1 below reflects the lease sale options selected to create the 2019–2024 DPP. Figures 1 and 2 depict the DPP program areas.

Table 1: 2019–2024 Draft Proposed Program Lease Sale Schedule

	Sale Year	OCS Region	Program Area
1.	2019	Alaska	Beaufort Sea
2.	2020	Alaska	Chukchi Sea
3.	2020	Pacific	Southern California
4.	2020	Gulf of Mexico	Western, Central, and Eastern Gulf of Mexico*
5.	2020	Gulf of Mexico	Western, Central, and Eastern Gulf of Mexico*
6.	2020	Atlantic	South Atlantic
7.	2020	Atlantic	Mid-Atlantic
8.	2021	Alaska	Beaufort Sea
9.	2021	Alaska	Cook Inlet
10.	2021	Pacific	Washington/Oregon
11.	2021	Pacific	Northern California
12.	2021	Pacific	Central California
13.	2021	Atlantic	North Atlantic
14.	2021	Gulf of Mexico	Western, Central, and Eastern Gulf of Mexico*
15.	2021	Gulf of Mexico	Western, Central, and Eastern Gulf of Mexico*
16.	2022	Alaska	Chukchi Sea
17.	2022	Pacific	Southern California
18.	2022	Atlantic	Mid-Atlantic
19.	2022	Atlantic	South Atlantic
20.	2022	Gulf of Mexico	Western, Central, and Eastern Gulf of Mexico*
21.	2022	Gulf of Mexico	Western, Central, and Eastern Gulf of Mexico*
22.	2023	Alaska	Beaufort Sea
23.	2023	Alaska	Cook Inlet
24.	2023	Alaska	Hope Basin
25.	2023	Alaska	Norton Basin
26.	2023	Alaska	St. Matthew-Hall
27.	2023	Alaska	Navarin Basin
28.	2023	Alaska	Aleutian Basin
29.	2023	Alaska	St. George Basin
30.	2023	Alaska	Bowers Basin
31.	2023	Alaska	Aleutian Arc
32.	2023	Alaska	Shumagin
33.	2023	Alaska	Kodiak
34.	2023	Alaska	Gulf of Alaska
35.	2023	Pacific	Central California
36.	2023	Pacific	Northern California
37.	2023	Gulf of Mexico	Western, Central, and Eastern Gulf of Mexico*
38.	2023	Gulf of Mexico	Western, Central, and Eastern Gulf of Mexico*
39.	2023	Gulf of Mexico	Eastern and Central Gulf of Mexico**
40.	2023	Atlantic	Straits of Florida
41.	2023	Atlantic	North Atlantic
42.	2024	Alaska	Chukchi Sea
43.	2024	Gulf of Mexico	Western, Central, and Eastern Gulf of Mexico*
44.	2024	Gulf of Mexico	Western, Central, and Eastern Gulf of Mexico*
45.	2024	Gulf of Mexico	Eastern and Central Gulf of Mexico**
46.	2024	Atlantic	South Atlantic
47.	2024	Atlantic	Mid-Atlantic

Notes:

* All available areas, not including those subject to the GOMESA moratorium through June 30, 2022.

** Those areas available following the expiration of the GOMESA moratorium.

Figure 1: 2019–2024 Draft Proposed Program Alaska Region Program Areas

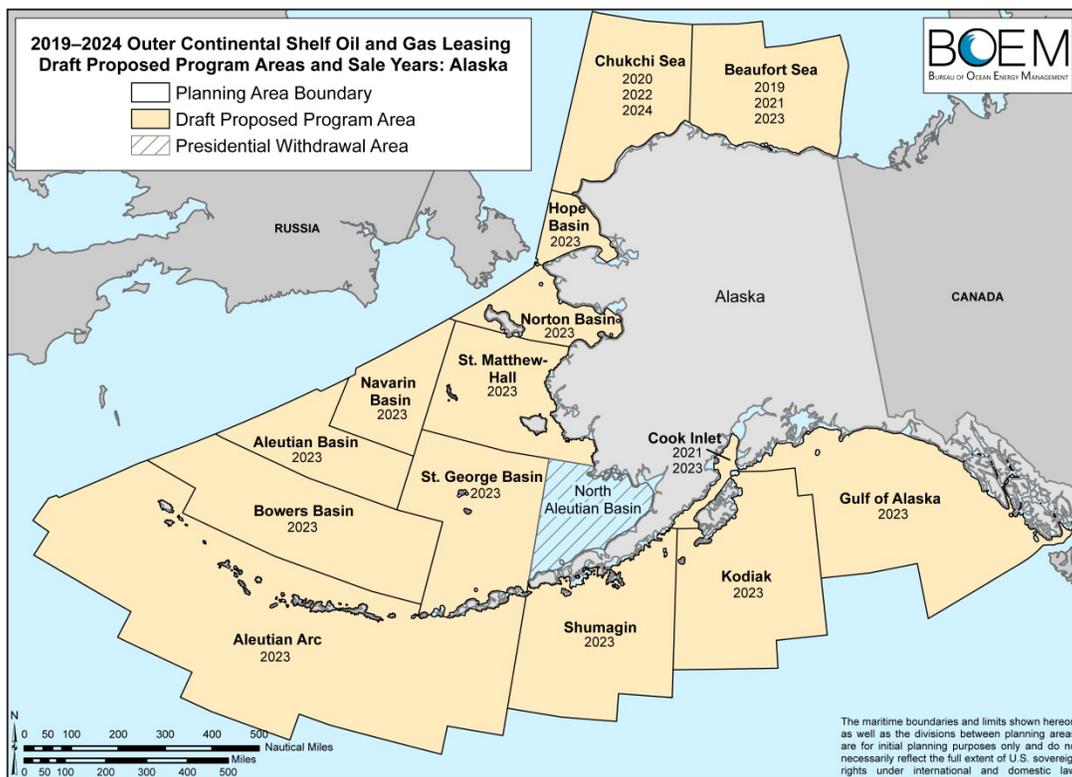
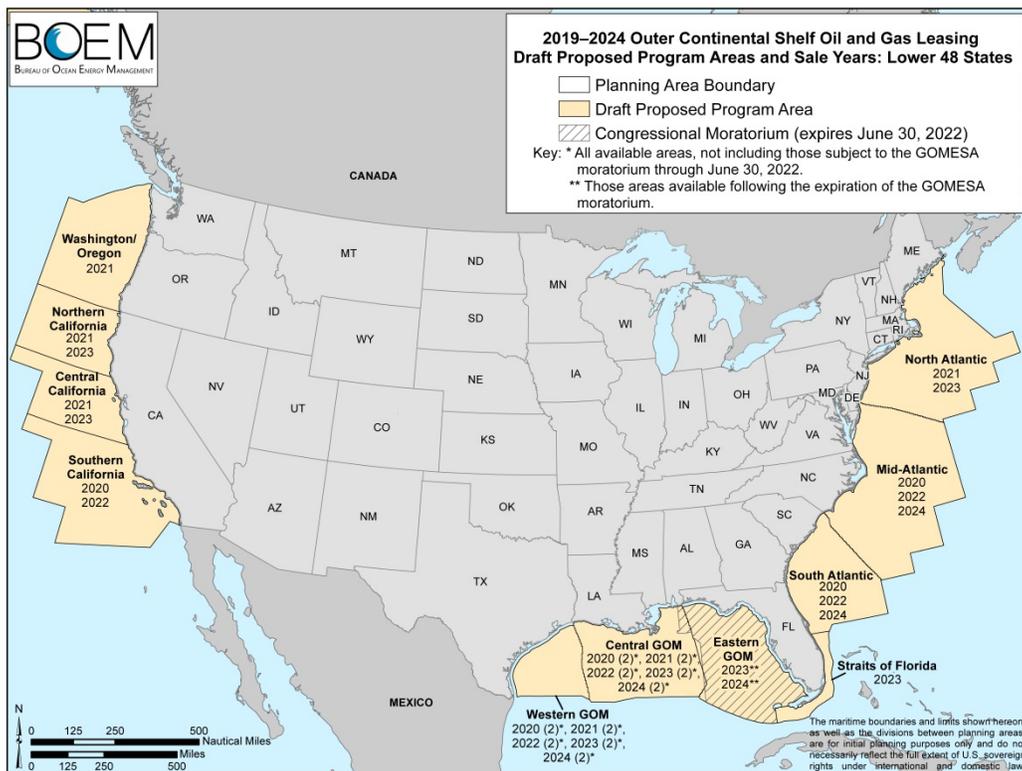


Figure 2: 2019–2024 Draft Proposed Program Pacific, Gulf of Mexico, and Atlantic Region Program Areas



Options to be Analyzed in the Proposed Program

The Program Options discussed in the following paragraphs have been identified for the Secretary's consideration. The chosen Program Option for each region, as shown in Table 1, is indicated by **bold font**; however, other Program Options may warrant further analysis in the subsequent Proposed Program and Draft Programmatic EIS documents, as appropriate. Any options considered at the Proposed Program phase would not be greater in geographic scope or frequency of lease sale offering than the DPP Program Options presented in this section. In addition, a no lease sale option will be analyzed for all program areas in the Proposed Program document and Draft Programmatic EIS.

ALASKA REGION PROGRAM OPTIONS

The chosen option for the Alaska Region is listed below and shown in Figure 1.

The DPP does not include a sale in the North Aleutian Basin Planning Area. This area was withdrawn on December 16, 2014, from consideration for any oil and gas leasing for a time period without specific expiration.

Option 1: Three sales in the Beaufort Sea Program Area in 2019, 2021, and 2023; three sales in the Chukchi Sea Program Area in 2020, 2022, and 2024; two sales in the Cook Inlet Program Area in 2021 and 2023; and one sale each in the Hope Basin, Norton Basin, St. Matthew-Hall, Navarin Basin, Aleutian Basin, St. George Basin, Bowers Basin, Aleutian Arc, Shumagin, Kodiak, and Gulf of Alaska program areas in 2023.

Option 2: Option 1 with the exclusion of one or more of these five exclusion options, identified as having exceptional ecological or subsistence values, or both, as shown in Figure 3:

1. Excluding Hanna Shoal in the Chukchi Sea

2. Excluding a subsistence use area in the Chukchi Sea
3. Excluding a 25-mile coastal buffer portion of the Chukchi Sea
4. Excluding the Barrow Whaling Area in Beaufort Sea
5. Excluding the Kaktovik Whaling Area in the Beaufort Sea.

PACIFIC REGION PROGRAM OPTIONS

See Figure 2 for a depiction of Option 1 below.

Option 1: Two sales in the Southern California Program Area in 2020 and 2022, two sales in the Northern California Program Area in 2021 and 2023, two sales in the Central California Program Area in 2021 and 2023 and one sale in the Washington/Oregon Program Area in 2021.

GULF OF MEXICO REGION PROGRAM OPTIONS

See Figure 2 for a depiction of Option 1 below. The portions of the Central and Eastern GOM planning areas that are currently under moratorium would be available for lease sale activities, including the initiation of the lease sale process, upon expiration of the Gulf of Mexico Energy Security Act on July 1, 2022. This is the first time the majority of the Eastern GOM Planning Area would be available for leasing since 1988.

Option 1: Ten regionwide sales in the portions of the Western, Central and Eastern GOM program areas (not currently under moratorium) in 2020, 2021, 2022, 2023, and 2024. Two sales in the portions of the Central and Eastern GOM program areas (under moratorium until 2022) in 2023 and 2024. See Figure 2 for the identified moratorium areas.

Option 2: Option 1 with coastal buffer(s) (see Figure 4 for examples) to accommodate military activities and nearshore use.

Option 3: Option 1 with Baldwin County buffer (see Figure 4).

ATLANTIC REGION PROGRAM OPTIONS

See Figure 1 for a depiction of Option 1 below.

Option 1: Three sales in the Mid- and South Atlantic program areas in 2020, 2022, and 2024; two sales in the North Atlantic Program Area in 2021 and 2023; and one sale in the Straits of Florida Program Area in 2023.

Option 2: Option 1 with the exclusion of the Atlantic Canyons in the North Atlantic and Mid-Atlantic program areas, identified as having exceptional ecological values (see Figure 5).

Option 3: Option 1 with coastal buffer(s) to accommodate concerns such as military use, fish and marine mammal migration, and other nearshore uses (see Figure 5 for an example coastal buffer).

Figure 3: Alaska Region Exclusion Option Areas

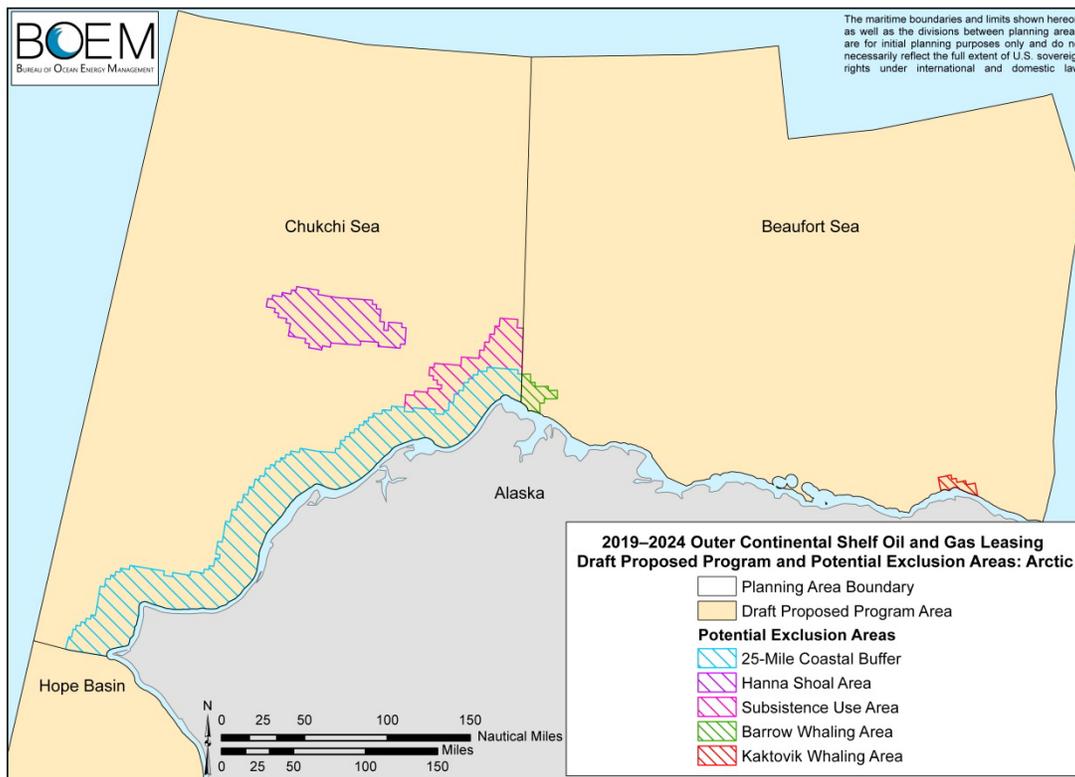


Figure 4: Gulf of Mexico Region Exclusion Option Areas

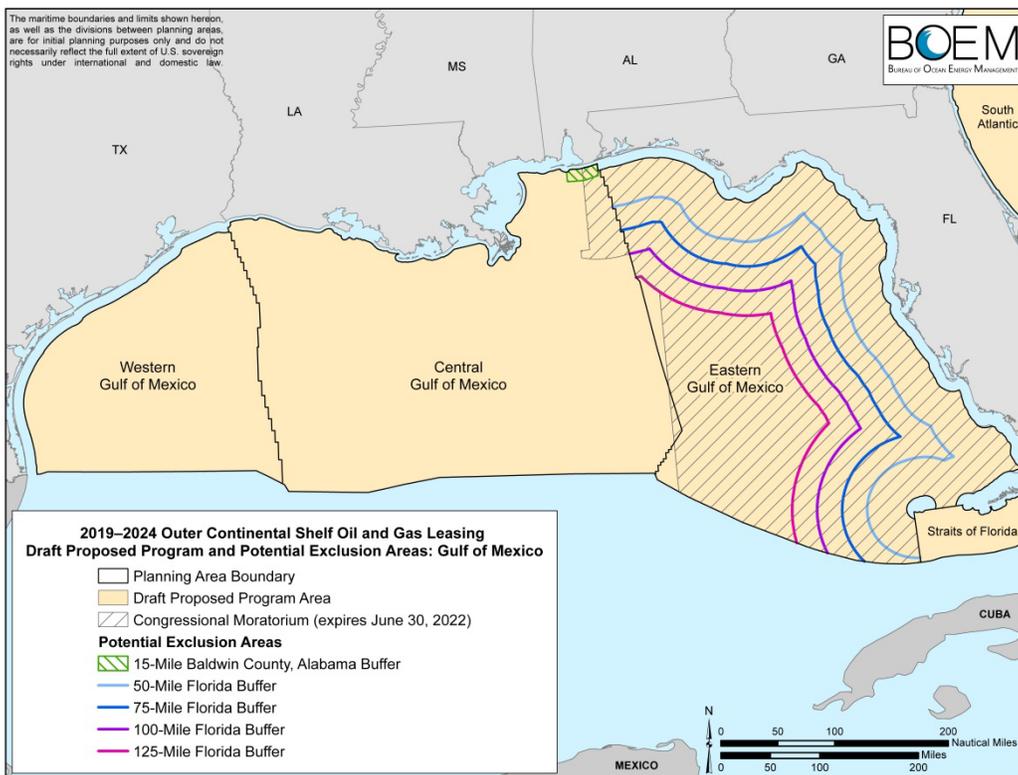


Figure 5: Atlantic Region Exclusion Option Areas



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Part II: Regulatory Framework

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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 (referred to as the National OCS Program, also called the Five-Year Program) 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 and criteria specified in Section 18 of the OCS Lands Act. Those criteria, and the manner in which they have been considered in preparing this *2019–2024 National OCS Oil and Gas Leasing Draft Proposed Program*, are summarized in Chapter 2.

The OCS consists of 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 (see 43 U.S.C. §§ 1301 and 1331). The jurisdiction of the United States lies seaward of states’ jurisdiction, which in most cases is three miles from the coastline. However, Texas, the Gulf coast of Florida, and Louisiana have slightly different jurisdictional limits as a result of a court decision. The jurisdiction of Texas and that of Florida, off its Gulf coast, extend nine nautical miles (nm) and Louisiana’s jurisdiction is three imperial nm. 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.¹ Figure 1-1 shows the boundaries for Federal jurisdiction and the EEZ.

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 planning areas, as shown in Figures 1-2 and 1-3. The four OCS regions are Alaska, Pacific, Gulf of Mexico (GOM), and 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 Program, the Pacific Region is only comprised of the four planning areas off the United States (U.S.) west coast.

¹ The EEZ 200-nm limit, however, does not define the outer limit of the OCS under the OCS Lands Act and could be better considered in that context as a jurisdictional minimum, except where constrained by the jurisdictional reaches of adjacent coastal nations.

Figure 1-1: OCS and EEZ Boundaries for Alaska and the Lower 48 States



Figure 1-2: OCS Alaska Planning Areas

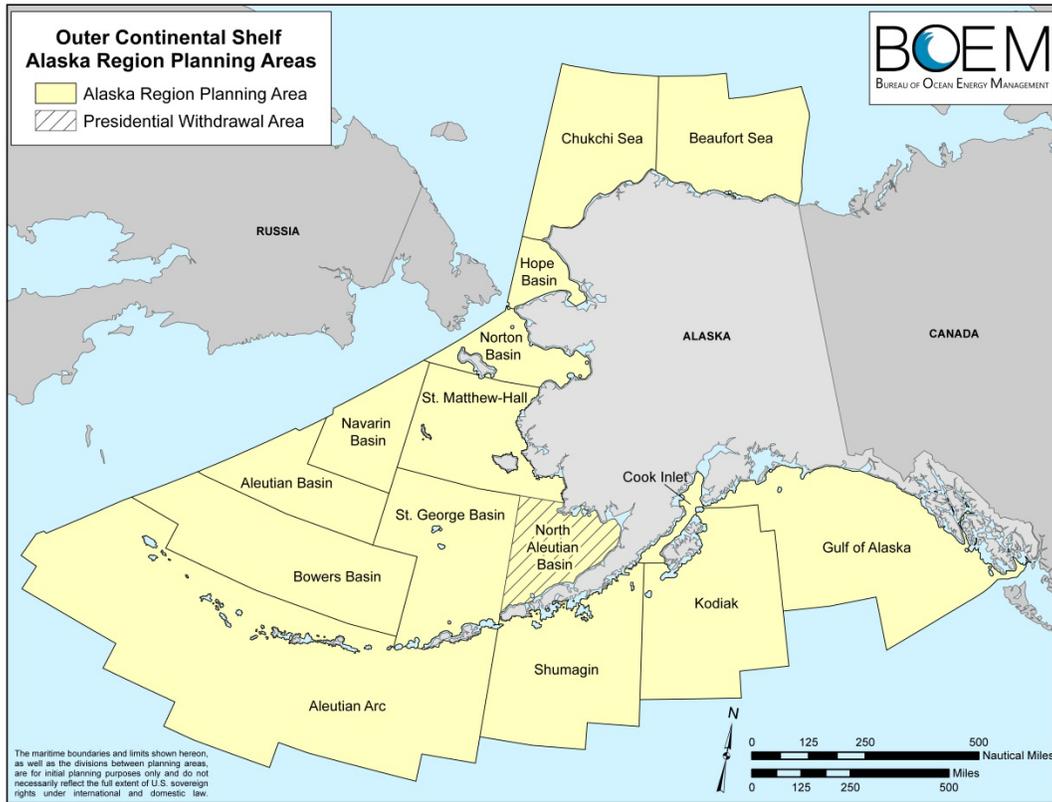
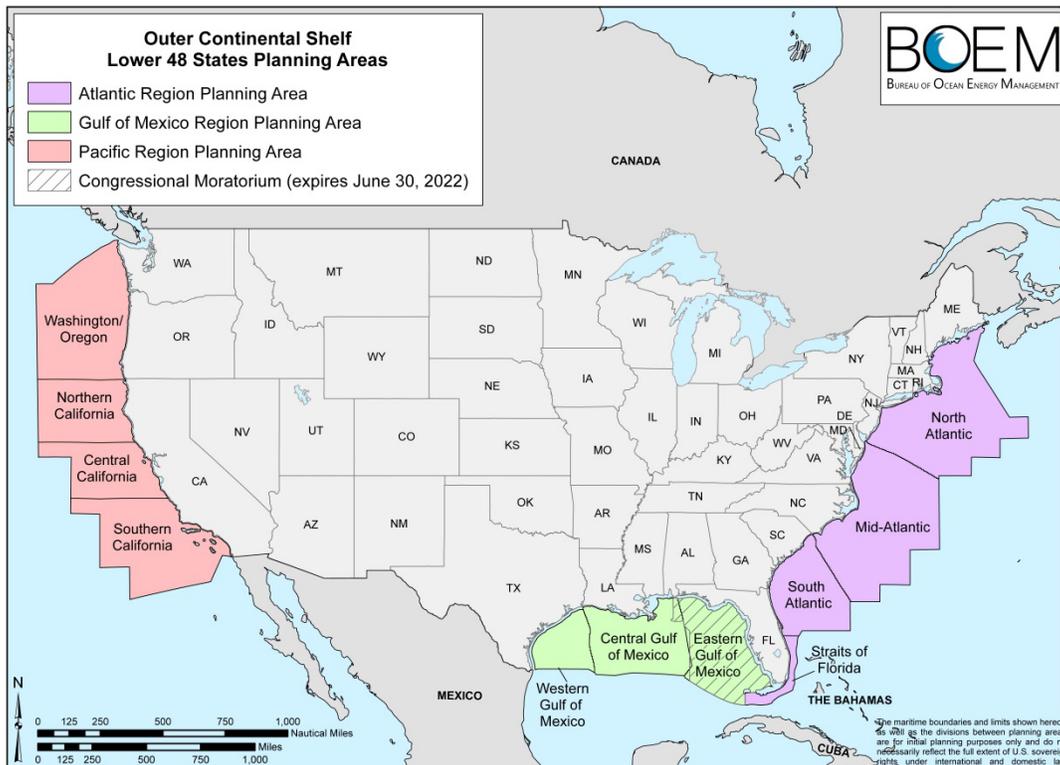


Figure 1-3: OCS Lower 48 States Planning Areas



1.2 NATIONAL ENERGY NEEDS

Meeting national energy needs is a primary purpose of the OCS Lands Act Amendments of 1978 (43 U.S.C. 1802), which established the criteria for the Secretary to consider when developing each new National OCS 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 a National OCS 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)).² The National OCS Program is designed to enable the decisionmaker to consider national energy needs over the long-term (40–70 years into the future). Prior to lease issuance, there are additional decision points that allow the decisionmaker to consider new information about U.S. energy needs. Once leases are issued, the contribution of OCS production toward meeting national energy needs might not be realized for years into the future. Once realized, the impacts and benefits of OCS energy production for the United States will continue for decades into the future.

Energy needs, as recognized in the language of the OCS Lands Act and reinforced by the U.S. Court of Appeals for the District of Columbia (D.C.) 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.³ Despite changes over the past few decades, many of the energy challenges that led to the passage of Section 18 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 and 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.

Developing more OCS energy production to support U.S. energy needs is a major component of the President’s energy strategy. Executive Order (E.O.) 13783, Promoting Energy Independence and Economic Growth, and E.O. 13795, The America-First Offshore Energy Strategy, together recognize the need for energy for American families and businesses and implement a plan to ensure energy security and economic vitality. E.O. 13795 provides U.S. policy to encourage domestic energy exploration and production to “maintain the Nation’s position as a global energy leader and foster energy security and resilience for the benefit of the American people.” Secretarial Order 3350 further implements the President’s E.O. by “enhancing opportunities for energy exploration, leasing, and development” on the OCS and promoting regulatory certainty for OCS activities to provide jobs, energy security, and revenue for the American people. The E.O.s and Secretarial Order recognize the broad nature of America’s energy needs and the important contribution made by OCS production.

² 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.

³ The Federal Circuit Court upheld this broad concept of energy needs in *Center for Sustainable Economy v. Department of the Interior*, 779 F.3d 588 (D.C. Cir. 2015). The court premised 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.”

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

Since 2005, American consumers have spent more than one trillion dollars a year, or generally more than seven percent of the gross domestic product (GDP), on energy (EIA 2017a). In 2016, oil and gas consumption accounted for approximately 66 percent of the energy consumed domestically, and it directly or indirectly supports the supply chain for delivering nearly all goods and services in our economy (EIA 2017b). Further, oil and gas activity contributes to employment and public revenues and the level of that activity affects the balance of payments and trade, energy security, and technology.

The U.S. Geological Survey (USGS) and BOEM estimate that a significant share of U.S. remaining oil (69 percent) and natural gas (22 percent) resources underlie the OCS (USGS 2013, BOEM 2016). Therefore, OCS oil and gas production can contribute to meeting the country's energy needs. In particular, the continued oil and natural gas production in the GOM, the primary OCS region currently available for energy production and development activities, remains vital.

1.2.1.1 Consumption of Energy Sources

Although U.S. energy needs expand far beyond simply consuming oil and natural gas, these fuels currently are fundamental to powering our economy. 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 the initial price shocks of 1974. In 2017, petroleum still accounts for more than 92 percent of transportation fuel share and petroleum-based fuels account for 97 percent (EIA 2017b). 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, synthetic materials). Section 6.2.1 provides more information on the consumption of oil and natural gas.

Over the past decade, hydraulic fracturing (“fracking”), combined with horizontal drilling, has allowed companies to significantly increase U.S. production from shale and other tight onshore oil and gas formations. The increase in domestic natural gas production led to lower prices, which in turn increased natural gas consumption. Natural gas has low carbon-emitting potential relative to coal, and is increasingly used for electricity generation (EIA 2015). 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 benefitted all regions of the country. Over the next 30 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 supply (EIA 2017c). It is important to keep in mind, however, that this assumption is based on current policy and technological assumptions. Changes in policy and more rapid technological advances could impact future markets and demand for oil and gas.

1.2.1.2 *Balance of Payments and Trade*

The America-First Offshore Energy Strategy is designed to increase domestic oil and gas production and reduce dependence on imported energy. Of the U.S.'s \$505 billion dollar trade deficit for all goods and services, the cumulative U.S. trade deficit in crude oil and petroleum products was \$58 billion, or 11 percent (BEA 2017). Recently, the portion of the trade deficit attributed to crude oil and petroleum products has decreased, largely due to falling prices in the oil and gas market, but also due to an increase in energy exports. Over the past six years, U.S. crude oil and petroleum product exports have more than doubled (EIA 2017d). The U.S. became a net exporter of petroleum products in 2011 and was the world's largest net exporter of refined products in 2016 (EIA 2017e). While the U.S. is expected to remain a net importer of crude oil for the foreseeable future, current projections show U.S. aggregate imports and exports from all energy sources coming into balance in 2026, with the U.S. becoming a net exporter of natural gas in 2018 (EIA 2017c). The country's transition away from being a net importer of energy will continue to improve the balance of trade. OCS production will remain an important contributor to domestic U.S. oil supplies, helping to further improve the trade balance.

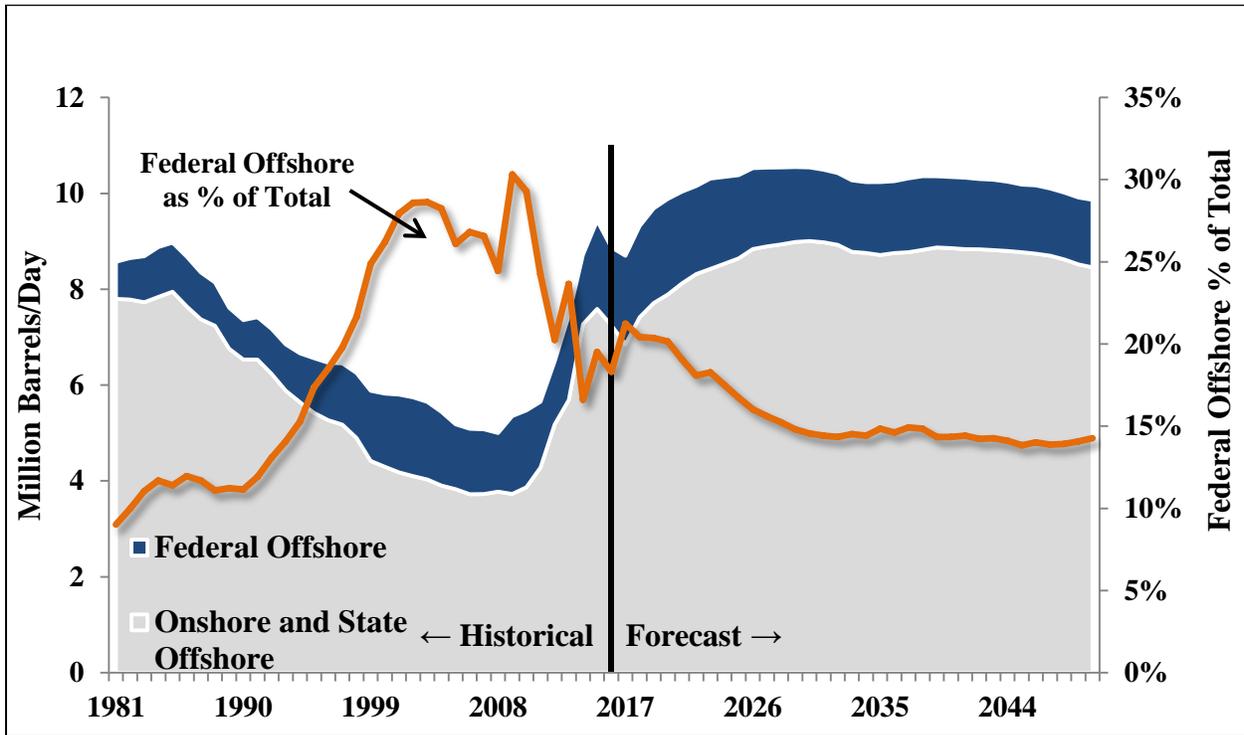
1.2.1.3 *Energy Security*

As described in the America-First Energy Plan, domestic energy production enhances America's national security interests by reducing our dependence on imported oil as well as providing domestic energy, particularly to the Department of Defense (DOD). The United States can reduce dependence on foreign oil by increasing the supply of domestic energy or by reducing domestic energy consumption. The recent increase in U.S. energy production has greatly contributed to U.S. energy supply security. The increase in domestic production 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 (Cummings and Gold 2013, Engel and Windrem 2013).

OCS oil and natural gas production varies considerably from year to year. The absolute amount of OCS oil production has increased somewhat over the past 10 years, whereas OCS natural gas production has fallen in the last decade, reflecting the decline in gas prices over the same period (BSEE 2017). In recent years, due to increased onshore production, the percentage of OCS oil and gas as a share of domestic production has declined and in 2016 was 18 percent for oil and 4 percent for natural gas (see Figures 1-4 and 1-5). However, OCS production continues to provide a vital source of domestic production that can reduce the Nation's vulnerability to a supply disruption. As explained in Section 6.1.6.1, the National OCS 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 National OCS Program has been approved).⁴ 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 are disruptive and damaging to the economy.

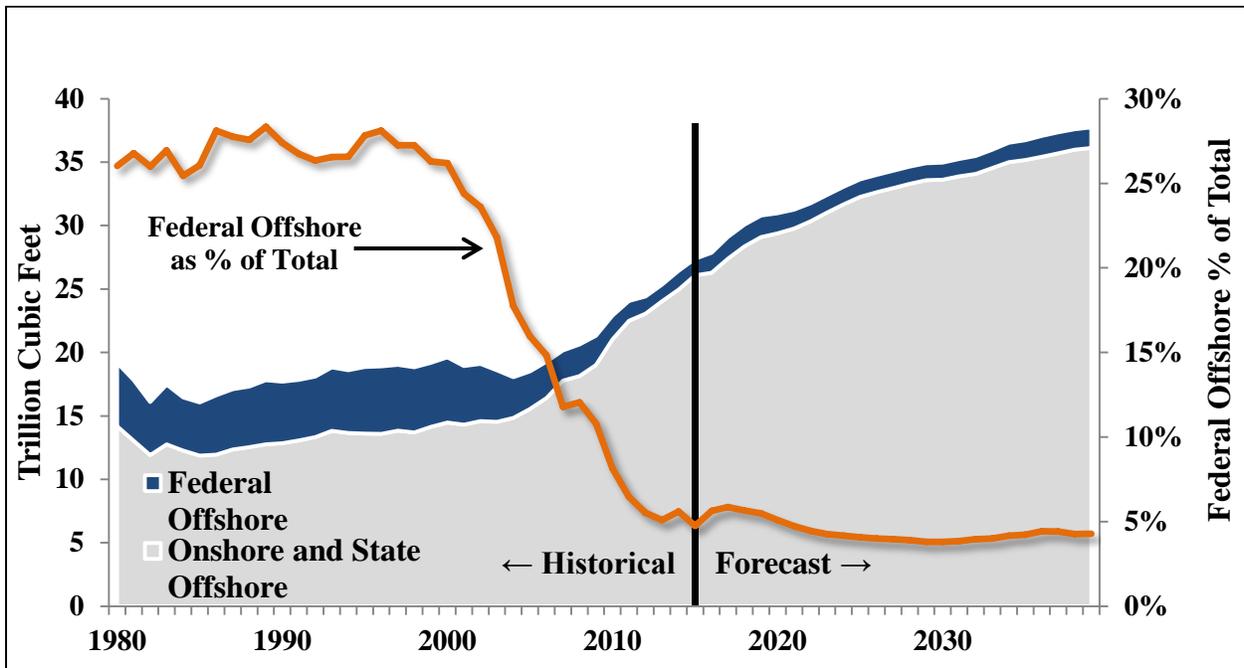
⁴ In addition, while lessees can decide fairly quickly to cancel or not initiate new OCS projects on existing leases, companies cannot initiate new OCS projects on unleased lands without going through a long process, including planning for a lease sale, bidding, applying for and obtaining approvals, and determining prospect viability through exploration, a process that can take 10-20 or more years, particularly in frontier areas.

Figure 1-4: Historical and Forecasted U.S. Crude Oil Production



Source: EIA 2017f, EIA 2017g

Figure 1-5: Historical and Forecasted U.S. Natural Gas Production



Source: EIA 2017h, EIA 2017i

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, raises 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, which made the U.S. the world's top producer of petroleum and natural gas. Technological advancements in fracking and horizontal drilling, along with high prices, drove the recent onshore boom in production, reversing a long-term decline that had been expected to continue. Offshore, technological advancements in the oil and natural gas industry over the past several decades have greatly expanded the resources available for production. In addition, the offshore oil and gas industry has reduced deepwater project costs through greater equipment standardization and reduced rig dayrates. These cost reductions have allowed companies to sanction offshore projects even in this time of relatively low oil prices (Dunnahoe 2017).

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 successful drilling operations. Advanced composite materials and materials engineering have improved OCS structures and moorings to better withstand the operating environment. These and other technologies developed for oil and gas operations have contributed to U.S. leadership in the worldwide energy industry. The importance of the United States as an offshore oil and gas technology leader was recognized in comments received in response to the RFI (see Appendix A). These technological advances support the country's economic growth and help meet global energy needs.

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 OCS 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 provide 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) and GOMESA revenue sharing payments to states⁵
- indirect revenues via funding to state and local governments through worker and industry tax payments.

1.3 PROGRAM DEVELOPMENT PROCESS

The development of an OCS Oil and Gas Leasing Draft Proposed Program (Draft Proposed Program or DPP) is one of several Section 18 steps in the process of preparing a new 2019–2024 National OCS Oil and Gas Leasing Program (2019–2024 Program) that will follow or replace the current 2017–2022 Program, which became effective on July 1, 2017, and expires on June 30, 2022, or when a new National OCS Program is approved. This DPP decision document constitutes the first of three proposals for an OCS lease sale schedule for the 2019–2024 timeframe. The three proposals include: (1) the DPP decision; (2) the Proposed Program decision; and (3) the Proposed Final Program (PFP) decision.

The National OCS Program development process starts with the broadest consideration of areas available for leasing (all 26 OCS planning areas) and can be narrowed throughout the National OCS Program development and lease sale process. Once a defined area is proposed for leasing during the development of the National OCS Program, it becomes known as a program area. Program areas are the portions of the original OCS planning areas that remain in consideration for leasing during the National OCS Program development process. For example, the Cook Inlet Program Area in the 2017–2022 Proposed Program included only the northern portion of the larger Cook Inlet Planning Area that was originally considered for leasing in the 2017–2022 DPP. In addition to the analyses and decision documents prepared pursuant to Section 18, once the initial program areas are identified in the DPP decision, BOEM has decided to prepare a Programmatic Environmental Impact Statement (Programmatic EIS) under the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 *et seq.*) and its implementing regulations as a vehicle for conducting and disclosing the environmental analyses for the National OCS Program. BOEM’s decision to prepare the Programmatic EIS is discretionary because the U.S. Court of Appeals for the District of Columbia has ruled that the approval of a National OCS Program does not constitute an irreversible and irretrievable commitment of resources, and that, in the context of BOEM’s multiple-stage leasing program, the obligation to fully comply with NEPA does not mature until leases are issued (*Center for Biological Diversity v. Department of the Interior*, 385 F.3d 466 [D.C. Cir. 2009]; *Center for Sustainable Economy v. Jewell*, 779 F.3d 588 [D.C. Cir. 2015]).

The NEPA analysis will include an evaluation of the potential environmental and socioeconomic impacts associated with the proposed lease sale schedule, and how those impacts could vary depending on the areas or regions that are included in the National OCS Program (see Section 1.3.2). The NEPA process is introduced in the discussion on factor H in Section 2.2 in this document, with a more detailed description contained in the forthcoming Programmatic EIS. The Programmatic EIS will identify any sensitive areas that might warrant exclusion from leasing for oil and gas as well as mitigation measures

⁵ 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, Congress passed the Gulf of Mexico Energy Security Act (GOMESA), which mandates that the states of Texas, Louisiana, Mississippi, and Alabama receive a portion of revenues from new oil and natural gas development in federal waters adjacent to the respective state.

for activities within leased areas that could have environmental impacts. The Programmatic EIS analysis will address whether mitigation measures are appropriate at the National OCS Program stage or should be deferred to the leasing or plan approval stages. The Programmatic EIS will address the cumulative effects of lease sales under the new National OCS Program, as well as those lease sale effects that could cross BOEM planning area boundaries, such as potential impacts on migratory animals.

The key steps in preparing a new National OCS Program under Section 18 of the OCS Lands Act and the Programmatic EIS under Section 102(2)(C) of NEPA are shown in Figure 1-6, with a star identifying where BOEM is in the process of developing the 2019–2024 Program and associated NEPA analyses. Table 1-1 shows the NEPA assessments associated with the various stages of National OCS Program and lease sale development.

The analysis contained in this DPP decision document examines and compares all 26 of the OCS planning areas in accordance with the Section 18 factors for consideration and balancing. However, only those areas and Program Options that the Secretary decides to include in his DPP decision will be analyzed in the Proposed Program decision document and the Draft Programmatic EIS. Subsequently, the 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.

BOEM informs federally recognized tribal governments that a National OCS Program is being prepared, of the steps in the development process, and where to find additional information on meetings and other opportunities to provide comments. Recognizing the unique government-to-government relationship between the United States and Indian tribes, BOEM also invites requests for government-to-government consultation. This consultation can occur at the National OCS Program stage as well as during the subsequent stages of the process (e.g., lease sales, plan reviews). Consultation and coordination with other Federal agencies, and state and tribal governments, as required under specific environmental statutes, occur at subsequent stages of the process, as well.

1.3.1 Request for Information and Comments

In developing the 2019–2024 Program, BOEM considers, among other items, regional and national energy needs; leasing interests as expressed by possible oil and gas producers; applicable laws, goals, and policies mentioned in the comments of affected states; comments and concerns of local governments and tribes; public input; competing uses of the OCS; relative environmental sensitivity and marine productivity among OCS regions; and the equitable sharing of benefits and risks among OCS regions.

On July 3, 2017, BOEM published in the *Federal Register* a Request for Information (RFI) regarding the preparation of a 2019–2024 Program, to commence in 2019, which would supersede the approved 2017–2022 Program (82 FR 30886). BOEM also sent letters to all governors and the heads of interested Federal agencies requesting their input. Summaries of the public comments received on the RFI are included in Appendix A.

Figure 1-6: National OCS Oil and Gas Leasing Program and Development Process

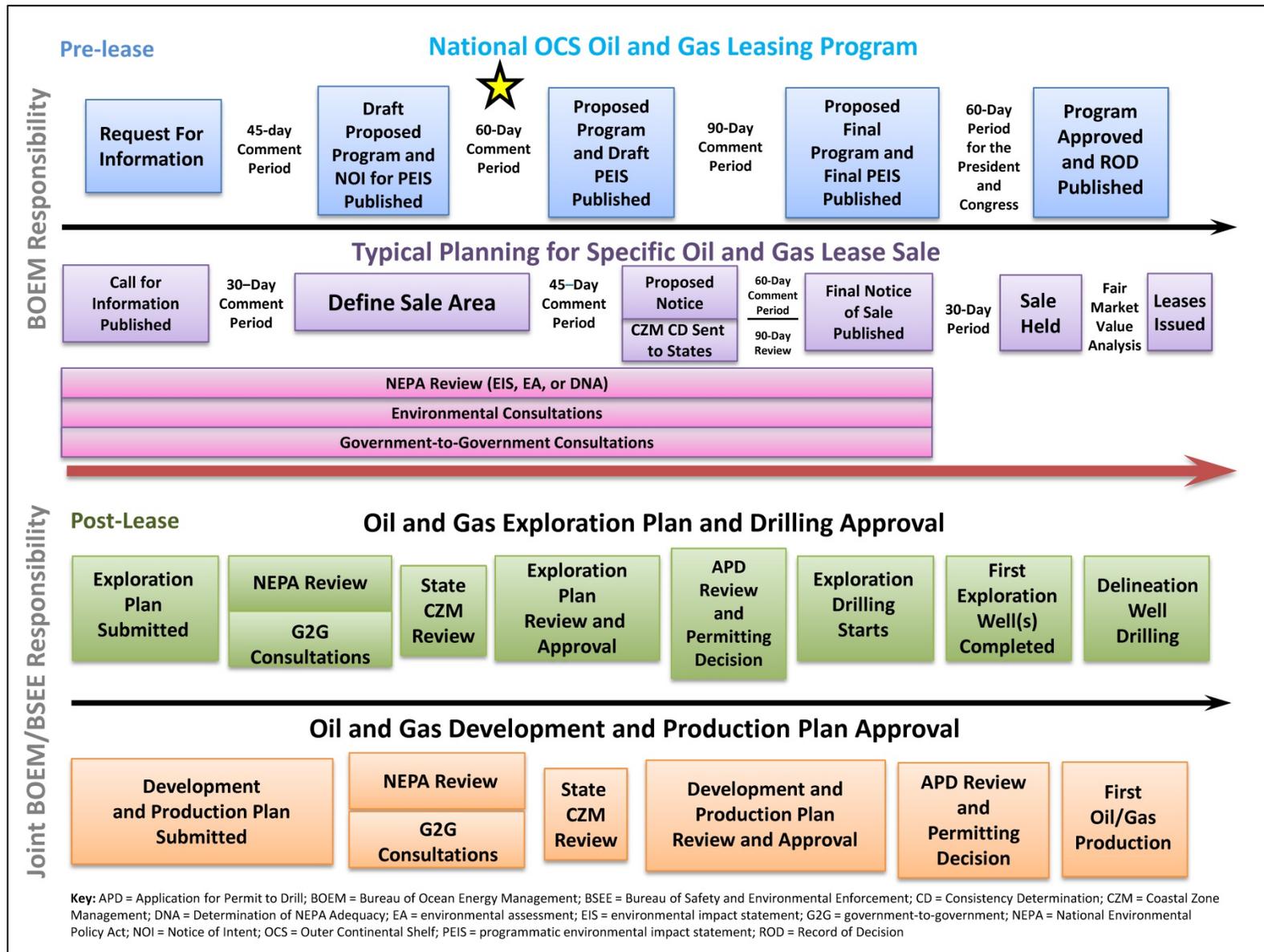


Table 1-1: NEPA Assessments Typically Conducted for the OCS Oil and Gas Leasing Program

Program Level	Program Stage	NEPA Analysis	Geographic Scope	Focus and Scope
Planning	National OCS Program	Programmatic EIS (NEPA is discretionary at this stage.)	Continental	Identification of program areas, number, and schedule of lease sales for the National OCS Program, and identification of National OCS Program-level environmental impacts and mitigation measures.
Lease sale	Lease sale	NEPA Review (EIS, EA, or DNA)	Program area	Identification of potential environmental impacts and mitigation measures (EIS or EA), or determination that these are adequately covered in a previously prepared NEPA document (DNA)
Project	Exploration	CER, EA, or EIS	Lease block(s)	Selection and application of mitigation measures
	Production	CER, EA, or EIS	Portion of lease block	
	Decommissioning	CER, EA, or EIS	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; DNA= Determination of NEPA Adequacy; EA=environmental assessment; EIS=environmental impact statement.

1.3.2 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 Chapter 2), the Secretary selects Program Options as part of the DPP decision (as discussed in Part I). This decision represents the initial proposal for the 2019–2024 Program. BOEM announces the availability of the DPP in the *Federal Register*, as well as the Notice of Intent (NOI) to discretionally prepare a Programmatic EIS, which signals the initiation of the NEPA process. Following the publication of the DPP and NOI, a 60-day comment period is initiated in which BOEM solicits comments on the DPP and requests scoping comments relevant to the development of the Programmatic EIS. BOEM also transmits the DPP decision document to all 50 governors and relevant Federal agencies, and begins development of the Draft Programmatic EIS.

1.3.3 Proposed Program and Draft Programmatic EIS

Preparation of the 2019–2024 Proposed Program will be based on additional analyses of required Section 18 factors (see Chapter 2) and comments received by BOEM on the DPP and NOI. As such, the 2019–2024 Proposed Program decision is the second version of the Secretary’s proposal for this National OCS Program. OCS areas identified for potential leasing in the DPP will be analyzed in the Proposed Program and Draft Programmatic EIS.

BOEM will announce the publication of the Proposed Program and Draft Programmatic EIS and associated request for comments in the *Federal Register*. The Proposed Program will be submitted to governors and relevant Federal agencies. In that *Federal Register* notice, BOEM will also request feedback on the Proposed Program and Draft Programmatic EIS from other interested and affected parties during a 90-day comment period. As provided in Section 18 of the OCS Lands Act, BOEM will provide written responses to governors and the Attorney General on their comments on the Proposed Program in conjunction with transmittal of the PFP and Final Programmatic EIS.

1.3.4 Proposed Final Program and Final Programmatic EIS

At the last phase of the National OCS Program analysis, BOEM will prepare a PFP based on additional analyses of Section 18 factors and comments BOEM received on the Proposed Program and Draft Programmatic EIS. The PFP is the third and last version of the Secretary's proposal. Additionally, a Final Programmatic EIS will be developed and released in conjunction with the PFP. OCS areas identified for potential leasing in the Proposed Program will be analyzed in the PFP and Final Programmatic EIS. BOEM will announce publication of the PFP in the *Federal Register* and will submit it to the President and Congress, along with the Final Programmatic EIS. 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 will also be submitted to the President and Congress. In accordance with Section 18(c)(2), the Secretary will not approve the PFP until at least 60 days after sending it to the President and Congress.

1.3.5 Program Approval and Record of Decision

Sixty days after the PFP is submitted to the President and Congress, the Secretary may approve the 2019–2024 Program. At the time of approval, the Secretary's decision is described in the Record of Decision (ROD) that is 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 otherwise mitigate environmental impacts. The ROD could adopt any programmatic mitigation measures, geographic exclusions or other restrictions on leasing activities that the Secretary considers necessary for environmental protection and that are sufficiently identifiable at the Programmatic stage.

1.4 LEASE SALE PROCESS

Approval of a National OCS Program does not constitute approval of the lease sales scheduled in that program. Each potential lease sale scheduled in the 2019–2024 Program will be subject to separate established pre-lease decision processes, including environmental review and analysis. Interested and affected parties have multiple opportunities to participate and comment prior to any decision to hold a specific lease sale (see Figure 1-6). The leasing process has traditionally taken about two years to complete, and contains multiple steps and decision points along the way. Generally, the process begins with a Call for Information and Nominations (Call), where BOEM solicits public input on areas of interest or concern, and specifically solicits industry interest on areas that should be considered for leasing. After the Call, BOEM completes and announces its Area Identification (Area ID), which determines the discrete area that will be considered for leasing and for further environmental analysis. BOEM then prepares and publishes a Proposed Notice of Sale (NOS), which announces the proposed

sale's size, timing, and terms and conditions, including any mitigation measures necessary to protect the environment and reduce potential conflicts-of-use. After required consultations and environmental review are completed, BOEM publishes a Final NOS, which includes the date, time, and location of the bid opening, the OCS blocks being offered, and the terms and conditions of the lease sale. The full process is described below in more detail.

1. **Call for Information and Nominations (30 CFR 556.301)**—In the first step of the lease sale process, BOEM issues a Call in the *Federal Register* on an area that was proposed for leasing in the National OCS Program. Potential bidders are invited to submit nominations or indications of interest in specific OCS blocks within the area included in the Call. The Call also solicits comments about geological conditions; archaeological sites; multiple uses of the area; sociological, biological, and other environmental information; and asks the public for information on areas of special concern that should be analyzed.
2. **Review under NEPA**—Each individual lease sale requires a NEPA review. This could include preparation of a programmatic EIS covering the sales identified in an approved National OCS Program for a given region or Program Area. Subsequent lease sales could then be covered by an EA, Determination of NEPA Adequacy (DNA), or, if new information or circumstances warrant, a Supplemental EIS.
3. **Area Identification (30 CFR 556.302)**—Area ID identifies the area proposed for leasing and further environmental analysis. Based on information gathered from responses to the Call and the NOI, BOEM will identify the Proposed Action to be analyzed in the NEPA document. BOEM publishes the Area ID decision in the *Federal Register*.
4. **Government-to-Government Consultations**—BOEM consults with federally recognized tribes. In Alaska, BOEM additionally consults with Alaska Native Claims Settlement Act Corporations. These consultations are conducted throughout the OCS oil and gas lease sale process.
5. **Environmental Consultations**—Consultations under various environmental statutes occur, such as the Endangered Species Act (ESA) of 1973 (16 U.S.C. § 1531 *et seq.*) and the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 *et seq.*), with Federal agencies such as the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). BOEM also consults with State Historic Preservation officers under Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108).
6. **Proposed NOS (30 CFR 556.304)**—The Proposed NOS describes the timing, size, and location of a proposed oil and gas lease sale. It also provides potential bidders with information on proposed lease terms and conditions, including any proposed environmental mitigations. BOEM publishes a Notice of Availability of the Proposed NOS in the *Federal Register*.
7. **Coordination with Governors of Affected States (30 CFR 556.304-305)**—Section 19 of the OCS Lands Act (43 U.S.C. § 1345) requires BOEM to solicit input on the size, timing, and location of lease sales from governors of affected states. BOEM sends the Proposed NOS to governors of affected states requesting their recommendations on the proposed lease sale's size, timing and location. The governors have 60 days to submit their recommendations to BOEM.
8. **Consistency Determination (30 CFR 556.305(b))**—All Federal activities, including OCS oil and gas lease sales, must be consistent to the maximum extent practicable with the enforceable policies of an affected state's coastal zone management (CZM) program (see

16 U.S.C. § 1456(c)(1) and (2)). BOEM provides coastal states with a Consistency 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 (CMPs). Currently, the State of Alaska does not have a federally approved CMP.

9. **Issuance of a Record of Decision (EIS-level), Finding of No New Significant Impact (EA level) or Determination of NEPA Adequacy**—The NEPA review for each individual lease sale must be completed before the sale can occur. Depending on the NEPA review undertaken for a lease sale, this could be through the issuance of a ROD, a Finding of No New Significant Impact, or a DNA.
10. **Final NOS (30 CFR 556.308(a))**—BOEM will publish a Final NOS at least 30 days before a lease sale is held. The Final NOS includes information on (1) how to submit bids; (2) the date, time, and location of the bid opening and reading; (3) the OCS blocks being offered; and (4) terms and conditions of the lease sale, including required environmental mitigations.
11. **Holding the Lease Sale (30 CFR 556.516)**—BOEM opens the sealed bids at the place, date, and hour specified in the Final NOS for the sole purpose of publicly announcing and recording the bids. BOEM does not accept or reject any bids at that time. High bids are subject to further evaluation regarding the receipt of fair market value (FMV) for the United States and adequate competition before a lease can be issued.
12. **Lease Issuance (30 CFR 556.520-522)**—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. The Department of Justice, in consultation with the Federal Trade Commission, has 30 days to conduct antitrust review of the lease sale, but could agree to a shorter review period.

1.5 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 so that BOEM can perform environmental review and possibly approve the plan (see Figure 1-6). In some cases, these potential resources could already be identified through analysis of existing data and information. In other cases, a lessee could 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 seismic data available (e.g., three-dimensional [3-D] seismic surveys), while older, less sophisticated seismic data (e.g., two-dimensional [2-D] seismic surveys) is often all that is available to delineate frontier areas, like in the Atlantic Region. 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 bottom habitat and coral reefs, and significant cultural resources such as historic shipwrecks or inundated occupation sites on or below the seabed. 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 oil or gas is discovered in quantities appearing to be economically favorable, one or more follow-up delineation wells could 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 so that BOEM can perform environmental review and possibly approve the plan (see Figure 1-6). Assuming that hydrocarbon resources are discovered and successfully delineated, a production facility could 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.

Exploration plans and development and production plans outside the GOM, and deepwater plans in the GOM, are subject to focused, site-specific environmental analyses under NEPA and other environmental statutes as well as the requirement for an operator to certify consistency 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: <https://www.boem.gov/Status-of-Gulf-of-Mexico-Plans/> and <https://www.boem.gov/akplans>. For more information about BOEM's oil and gas resource evaluation program, see BOEM's web page: <https://www.boem.gov/Resource-Evaluation-Program/>.

Chapter 2 Section 18 Factors for Consideration and Balancing

2.1 BOEM’S APPROACH TO ANALYZING PLANNING AREAS

Section 18(a) of the OCS Lands Act contains four subsections which set forth specific principles and factors that guide National OCS Program formulation and which, together, provide the foundation for BOEM’s analysis that is used in the development of 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 National OCS Programs (see Section 2.7, Judicial Guidance). This DPP decision document contains analyses of all 26 OCS planning areas 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, Section 18(a): Factors for Determining Size, Timing, and Location of Leasing). The Secretary’s proposal, as presented in Part I, identifies areas for further leasing consideration, consisting of some of the 26 OCS planning areas. Once the Secretary proposes areas for inclusion in the National OCS Program, those areas become “program areas.” See further discussion of planning and program areas in Section 4.1. The Program Options presented in Part I will be analyzed in the Proposed Program and Draft Programmatic EIS.

The analyses underlying the 2019–2024 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 on the RFI. Additionally, BOEM reviews and reinterprets existing oil and gas resource data as necessary. The DPP lease sale schedule provides the initial Proposed Action to be analyzed in the Proposed Program and Draft Programmatic EIS. The Draft Programmatic EIS is published in conjunction with the Proposed Program decision document. The Proposed Program lease sale schedule provides the refined Proposed Action analyzed in the PFP and Final Programmatic EIS. The Final Programmatic EIS is published in conjunction with the PFP decision document.

2.2 SECTION 18(A): FACTORS FOR DETERMINING SIZE, TIMING, AND LOCATION OF LEASING

As stated above, Section 18(a) of the OCS Lands Act states that a five-year leasing program must be prepared and maintained by the Secretary consistent with principles set forth in the section. Section 18(a)(2) lists eight factors 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 planning 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 below:

A) Geographical, Geological, and Ecological Characteristics

The main sources of information on geographical, geological, and ecological characteristics of the OCS planning areas considered in preparing this DPP 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 unpublished but vetted scientific 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). Additional information on the ecological characteristics will be included in the Draft 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 to consumers of energy.

Environmental risks (impacts) include the potential for activities stemming from the DPP decision 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 could affect or diminish ecosystem services. 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. In addition, the Draft Programmatic EIS will analyze the potential impacts that

could occur from leasing activities under the National OCS Program. The impact analysis will further inform the discussion of environmental risks.

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.⁶ The analyses include the U.S. Department of Energy’s projections of national and regional production and consumption according to the EIA’s *Annual Energy Outlook (AEO) 2017* (EIA 2017); the potential contribution of OCS oil and gas production in meeting national energy needs; regional energy markets and the location of OCS planning areas; and alternatives to OCS production.

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

Section 6.5 discusses competing uses of the OCS. This section includes information received from Federal, state, and local government agencies; tribal governments, environmental organizations; and regional fishery management bodies (see Appendix A); as well as information provided by BOEM’s Marine Minerals and Renewable Energy programs.

Other uses of the sea and seabed will be covered in the Draft Programmatic EIS as well. The discussion of past, present, and reasonably foreseeable future actions in the Draft Programmatic EIS will include a characterization of OCS activities, other than 2019–2024 Program activities, that could affect environmental resources on or adjacent to the OCS.

E) Laws, Goals, and Policies of Affected States Identified by Governors

Section 9.2 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 the comments received on the RFI, including those from governors and state government agencies.

F) Interest of Potential Oil and Gas Producers

Section 9.1 describes industry interest as indicated in response to the RFI. Appendix A summarizes the comments received, including those from oil and natural gas companies and associations in the exploration and production sector of the energy industry.

G) Relative Environmental Sensitivity and Marine Productivity

Chapter 7 contains an analysis of the environmental sensitivity and marine productivity for the planning areas. In Chapter 7, as in previous National OCS 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. Additional information on the plants, animals, habitats, and human activities that could affect the sensitivity of an area will be provided in the Draft Programmatic EIS as well.

⁶ Section 1.2 also addresses energy needs but with respect to the overriding purpose of the National OCS 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).

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 or higher level 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 (Balcom et al. 2011). Furthermore, measurements for the BOEM ecoregion areas were produced using satellite-based measurements of chlorophyll-*a*, available light, and photosynthetic efficiency (Balcom et al. 2011). These rates are on an areal basis so direct comparisons among planning areas of different sizes can be made.

H) Environmental and Predictive Information

Chapter 7 provides a summary of environmental and cultural resource information for each OCS region, which includes the ecological considerations and portions of the geographic and geological considerations that are relevant to determining when and where leasing should occur. Chapter 7 includes a discussion of the most relevant environmental issues and builds on the environmental setting to discuss the predictive information relevant to potential environmental impacts. It provides a broad overview of the types of relationships between resources and impact-producing factors (IPFs) that could result in impacts on those resources. The nature and severity of these impacts will be analyzed in the Programmatic EIS for the 2019–2024 Program.

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 his analysis of the Section 18(a)(2) factors. Part III of this DPP decision document presents a comparative analysis of all 26 planning areas.

For the DPP, an element of the comparative analysis is an estimation of societal net benefits for each planning area, derived by calculating the value of undiscovered economically recoverable oil and natural gas resources (UERR) minus the cost to industry and the environmental and social costs of developing those resources. BOEM refers to the results of this analysis as the net social value (NSV) (see Section 5.3).⁷ See also the descriptions of the various types of “value” in Section 2.6, Section 18(a)(1): Economic, Social, and Environmental Values.

The environmental sensitivity index compares and ranks the sensitivity of the different BOEM ecoregions based upon quantified information relating to environmental sensitivity and marine productivity (see Chapter 7). Each planning area within an ecoregion is assigned a sensitivity score based upon the ecoregion as a whole. The comparative analysis uses these scores to rank the environmental sensitivity of

⁷ As explained below, for later programmatic analyses, the NSV and additional estimates will reflect production and related activities anticipated to result specifically from the National OCS Program decision.

the planning areas based on their relative vulnerability and sensitivity to oil and gas development. The marine primary productivity of each planning area was also calculated. Both the environmental sensitivity and productivity are then related to the interest of potential oil and natural gas producers (see Section 9.1). 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 how the factors in Section 18(a)(2) should be weighed to achieve the balancing required by Section 18(a)(3), 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 assures the FMV requirement is met 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 National OCS 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 National OCS Program is to help meet the future energy needs of the United States. Section 1.2, Energy Needs, 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, and national energy security; and as an integral component to national economic and energy policies in general.⁸

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 non-renewable resources contained in the outer Continental Shelf...” The DPP analyses presented in Part III of this document are conducted to ensure that economic, social, and environmental values associated with exploration,

⁸ Chapter 6 addresses similar energy subjects but instead of focusing on broad themes, Chapter 6 focuses on information the Secretary must consider pursuant to Section 18(a)(2)(C), discussed in Section 2.2, Section 18(a): Factors Determining Size, Timing, and Location of Leasing.

development, and production of OCS resources are incorporated as important aspects of the National OCS 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 DPP is to assist the Secretary with meeting these requirements (including the balancing requirement described in Section 2.3, Section 18(a)(3): Balancing the Potential for Environmental Damage, Discovery of Oil and Gas, and Adverse Impact on the Coastal Zone), in consideration with the other analyses.

Chapter 7 presents the environmental setting for each of the OCS regions (Alaska, Pacific, GOM, and Atlantic), which includes relevant environmental information on habitats, species types and distribution, and federally protected species. Appendix A contains summaries of comments received in response to the RFI, including issues or concerns that were identified by commenters. The environmental considerations section also includes information from previous National OCS Program decision documents and references to available environmental resource information. Finally, a brief discussion of predictive information is provided to identify the potential relevant impacts and the resource areas that could be affected.

2.6.1 Economic Value

Economic value will be realized from decades of oil and natural gas activity and production that result from leases awarded during the implementation of the National OCS 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;⁹ and government receipts of cash bonuses, rentals, royalties, and taxes. Economic values are discussed primarily in NSV (Section 5.3), Equitable Sharing Considerations (Chapter 8), and Assurance of Fair Market Value (Chapter 10).

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 National OCS 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 conservation¹⁰ or when oil and gas activities result in adverse consequences to society, such as a highly damaging event like a large 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 include cultural and community values but also broad considerations of a wide array of factors, many of which could also be considered economic or environmental effects. Components of social value are reflected in all of the substantive requirements analyses prepared in support of this DPP, whether accounted for in NSV or described qualitatively. Social values are especially relevant in Part III, Analysis and Results.

⁹ Consistent with standard practices in cost-benefit analysis, the analysis in Part III, 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 as such in Chapter 8.

¹⁰ 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).

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 provides goods and services from nature, including marine productivity, quality of aesthetic resources, human-ecological connectivity, and air and water quality. The analyses presented in Chapter 7 discuss environmental sensitivity and marine productivity, and the important effect of relevant environmental impacts on environmental value. Section 18(a)(2)(G) calls for the consideration of the relative environmental sensitivity and marine productivity of the OCS. BOEM sponsored the development of a new method for performing the corresponding assessment for the 2017–2022 Program, the results of which were first presented in the 2017–2022 DPP decision document. See Section 2.2 (G) and Chapter 7 in this document for methodological explanations. Feedback from internal and external reviews of this new approach was incorporated into the analysis for the 2017–2022 PFP document.

2.7 JUDICIAL GUIDANCE

The 2019–2024 Program will be the tenth National OCS Program prepared by the Department. Pursuant to Section 23(c)(1) of the OCS Lands Act, all challenges to the National OCS Program are heard in the U.S. Court of Appeals for the D.C. 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, 2002–2007, or 2017–2022 Programs.

The 2019–2024 Program is being prepared in accordance with guidance provided in those court decisions addressing past National OCS Programs. A brief description of the findings of each decision and how they have guided preparation of the National OCS 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 National OCS Program was the first that followed the 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 consideration of 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, because a new National OCS 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 NSV analysis. The court reiterated the “pyramidal” 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 National OCS 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)—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. The court stated that while the Secretary was required to receive and consider nominations for exclusion of areas, there was no requirement to exclude nominated areas. Should a decision be made to exclude an area, the court agreed with the Secretary that such exclusion decisions must be reasoned and the basis for making them identified, but there did not need to be a “formula” for such decisions. The court cited *California I* (at 1321–22) to explain that the Secretary’s duty as to the exclusion decisions is “simply to identify his legal or factual basis and to explain why he acted as he did.” Also once an area is excluded from availability for leasing, “[t]he Secretary need not perform a Section 18 analysis” on that area (*California II* at 608).
- *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 that will affect the environment. The court reasoned that in the case of the National OCS Program, the point of irreversible and irretrievable commitment of resources and the concomitant obligation to fully comply with NEPA does not occur until leases are issued.
- *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 National OCS Program stage, and upheld the Department’s chosen methods of cost-benefit analysis as reasonable and consistent with the statute.

Chapter 3 Outreach and Coordination

BOEM’s outreach and coordination with 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 public involvement efforts strive to encourage open and continued communication between and among these groups to share ideas and concerns, and to ensure that accurate and timely information is exchanged.

Section 18 of the OCS Lands Act specifies a multi-step process of public involvement and analysis that must be completed before the Secretary may approve a new National OCS 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). Industry interest is discussed in Section 9.1 and laws, goals, and policies of affected states that were identified by governors’ comments are discussed in Section 9.2.

The National OCS Program development process provides 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.

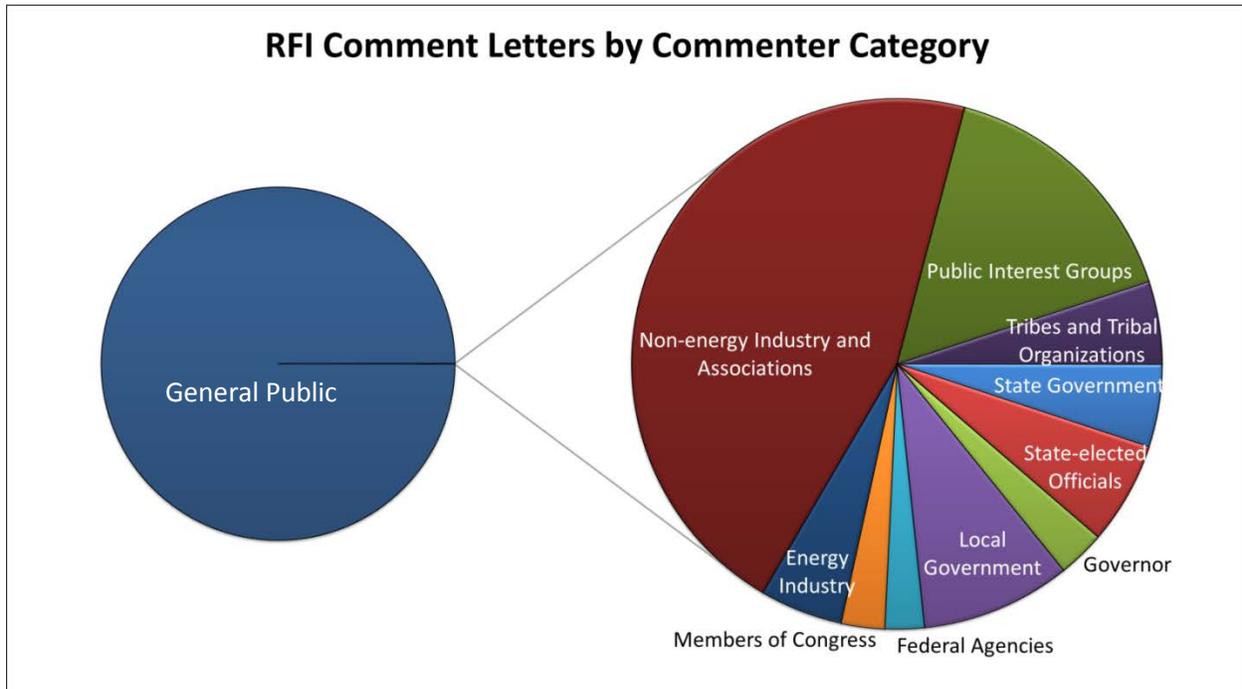
3.1 REQUEST FOR INFORMATION AND COMMENTS

On July 3, 2017, BOEM published in the *Federal Register* an RFI, which is the first step in the preparation of a new National OCS Program (82 FR 30886). BOEM also sent letters to all governors and potentially interested Federal agencies requesting their input. BOEM received a total of approximately 816,000 comments in response to the RFI (see Appendix A for a summary of comments received on the RFI). See Figure 3-1 for a breakdown of comment letters received by commenter category.

The publication of the 2019–2024 DPP initiates a 60-day public comment period. A scoping comment period for the Programmatic EIS will occur concurrently with the DPP public comment period.

The publication of the 2019–2024 Proposed Program and Draft Programmatic EIS will initiate a 90-day public comment period.

Figure 3-1: Request for Information Comment Letters by Commenter Category



3.2 PUBLIC MEETINGS FOR THE NATIONAL OCS PROGRAM AND 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 will collect comments relevant to development of the Draft Programmatic EIS and National OCS Program development at public meetings, from the Federal commenting website www.regulations.gov, and through the U.S. mail. BOEM’s staff will attend the public meetings to facilitate discussions with the public on both planning processes. The Programmatic EIS will also include a public comment process, including responses to substantive comments on the Draft Programmatic EIS within the Final Programmatic EIS and, if relevant, the Proposed Program decision document. Please visit <https://www.boem.gov/National-OCS-Program/> for public meeting locations, dates, and times.

Chapter 4 Background, Leasing History, and Status of OCS Planning Areas

4.1 BACKGROUND

This chapter contains the background and history of all 26 OCS planning areas upon which the DPP analyses are based. The OCS is divided into 26 planning areas that are grouped, for administrative purposes, into the following four regions (see Figures 1-2 and 1-3):

Alaska Region. The Alaska Region is the largest OCS region, covering more than 1,035 million acres including offshore areas such as the Chukchi Sea, Beaufort Sea, the Bering Sea, Cook Inlet, and Gulf of Alaska. Water depths in the Alaska OCS range from less than 10 feet to more than 25,000 feet. This region consists of 15 planning areas (see Figure 1-2). Lease sales have been held in eight of the planning areas over the years, the most recent of which was held in 2017 in the Cook Inlet Planning Area. Four of the areas (Aleutian Arc, Aleutian Basin, Bowers Basin, and St. Matthew-Hall) have been determined to have negligible oil and gas resource potential. The only existing Federal leases are in the Beaufort Sea Planning Area and Cook Inlet Planning Area. There were 487 leases issued in the Chukchi Sea Planning Area in 2008, all of which have been relinquished. The current 2017–2022 Program includes an Alaskan sale (Cook Inlet Sale 258) in 2021.

Pacific Region. The Pacific Region encompasses an area of more than 248 million acres in four planning areas, and includes the Pacific offshore area from the Canadian border in the north to the Mexican border in the south (see Figure 1-3).¹¹ Water depths range from approximately 30 feet to more than 17,500 feet. Lease sales have been held in all four areas, with the most recent lease sale occurring in 1984. The Southern California Planning Area has existing Federal leases and production from 23 platforms.

Gulf of Mexico Region. The GOM Region is on the southern margin of the United States and contains approximately 160 million acres in three planning areas. The coastline distance is approximately 1,650 miles from Texas to the Straits of Florida (see Figure 1-3). Water depths range from less than 30 feet to greater than 11,000 feet. The Central and Western GOM planning areas are the most mature and active oil and gas areas of the OCS, with production ongoing for more than 60 years. Annual planning area-wide lease sales in these two areas had been typical for the past 30 years. However, the 2017–2022 Program instituted semi-annual, region-wide lease sales of all available acreage in the Western, Central, and Eastern GOM Planning Areas. Although much of the Eastern GOM Planning Area is unavailable for leasing through June 30, 2022, there are existing Federal leases in all three planning areas due to lease sales that occurred prior to the moratorium and in the small area of the Eastern GOM Planning Area that is not under moratorium. Additionally, millions of cubic yards of OCS sand for coastal protection projects in this region have been conveyed through leases and agreements.

¹¹ Administratively, the Pacific Region includes the State of Hawaii. However, for the national OCS oil and gas leasing program, and, in particular, DPP analysis purposes, the Pacific Region only includes the four planning areas off of the U.S. west coast.

Atlantic Region. The Atlantic Region encompasses an area of nearly 270 million acres in four planning areas. It extends north to Canada, east to the offshore territorial waters of the Commonwealth of the Bahamas, and south to the territorial waters of Cuba (see Figure 1-3). Water depths in the Atlantic OCS range from approximately 12 feet to more than 18,000 feet. Lease sales have been held in all four areas, the most recent of which was held in 1983. There was exploration activity in the past, but there has been no production in this region. There are no existing oil and gas leases in the Atlantic Region; however, there are 13 existing leases for renewable energy projects, and millions of cubic yards of OCS sand for coastal protection projects in this region have been conveyed through leases and agreements.

Table 4-1 contains a summary of the OCS regions. See Section 7.1 for more information on the environmental setting of the four regions and the planning areas. The environmental setting of an area where oil and gas leasing activities could occur is defined by various geological, geographical, and ecological characteristics. Section 6.5 provides an overview of the various economic, military, and public uses of the OCS and nearby coastal regions.

Table 4-1: Acreages of the OCS Regions

Region	Acres (millions)	Number of Planning Areas
Alaska	1,035	15
Pacific	248	4
Gulf of Mexico	160	3
Atlantic	269	4

The planning areas were initially established for administrative convenience to implement the OCS Lands Act Amendments of 1978. They have been reconfigured several times over the years, most recently to correspond to the administrative lines announced in the January 2006 *Federal Register* Notice (71 FR 127) and the February 2006 DPP for 2007–2012. Unless otherwise noted, references to a planning area in this document correspond to the current configuration. The portion of a planning area that is available for leasing consideration in the National OCS Program is referred to as a program area (see Part I). A program area can be an entire planning area; a small portion of a planning area; comprised of parts, or all, of more than one planning area; or any size/configuration in between. As discussed in the program development process in Chapter 1, the preparation of a new National OCS Program begins with an RFI and analysis and consideration of all 26 planning areas, as required by the OCS Lands Act. Once areas are chosen for further consideration by the Secretary, the subsequent analyses generally focus on those areas.

Restrictions on OCS leasing can originate from outside the National OCS Program development process. Areas may be withdrawn by the President under Section 12(a) of the OCS lands Act, 43 U.S.C. 1341(a), and are referred to as presidential withdrawals (also referred to as executive withdrawals). Areas can also be withdrawn or otherwise made unavailable for leasing by the President under the Antiquities Act, or by Congress by such statutes as GOMESA. Recently, pursuant to E.O. 13795, President Trump reduced existing presidential withdrawals to include only those of the North Aleutian Basin and National Marine Sanctuaries that were designated as of July 14, 2008. Table 4-2 lists the areas withdrawn from OCS oil and gas leasing and the current status of withdrawal.

Table 4-2: Status of Areas Withdrawn from OCS Oil and Gas Leasing

Area/Feature	Withdrawal Date	Status
National Marine Sanctuaries designated as of July 14, 2008	April 27, 2017	Unavailable for OCS oil and gas leasing, pursuant to the OCS Lands Act, 43 U.S.C. 1341(a).
Majority of the Eastern GOM and a portion of the Central GOM	December 20, 2006	Unavailable for oil and gas leasing until June 30, 2022, pursuant to GOMESA.
North Aleutian Basin (Alaska)	December 16, 2014	Withdrawn. Unavailable for OCS oil and gas leasing, pursuant to the OCS Lands Act, 43 U.S.C. 1341(a).
Northeast Canyons and Seamounts Marine National Monument (Atlantic)	September 15, 2016	Unavailable for OCS oil and gas leasing, pursuant to the Antiquities Act (54 U.S.C. 320301).

Note: The designation and expansion of any National Marine Monument is under review pursuant to Section 4 of E.O. 13795 (April 28, 2017).

Key: GOM = Gulf of Mexico; GOMESA = Gulf of Mexico Energy Security Act

4.1.1 Alaska Region Planning Areas

The Alaska Region is composed of 15 planning areas surrounding the state. Federal lease sales have been held in 8 of those planning areas. Existing Federal leases are present only in the Beaufort Sea Planning Area and the Cook Inlet Planning Area. 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 Alaska. All Alaska areas are considered to be frontier areas. See Chapter 5 for information on the oil and gas resource potential in Alaska.

Figure 9-2 shows the general position on OCS oil and gas production stated by the Governor of Alaska, as expressed in the comments received in response to the RFI.

4.1.2 Beaufort Sea

Ten lease sales have been held in this planning area since 1979. One lease sale was scheduled in the 2012–2017 Program, but was subsequently cancelled on October 16, 2015, due to lack of industry interest and then-existing market conditions. One lease sale was planned in the 2017–2022 Proposed Program, but was subsequently removed in the 2017–2022 PFP decision.

Pursuant to Section 12(a) of the OCS Lands Act, 43 U.S.C. 1341(a), on December 20, 2016, President Obama withdrew the majority of the Beaufort Sea Planning Area in the Alaskan Arctic from future oil and gas leasing consideration for a time period without specific expiration (see Figure 1-2). However, E.O. 13795 rescinded this withdrawal and thus the entire Beaufort Sea Planning Area is available for leasing consideration.

As of December 1, 2017, there were 21 existing OCS leases in this planning area. Thirty-one exploratory wells have been drilled.¹² The most recently drilled well (2012) was plugged and abandoned without being drilled to total depth. In July 2017, BOEM approved an exploration plan for up to four exploration wells to be drilled from an existing gravel island. 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.

¹² The 31 wells include the top hole well drilled in 2012, which is not considered a well drilled to completion.

The State of Alaska holds area-wide lease sales in the adjacent state waters annually in the fall, and there is active production from state acreage adjacent to existing OCS leases.

The North Slope Borough and others, in public comments on the RFI, have stated the importance of 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 planning areas have the potential for oil discoveries that could help extend the viability of TAPS.

4.1.3 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 lease sales; all have since been plugged and abandoned. An uneconomic gas discovery was made in 1990 in the Burger prospect and the well was plugged and abandoned. One exploration well was drilled in 2012, but was also 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 lease sale in the history of Alaska OCS leasing, generating more than \$2.6 billion in bonus revenues. There are no existing leases; for a variety of reasons, all 487 leases in the Chukchi Sea Planning Area have been relinquished by the leaseholders. The Chukchi Sea Planning Area, however, has significant estimated hydrocarbon resource potential.

One lease sale was scheduled in the 2012–2017 Program, but subsequently cancelled on October 16, 2015, due to lack of industry interest and then-existing market conditions. One lease sale was scheduled in the 2017–2022 Proposed Program but was removed in the 2017–2022 PFP decision.

Pursuant to Section 12(a) of the OCS Lands Act, 43 U.S.C. 1341(a), on December 20, 2016, President Obama withdrew the entire Chukchi Sea Planning Area in the Alaskan Arctic from future oil and gas leasing consideration for a time period without specific expiration (see Figure 1-2). However, E.O. 13795 rescinded this withdrawal and the Chukchi Sea Planning Area is available for leasing consideration.

4.1.4 Hope Basin

No lease sales have been held in the Hope Basin Planning Area. The area was included in the 1997–2002 Program as a simultaneous U.S./Russia OCS lease sale, but that sale was canceled. Subsequently, this area was included in the 2002–2007 Program as a special interest lease sale in conjunction with the Chukchi Sea Planning Area. However, no interest was expressed for the Hope Basin in response to three Calls issued during the 2002–2007 Program timeframe.

4.1.5 Norton Basin

One lease sale was held in 1983 in Norton Basin. Six exploratory wells have been drilled, with no commercial discoveries. There are no existing leases. The area was included in the 2002–2007 Program as a special interest lease sale. Four Calls were issued with no expressions of interest.

4.1.6 Navarin Basin

One lease sale was held in 1983 in the Navarin Basin. Eight exploratory wells were drilled, with no commercial discoveries. There are no existing leases and the area has not been included in a lease sale schedule since the 1987–1992 Program.

4.1.7 St. George Basin

One lease sale was held in 1983 in St. George Basin. Ten exploratory wells were drilled, with no commercial discoveries. There are no existing leases in this area. One lease sale was scheduled in the 1992–1997 Program, but it was cancelled. The area has not been included for leasing consideration since that National OCS Program.

4.1.8 North Aleutian Basin

There was one lease sale in the North Aleutian Basin in 1986 with 23 leases issued in 1988 after resolution of litigation concerning the lease sale. However, those leases were relinquished in settlement of litigation in 1995. There has been no exploratory activity and there are no existing leases in this area. One lease sale was scheduled for this area in the 2007–2012 Program. However, pursuant to Section 12(a) of the OCS Lands Act, the area was withdrawn from leasing consideration through June 30, 2017, by President Obama in a statement on March 31, 2010. The lease sale proposed in the original 2007–2012 Program was not included in the December 2010 Revised 2007–2012 Program that followed the remand by the U.S. Court of Appeals (see Section 2.7 for further information).

Pursuant to Section 12(a) of the OCS Lands Act, 43 U.S.C. 1341(a), on December 16, 2014, President Obama withdrew the entire North Aleutian Basin Planning Area from future leasing consideration for a time period without specific expiration (see Figure 1-2).

4.1.9 Cook Inlet

There have been six lease sales in this area since 1977. As of December 1, 2017, there are 14 existing leases in the planning area, all of which were issued as a result of Lease Sale 244 held June 21, 2017. Thirteen exploratory wells have been drilled on earlier leases, with no commercial discoveries.

The upper Cook Inlet is a mature basin in which extensive exploration and development in state submerged lands have occurred during the past 40 years. The State of Alaska schedules annual area-wide lease sales in state submerged lands, the most recent of which was held in June 2017, with bids received on six tracts. Annual production from non-OCS leased acreage during calendar year (CY) 2016 totaled approximately 5.7 million barrels of oil (bbl) (ADNR 2016) and approximately 296 billion cubic feet of natural gas (EIA 2017). Existing infrastructure in the upper portion of Cook Inlet includes 17 platforms in state waters, associated oil and gas pipelines, and onshore drill pads, processing and support facilities.

4.1.10 Gulf of Alaska

Three lease sales were held from 1976 to 1981 in the Gulf of Alaska. Twelve exploratory wells were drilled, but no commercial discoveries have been found. The lease sale scheduled in the 1997–2002 Program was canceled, primarily due to low prices and low industry interest. There are no existing leases.

4.1.11 Alaska Planning Areas with No Lease Sales

The following planning areas have had no lease sales and no wells have been drilled:

- Aleutian Arc
- Aleutian Basin
- Bowers Basin
- Hope Basin
- Kodiak
- Shumagin
- St. Matthew-Hall.

4.2 PACIFIC REGION PLANNING AREAS

The Pacific OCS planning areas encompass more than 248 million acres, and includes the Pacific offshore area extending north to the Canadian border and south to the Mexican border. Pacific OCS planning areas begin 3 miles offshore and extend seaward to approximately 200 nm seaward of the baseline, with water depths ranging from approximately 30 feet to more than 17,500 feet.

The Pacific Region is comprised of four planning areas: Washington/Oregon, Northern California, Central California, and Southern California. Lease sales have been held in all four planning areas, the most recent of which was held in 1984. There are existing leases and production from these leases in the Southern California Planning Area. See Chapter 5 for information on the Pacific Region oil and gas resource potential. Figure 9-2 shows the general positions stated by the governors of the three coastal states, as expressed in their comments received in response to the RFI.

4.2.1 Washington/Oregon

One lease sale was held in 1964 in the Washington/Oregon Planning Area. Twelve exploratory wells were drilled, with no commercial discoveries. There are no existing leases. The area was under annual Congressional restrictions from Fiscal Year (FY) 1991 through FY 2008, and under presidential withdrawal from 1990 to July 2008.

4.2.2 Northern California

One lease sale was held in 1963 in Northern California. Seven exploratory wells were drilled, with no commercial discoveries. The area was under annual Congressional restrictions from FY 1982 through FY 2008 and under presidential withdrawal from 1990 to July 2008.

4.2.3 Central California

One lease sale was held in 1963 in Central California. Twelve exploratory wells were drilled, with no commercial discoveries. The area was under annual Congressional restrictions from FY 1991 through FY 2008 and under presidential withdrawal from 1990 to July 2008. Most of the OCS closest to the coast is designated as National Marine Sanctuaries (NMSs) and is under presidential withdrawal for a time period without specific expiration.

4.2.4 Southern California

Ten lease sales were held from 1963 through 1984 for Southern California. More than 1,500 exploratory and development wells have been drilled. As of December 1, 2017, there are 43 existing leases, all considered producing. Oil and gas production, which began in June 1968, totaled more than 1.35 billion barrels of oil (BBO) and 1.84 trillion cubic feet (Tcf) of natural gas through December 2016. Much of the area was under annual Congressional restrictions for new lease sales from FY 1985 through FY 2008 and under presidential withdrawal from 1990 until July 18, 2008. There also are producing leases in state waters, although no new state leases have been issued since 1969.

4.3 GULF OF MEXICO REGION PLANNING AREAS

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 the 26 OCS planning areas, with extensive existing infrastructure. 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 98 percent of all OCS oil and gas production. This high level of production and activity is supported by an oil and gas industry that includes hundreds of large and small companies, and an expansive onshore network of coastal infrastructure. The majority of the Eastern GOM Planning Area and a small portion of the Central GOM Planning Area are not available for leasing consideration through June 30, 2022, pursuant to GOMESA. There are existing leases in both the currently available and unavailable portions of the Eastern GOM. Those in the unavailable portion pre-date 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 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. There is production from leases in the Western and Central GOM planning areas, but as of December 1, 2017, no production has occurred from leases anywhere in the Eastern GOM Planning Area. See Part III for geologic play maps

and a discussion of estimated oil and gas resources by planning area. Figure 9-2 shows the general position on OCS oil and gas production stated by governors in the GOM Region, as expressed in the comments received in response to the RFI.

Internationally, the U.S and Mexico signed the *Agreement between the United States of America and the United Mexican States Concerning Transboundary Hydrocarbon Reservoirs in the Gulf of Mexico* (Agreement) in February 2012. It entered into force in July 2014. The Agreement sets out a framework for cooperating on joint exploration and exploitation of geological hydrocarbon structures and reservoirs that extend across the maritime boundary of the U.S. and Mexico, and the entirety of which are located beyond nine miles from the coastline. Accordingly, the U.S. and Mexico notify each other of planned activities within three statute miles of the limitation line. Mexico made constitutional amendments in December 2013, followed by legislation in August 2014, which opened oil and natural gas markets to foreign investments, including from entities that are active in the GOM. The first leases in the area covered by this agreement on the U.S. side 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 OCS.

4.3.1 Western Gulf of Mexico

As of December 1, 2017, there are approximately 437 existing leases in the Western GOM. More than 7,800 wells have been drilled. The most recent and first region-wide lease sale, Lease Sale 249, was held on August 16, 2017, and resulted in 23 Western GOM tracts being bid on with high bid bonuses totaling almost \$38 million. The State of Texas administers a robust oil and gas program in state submerged lands adjacent to this area.

4.3.2 Central Gulf of Mexico

As of December 1, 2017, there are approximately 2,356 existing leases in the Central GOM. More than 44,743 wells have been drilled. The most recent and first region-wide lease sale, Lease Sale 249, was held on August 16, 2017, and resulted in 67 Central GOM tracts being bid on with high bid bonuses totaling more than \$82 million. The states of Louisiana and Alabama administer robust oil and gas programs in state submerged lands adjacent to this area. There are no leases in Mississippi state submerged lands.

4.3.3 Eastern Gulf of Mexico

As of December 1, 2017, there are 37 existing leases in this area. Fourteen lease sales have been held in this planning area as it has been configured over the years and more than 100 wells drilled, with significant discoveries of natural gas. However, there has been no production in the planning area. The majority of this planning area is unavailable for leasing consideration through June 30, 2022, pursuant to GOMESA's moratorium. Lease Sale 224 in March 2008, a sale mandated by GOMESA, resulted in leases being awarded on 36 OCS blocks with bonuses totaling \$64.7 million. The most recent sale for the Eastern GOM, part of BOEM's first region-wide lease sale, Lease Sale 249, was held on August 16, 2017. No bids were received on tracts in the available area of the Eastern GOM.

4.4 ATLANTIC REGION PLANNING AREAS

The Atlantic OCS encompasses nearly 270 million acres, and includes the Atlantic offshore area extending north to Canada, east to the offshore territorial waters of the Commonwealth of the Bahamas, and south to the offshore territorial waters of Cuba. The area begins 3 miles off the Atlantic coast and extends at least to the edge of EEZ and beyond, where the continental shelf extends beyond the EEZ. Water depths in the Atlantic OCS range from approximately 12 feet to more than 18,000 feet.

The Atlantic Region is comprised of four planning areas (North Atlantic, Mid-Atlantic, South Atlantic, and the Straits of Florida) that have undergone numerous boundary changes over the years. There have been 10 Federal oil and gas lease sales in all or portions of this region, the most recent of which was held in 1983. A total of 410 leases were issued in the Atlantic, but there have been no active oil and gas leases since the mid-1990s, and although there were 51 wells drilled, there has been no hydrocarbon production from the Atlantic OCS. See Figure 5-6 for a map of the Atlantic geologic plays and oil and gas resource potential by planning area. Figure 9-2 shows the general positions stated by the governors of the coastal states, as expressed in comments received in response to the RFI.

The Final Atlantic G&G Programmatic EIS (BOEM 2014) was published on March 7, 2014, and the ROD was signed on July 7, 2014, with a Notice of Availability of the ROD published in the *Federal Register* on July 23, 2014 (79 FR 42815). In accordance with Secretarial Order 3350 (May 1, 2017), which implements President Trump's America-First Offshore Energy Strategy, the USDOJ will move forward in its evaluation of applications from six companies seeking permits to conduct G&G activities in the Atlantic Ocean. In 2017, the Acting BOEM Director reversed an earlier decision that summarily denied these G&G permit applications. Thus, at this time, several applications for G&G permits in the Atlantic are pending.¹³ See Chapter 5 regarding resource potential and G&G activities.

4.4.1 North Atlantic

Between 1976–1984, 43 exploratory wells were drilled in the currently configured planning area with no commercial discoveries. The area was under annual Congressional restrictions from FY 1984 through 2008, and under presidential withdrawal from 1990 through July 18, 2008. There are no existing oil and gas leases. There are eight renewable energy leases. The northern section of this planning area is adjacent to the offshore waters of the Canadian province of Nova Scotia, where there are existing exploratory permits. However, those that abut the U.S.-Canada boundary are within the Georges Bank Prohibited Zone, as declared by the Canada federal, and Nova Scotia, governments, where no activity is allowed to occur in Canadian waters through the end of 2022.

4.4.2 Mid-Atlantic

In 1984, one exploratory well was drilled in the current planning area, with no commercial discoveries. There are no existing oil and gas leases. There are five renewable energy leases. The area 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 lease sale for an area offshore Virginia was scheduled for 2011

¹³ See BOEM's website for updates: <https://www.boem.gov/Atlantic-G-and-G-Permitting/>.

in the 2007–2012 Program; however, the lease sale was cancelled by the Secretary in May 2010, and a notice of cancellation published in the *Federal Register* on July 28, 2010 (75 FR 44276). This planning area was analyzed in the Atlantic G&G Programmatic EIS and the Draft Programmatic EIS for the 2017–2022 Program, and G&G permit applications for the area are under review. A potential lease sale for a portion of this planning area was included in the 2017–2022 DPP decision, but subsequently removed in the 2017–2022 Proposed Program decision.

4.4.3 South Atlantic

Between 1979–1980, seven exploratory wells were drilled in the current planning area with no commercial discoveries. The area was subject to presidential withdrawal from 1998 to July 2008 and to annual Congressional restrictions from FY 1999 through FY 2008. This planning area was analyzed in the Atlantic G&G Programmatic EIS and the Draft Programmatic EIS for the 2017–2022 Program, and G&G permit applications for the area are under review. A potential lease sale for a portion of this planning area was included in the 2017–2022 DPP decision, but subsequently removed in the 2017–2022 Proposed Program decision.

4.4.4 Straits of Florida

Between 1960–1961, three exploratory wells were drilled, with no commercial discoveries. There are no existing oil and gas or renewable energy leases and the area has not been included in a National OCS Program since 1987–1992. No Congressional or Presidential restrictions on activity have been in place. There are existing exploratory licenses offshore Cuba and the Commonwealth of the Bahamas in the waters nearby to this planning area. Wells that were drilled in the past off both countries have not had commercial discoveries. In June 2014, Cuba signed agreements with Russian companies to further explore in Cuban waters. In 2017, Cuba ramped up its solicitation of foreign investment in its offshore, which is primarily in deep and ultra-deep water. Interest has been expressed by companies from Australia, Venezuela, Angola, and Canada. An exploration well could be drilled offshore the Bahamas in the next year by the Bahamas Petroleum Company.

Part III: Analysis and Results

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Chapter 5 Valuation of Planning Areas

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 considers 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 (i.e., areas are ranked from greatest to least amount of resources estimated to be economically recoverable). BOEM’s approach to resource assessment is designed to account for the uncertainty inherent in estimating undiscovered resources.

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

In conducting resource assessments, BOEM accounts for this uncertainty by applying risk to geologic plays and assessment units that do not have a proven petroleum system. BOEM subsequently reports estimates of undiscovered technically recoverable resources (UTRR) as “riskied.” The opportunity to drill wells in frontier areas can provide the empirical evidence necessary to determine the presence of hydrocarbons within the assessment units or geologic plays in these areas. In the event that hydrocarbons are encountered through well drilling, these geologic risks would be eliminated, resulting in a dramatic increase in UTRR estimates reported by BOEM in these frontier areas. For example, based on the *Assessment of Undiscovered Oil and Gas Resources of the Nation’s Outer Continental Shelf, 2016* (BOEM 2016a), referred to as the “2016 National Assessment,” the elimination of all petroleum system risk from conceptual plays on the Atlantic OCS could increase BOEM’s reported UTRR estimates by as much as 300 percent, which translates to a very significant upside regarding oil and gas resource potential on the Atlantic OCS.

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 2016 National Assessment. These estimates form the basis for the unleased UERR 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 changes in composition with increasing burial depth and temperature. Once generated and expelled from source rocks, the hydrocarbons migrate laterally and/or vertically into porous reservoirs that are associated with an impermeable trap or seal.

These petroleum system elements are not ubiquitous across the entire OCS. Thus, the assessment of hydrocarbon resources requires that geologic plays be delineated, which allows for the incorporation of petroleum system elements that reflect local geologic conditions. A geologic play is a group of geologically related potential or known hydrocarbon accumulations that share a common history of hydrocarbon generation, accumulation, and entrapment in a reservoir. BOEM defines two types of geologic plays in its resource assessment, as follows:

- **established play:** geologic play in which hydrocarbons have been discovered and a petroleum system has been proven to exist
- **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 could 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 (if undiscovered) 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 5-6 show the geologic plays analyzed in the 2016 National Assessment. 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 could overlap spatially because they exist at different depths below the sea floor and, in many cases, are stacked on top of each other. Therefore, the figures showing geologic play outlines do not represent the full, 3-D extent of an individual geologic play.

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; 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 (BBOE).

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 could be present in insufficient quantities or quality (low-permeability, “tight” reservoirs) to be produced by conventional recovery techniques.

Figure 5-1: Extent of Geologic Plays in the Beaufort Sea and Chukchi Sea Planning Areas

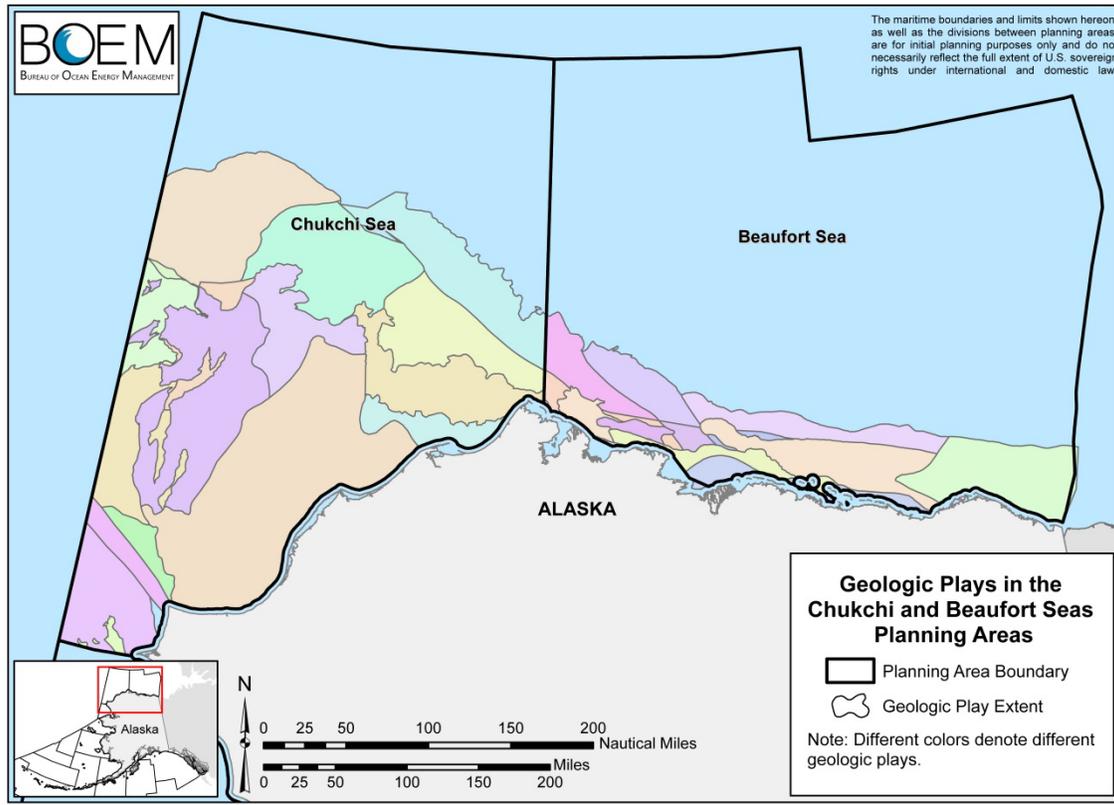


Figure 5-2: Extent of Geologic Plays in the North Aleutian Basin Planning Area

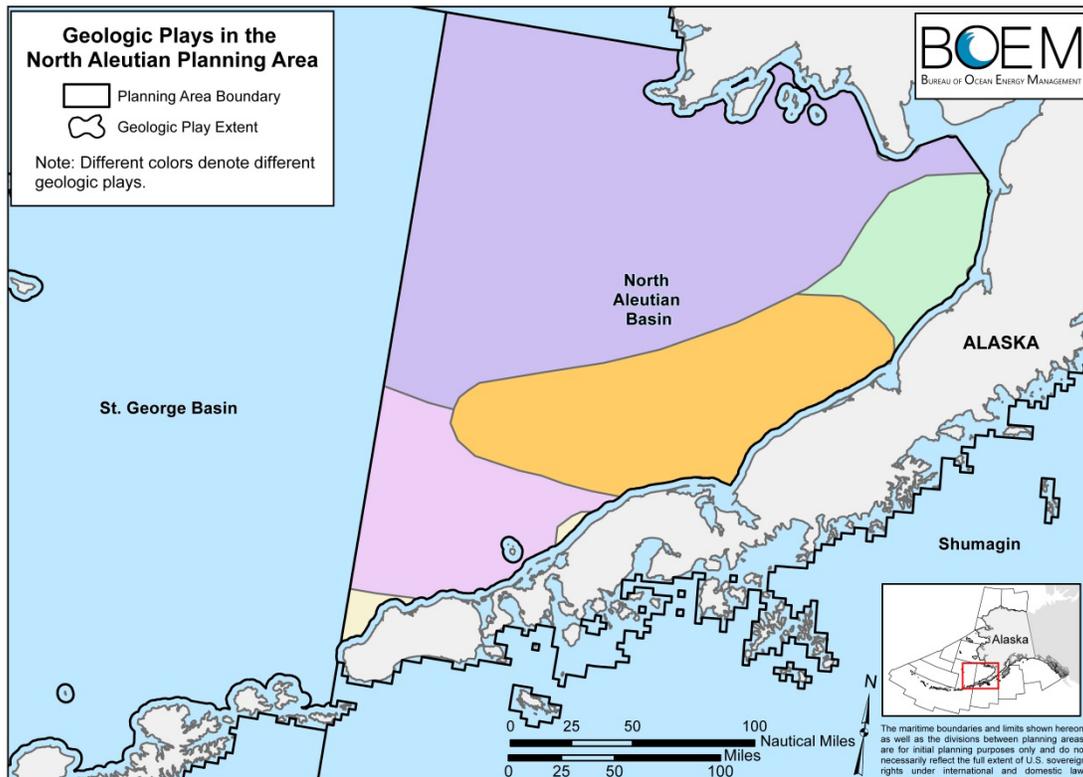


Figure 5-3: Extent of Geologic Plays in the Cook Inlet and Gulf of Alaska Planning Areas

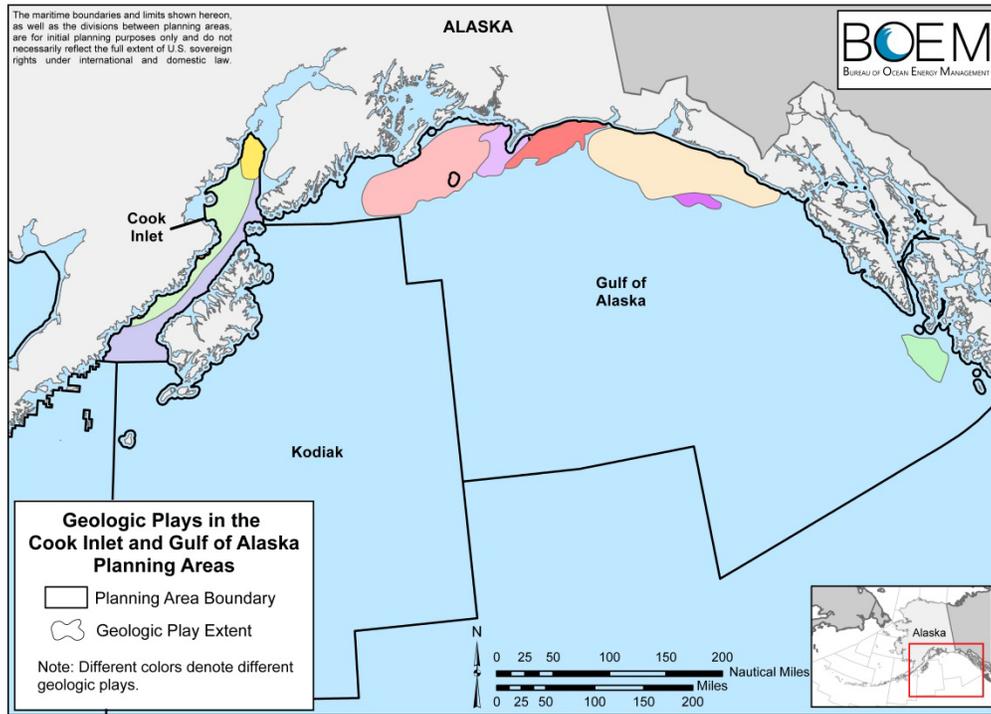


Figure 5-4: Extent of Geologic Plays in the Pacific Region Planning Areas

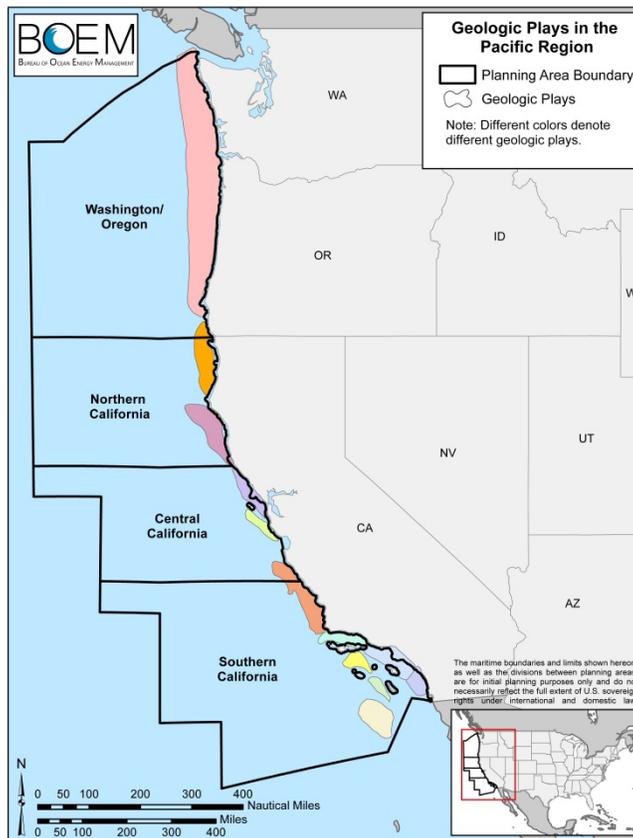


Figure 5-5: Extent of Geologic Plays in the Gulf of Mexico Region Planning Areas

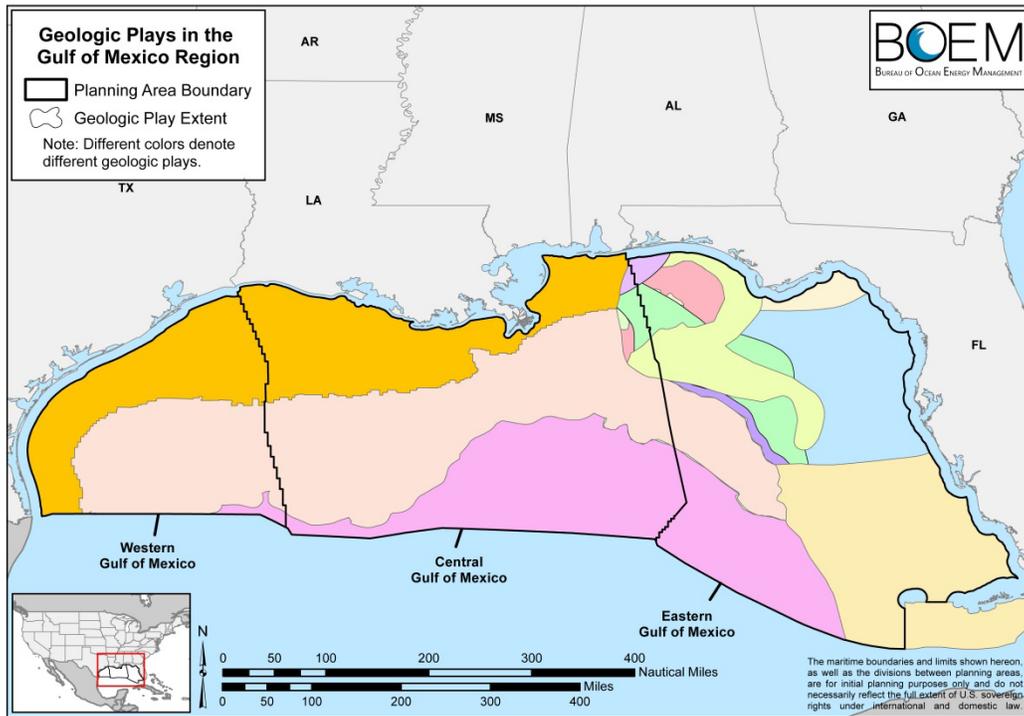
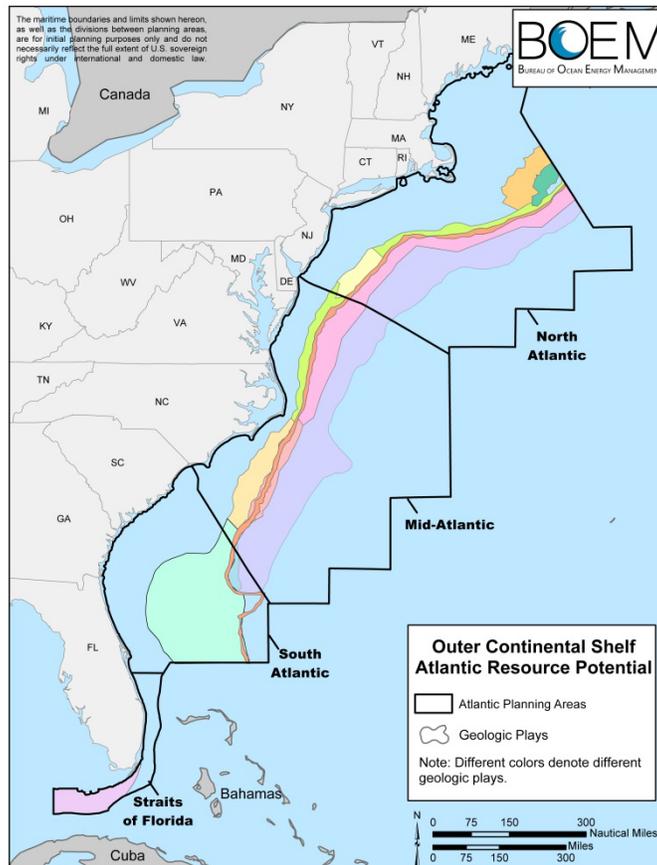


Figure 5-6: Extent of Geologic Plays in the Atlantic Region Planning Areas



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 is from mature plays (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's conceptual plays in the Alaska and Atlantic 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 geological, geophysical, 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 G&G 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 (2-D) seismic surveys often are designed to cover thousands of square miles or entire geologic basins as a means to assess large areas for hydrocarbon potential. In contrast, 3-D surveys can focus on a few to several hundred OCS blocks and provide higher resolution to evaluate hydrocarbon potential in structurally complex areas (often below salt) that may be poorly imaged on existing 2-D seismic surveys. In general, the acquisition and processing of marine seismic data is a complex process that often requires a significant time and cost investment measured in years and millions of dollars.

BOEM maintains an inventory of industry seismic data that includes more than 308,000 OCS blocks of 3-D coverage and 3.1 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 and approximately 74 percent of the 2-D seismic data on the OCS have been acquired in the GOM.

5.2.4 Uncertainty in Resource Assessment

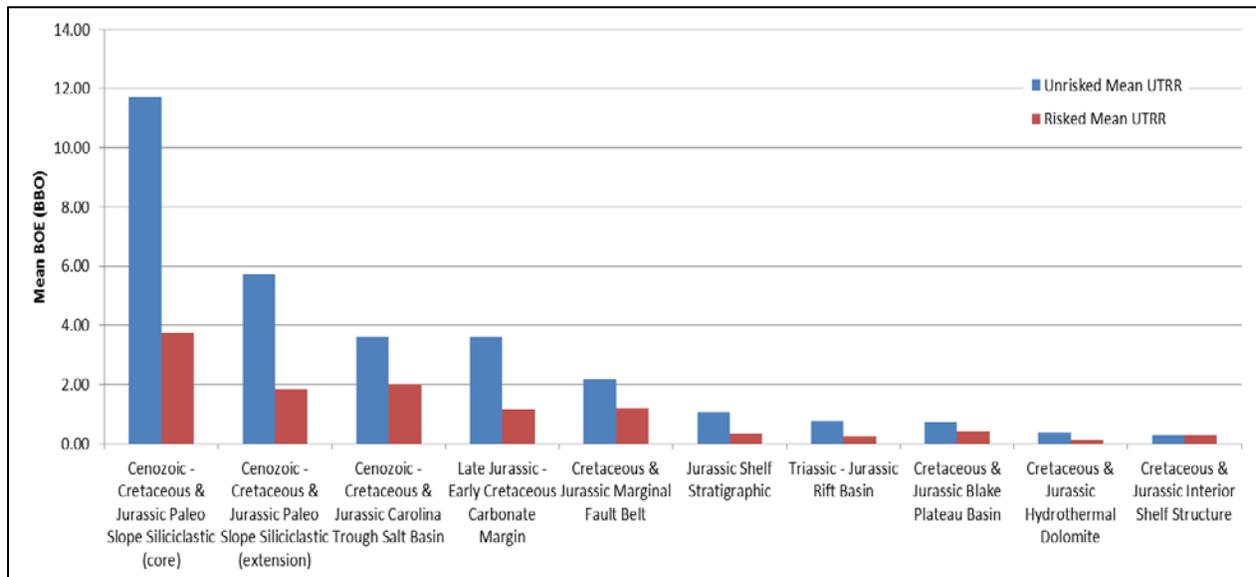
All methods of assessing potential quantities of technically and economically recoverable resources are efforts in quantifying a value that will not be reliably known until the resource is nearly depleted. Thus, there is considerable uncertainty intrinsic to any estimate, and resource estimates should 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 are often expressed qualitatively. 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. For the purpose of the DPP analysis, only the mean estimates of unleased UERR are used.

For this DPP analysis, estimates of unleased UERR are derived from a geologic play-based approach that spans large geographic areas. This approach differs from that which is used for individual OCS tract evaluations to determine the FMV of OCS blocks receiving bids in a particular lease sale. For the sale-specific evaluations, a more detailed prospect analysis is performed and subsequently subjected to economic parameters and fiscal regimes specific to the timing and location of that particular lease sale.

As mentioned in Section 5.1, BOEM accounts for uncertainty by applying risk to geologic plays and assessment units where a working petroleum system has not been proved and subsequently reports estimates of UTRR as “risky.” In the event that hydrocarbons are encountered through well drilling, these risks would be eliminated, resulting in a dramatic increase in UTRR estimates reported by BOEM in these frontier areas. To illustrate the influence of geologic risk on reported UTRR estimates, Figure 5-7 shows the magnitude of the upside UTRR potential on the Atlantic OCS if all petroleum system risk in conceptual plays were removed through successful drilling and field discovery.

Figure 5-7: Risked versus Undiscovered Resource Potential for the Atlantic OCS



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 a range of values 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.
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 size estimates and compare to the ranked sizes of discovered pools.
6. Generate potential resources of the play.

Volumetric estimates of 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 could be produced using conventional extraction techniques without any consideration of economic viability.

The UTRR estimates from the 2016 National Assessment provide the foundation from which UERR estimates are derived for the DPP analysis. The mean UTRR for each planning area is shown in Figure 5-8¹⁴. The 2016 National Assessment is available at <https://www.boem.gov/National-Assessment-2016/>.

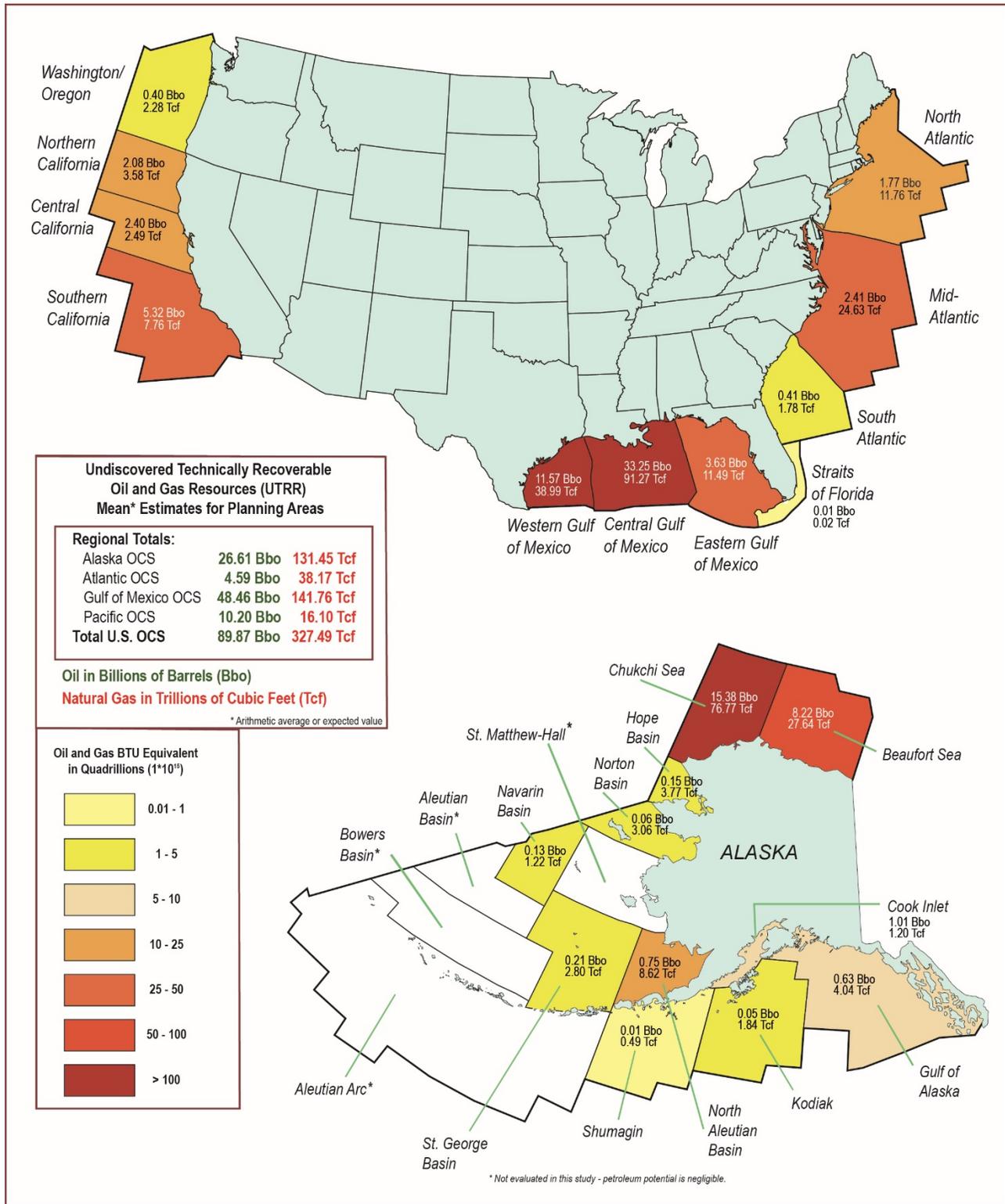
Following assessment of the UTRR, economic and petroleum engineering factors are included for each assessment area to estimate the portion of the UTRR that is economically recoverable over a broad range of commodity prices. UERR are defined as the portion of the UTRR that are economically recoverable 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 points¹⁵ 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 using the following methodology:

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

¹⁴ Pursuant to Secretarial Order 3352, BOEM is updating its assessment of nearshore Beaufort Sea resources based on new data from seismic surveys and drilling onshore and in state waters.

¹⁵ Because oil and gas typically are produced together, BOEM estimates UERR at specific combinations of oil and gas prices, or "price pairs."

Figure 5-8: Assessment of UTRR on the OCS, 2016



Note: UTRR include leased and unleased areas. Because geologic plays within the Straits of Florida are extensions of plays in the Eastern GOM, the UTRR for the Straits of Florida are included in GOM estimates.

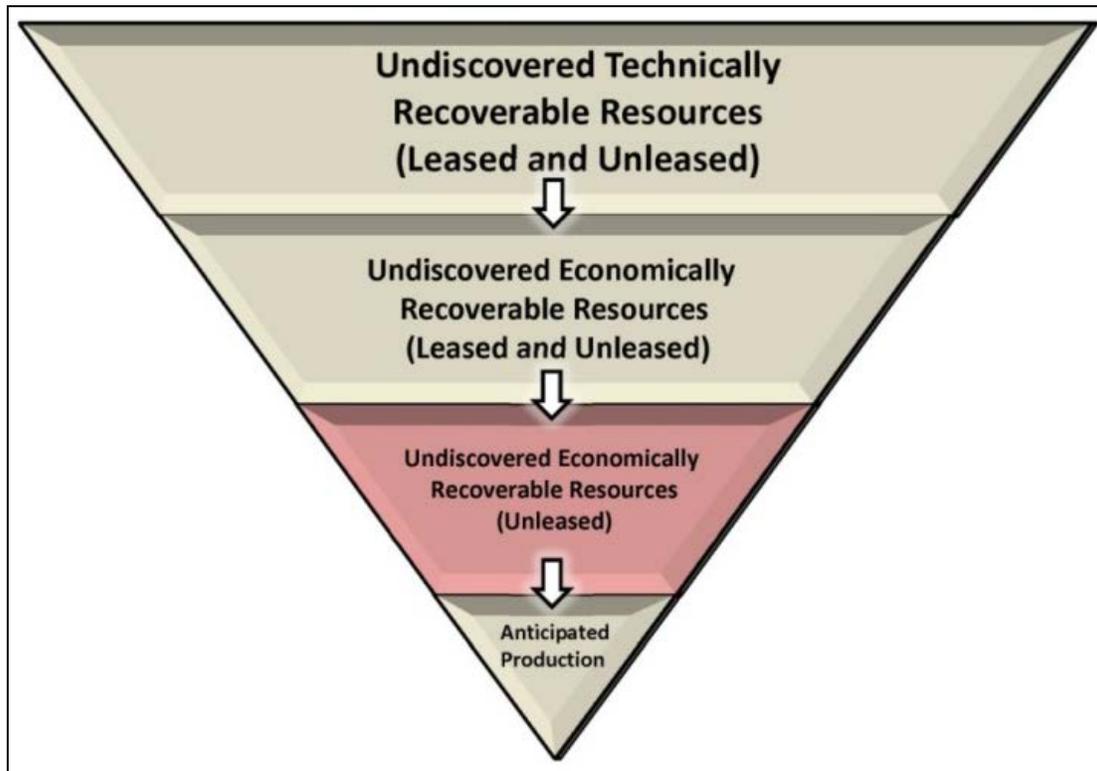
5.2.6 Unleased Undiscovered Economically Recoverable Resources

The DPP analysis requires an assessment of the UERR that are expected to be available for lease as of July 2019. BOEM considers the unleased UERR as of June 2017 as a proxy for this projection. In all OCS planning areas with active leases, BOEM takes into account leases that are expected to expire between June 2017 and July 2019 when developing unleased UERR estimates for the DPP.

This analysis follows a multi-step process listed below and is shown in Figure 5-9:

1. Assess all oil and gas that could be produced using conventional extraction techniques without any consideration of economic viability (this is the UTRR, as published in BOEM 2016a).
2. Reduce the UTRR to that portion of oil and gas resources that is economically recoverable under specified economic and technologic conditions, including prevailing prices and costs (this is the UERR, as published in BOEM 2016a).
3. Further reduce the UERR to only the portion expected to be available for lease as of July 2019.

Figure 5-9: Conceptual Workflow Showing Transition from UTRR to Anticipated Production



Note: For this DPP, only the unleased UERR (shown in pink) was considered for analysis. Anticipated production is considered for analysis in the subsequent Proposed Program and PFP.

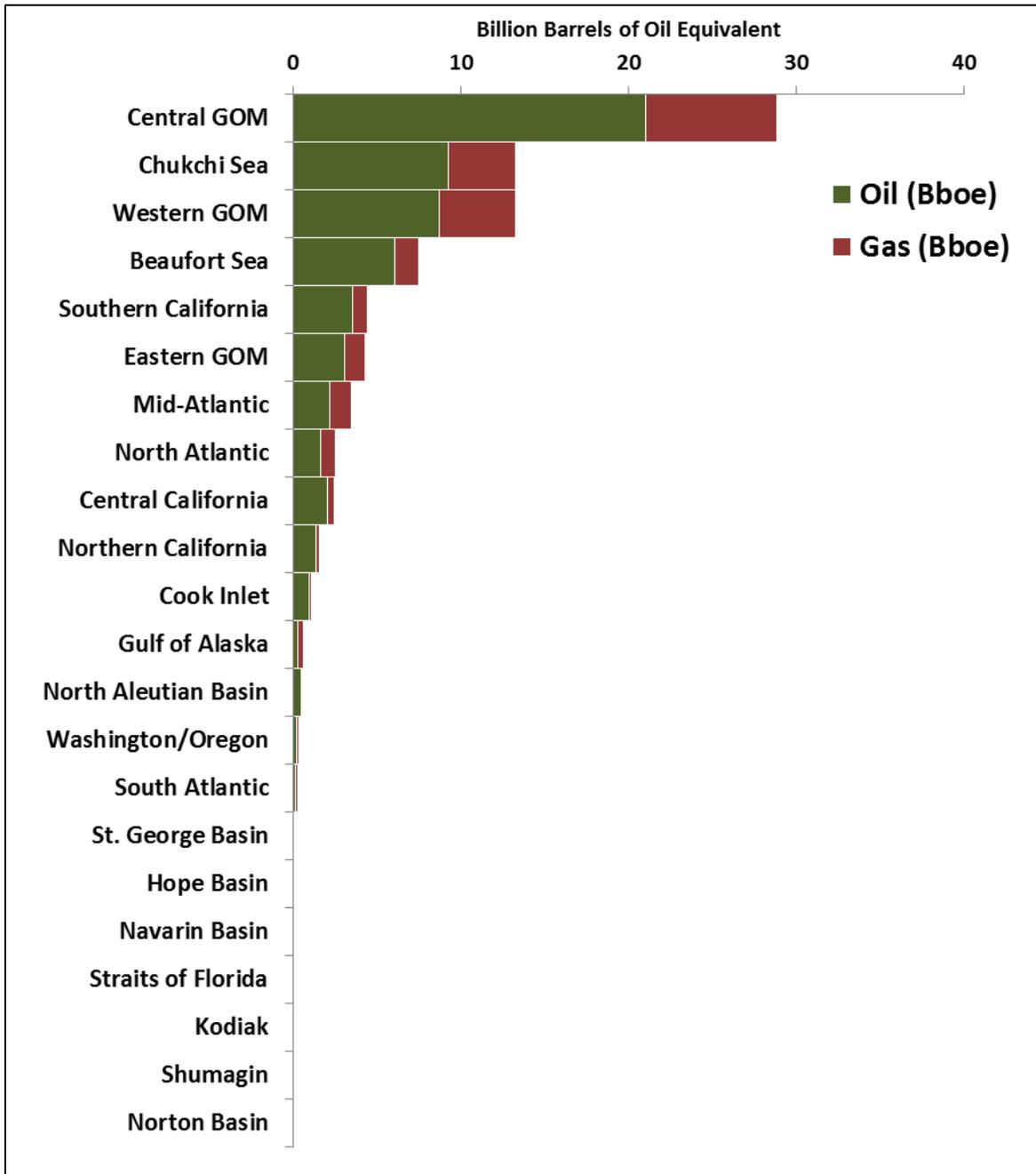
Figure 5-10 shows the relative ranking of the planning areas based on the estimates of unleased UERR in BOE for an inflation-adjusted oil price of \$100/bbl and an inflation-adjusted natural gas price of \$5.34/thousand cubic feet (mcf).¹⁶ The planning areas are ranked from those with the largest amount of resources to those with the least. These UERR-based rankings take into account the geologic risk associated with finding oil and gas on the OCS. As explained in Section 5.2.4, the UERR estimates associated with underexplored and/or underdeveloped areas on the OCS would significantly increase following successful well drilling and field discovery. BOEM analyzed all 26 planning areas for resource potential. Eleven planning areas, preliminarily analyzed and estimated to have negligible resources or negligible development value, are not analyzed further in the DPP hydrocarbon and economic analyses. Of these 11 planning areas, seven areas have measured resource potential, but negligible development value. These are the St. George Basin, Kodiak, Shumagin, Navarin, Norton, and Hope Basin planning areas in the Alaska Region, and the Straits of Florida Planning Area in the Atlantic Region. Four of the planning areas (Aleutian Arc, Aleutian Basin, Bowers Basin, and St. Matthew-Hall planning areas, all in the Alaska Region) are excluded from the further DPP hydrocarbon and economic analysis because they are estimated to contain negligible resource quantities.

To account for some of the uncertainty surrounding oil and natural gas prices and the possibility that prices can change greatly during development and implementation of a National OCS Program, the DPP analysis is conducted using three different price scenarios and corresponding sets of resource estimates. The unleased UERR for the 22 OCS planning areas with non-negligible resource estimates are displayed in Table 5-1 at the three different price scenarios. The price scenarios are based on price pairs of \$40/bbl (\$2.14/mcf), \$100/bbl (\$5.34/mcf), and \$160/bbl (\$8.54/mcf).¹⁷ The estimate of resources is provided at each of these three price cases to show the different level of available resources at three different sets of energy market conditions/activity levels. The price scenarios are discussed in more detail in Appendix B. Table 5-1 shows the ranking of the planning areas in order of unleased BOE resources in the \$100 oil price case. All values in table are reported in BBOE.

¹⁶ Prices are discussed in Price Level Assumptions in Appendix B. BOEM uses three inflation-adjusted price cases to represent the great uncertainty in oil and natural gas price levels. Values shown in the figure are in BBOE.

¹⁷ The price pairs reflect possible levels over the life of production from the National OCS Program rather than near-term prices, and the mid-range price is roughly comparable to EIA's projections for the 15–20 years after the early sales would occur (EIA 2017).

Figure 5-10: Unleased UERR by Planning Area (\$100 Oil Price Case)



Notes: The \$100 price case assumes an inflation-adjusted price of \$100/bbl for oil and \$5.34/mcf for natural gas over the life of the 2019–2024 Program. Aleutian Arc, Aleutian Basin, Bowers Basin, and St. Matthew-Hall planning areas are estimated to contain negligible resource quantities and are not shown in this figure.

Table 5-1: Unleased UERR as of July 2019, Ranked by BOE for the \$100 Oil Price Case

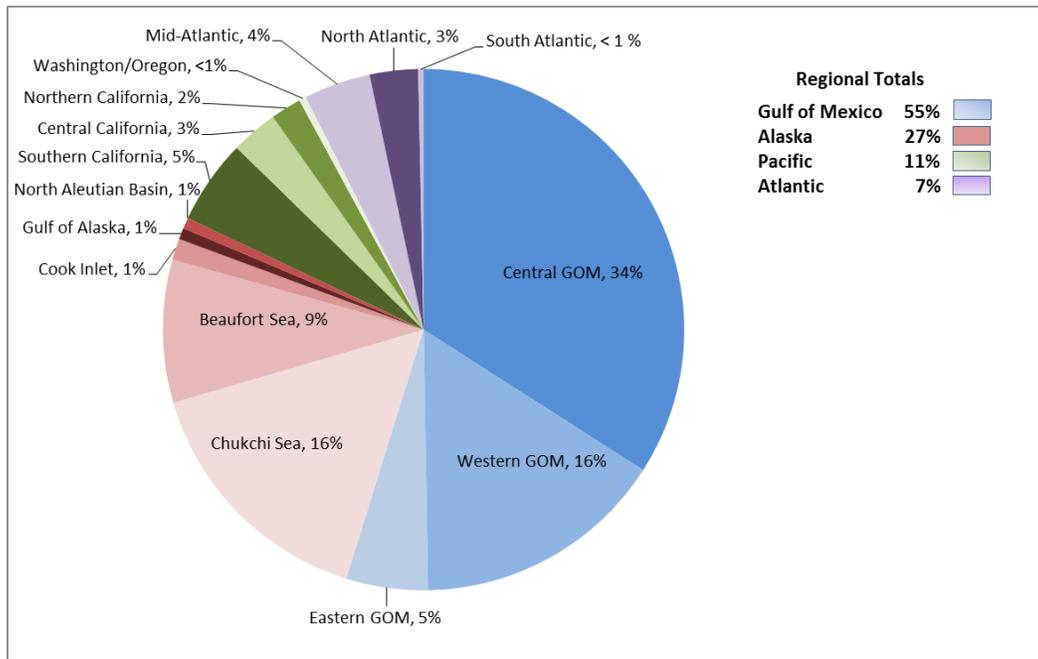
Rank	Planning Area	Oil (Bbo)			Gas (Tcf)			BOE (Bboe)		
		\$40/bbl, \$2.14/mcf	\$100/bbl, \$5.34/mcf	\$160/bbl, \$8.54/mcf	\$40/bbl, \$2.14/mcf	\$100/bbl, \$5.34/mcf	\$160/bbl, \$8.54/mcf	\$40/bbl, \$2.14/mcf	\$100/bbl, \$5.34/mcf	\$160/bbl, \$8.54/mcf
1	Central GOM	17.20	20.99	21.90	26.46	43.95	49.49	21.91	28.81	30.71
2	Chukchi Sea	0.07	9.25	12.61	0.06	22.58	40.63	0.08	13.27	19.84
3	Western GOM	6.99	8.69	9.10	14.91	25.68	28.76	9.64	13.26	14.22
4	Beaufort Sea	1.02	6.06	7.07	0.66	8.07	12.61	1.13	7.50	9.31
5	Southern California	2.45	3.58	3.87	3.47	4.84	5.26	3.07	4.44	4.81
6	Eastern GOM	2.55	3.06	3.19	5.14	6.91	7.65	3.46	4.29	4.55
7	Mid-Atlantic	1.89	2.18	2.25	2.41	7.42	10.29	2.32	3.50	4.08
8	North Atlantic	1.48	1.64	1.68	2.45	5.05	6.24	1.92	2.54	2.79
9	Central California	1.63	2.08	2.18	1.71	2.17	2.27	1.93	2.47	2.58
10	Northern California	0.83	1.34	1.50	0.91	1.52	1.77	0.99	1.61	1.81
11	Cook Inlet	0.81	0.98	1.00	0.33	0.77	1.03	0.87	1.12	1.18
12	Gulf of Alaska	0.00	0.31	0.47	0.01	1.62	2.73	0.00	0.60	0.96
13	North Aleutian Basin	0.33	0.51	0.55	0.13	0.34	0.86	0.35	0.57	0.70
14	Washington/Oregon	0.14	0.23	0.26	0.46	0.79	0.93	0.22	0.37	0.43
15	South Atlantic	0.09	0.18	0.22	0.20	0.52	0.69	0.13	0.27	0.34
16	St. George Basin	0.02	0.10	0.13	0.02	0.15	0.66	0.02	0.13	0.25
17	Hope Basin	0.01	0.06	0.08	0.02	0.17	0.90	0.01	0.09	0.24
18	Navarin Basin	0.00	0.05	0.07	0.00	0.12	0.30	0.00	0.07	0.12
19	Straits of Florida	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
20	Kodiak	0.00	0.00	0.02	0.00	0.02	0.54	0.00	0.00	0.12
21	Norton Basin	0.00	0.00	0.01	0.00	0.00	0.40	0.00	0.00	0.08
22	Shumagin	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00

Note: All price scenarios represent a constant, inflation-adjusted price throughout the life of the 2019–2024 Program. The Aleutian Arc, Aleutian Basin, Bowers Basin, and St. Matthew-Hall planning areas contain negligible hydrocarbon resources and are not shown in this table.

Key: Bbo= billion barrels of oil; bbl=barrels of oil, BBOE=billion barrels of oil equivalent, BOE=barrel of oil equivalent, mcf=thousand cubic feet of natural gas, Tcf=trillion cubic feet of natural gas, UERR=undiscovered economically recoverable resources.

Figure 5-11 shows the portion of total unleashed UERR for each of the 15 fully analyzed planning areas at the \$100 oil price case. The three GOM planning areas (Central, Western, and Eastern) contain 55 percent of the total \$100 oil price case UERR, with 34 percent of the total unleashed UERR in the Central GOM Planning Area. The five Alaska planning areas included herein contain approximately 27 percent of the total unleashed UERR, with the Alaskan Arctic (Beaufort Sea and Chukchi Sea planning areas) containing 25 percent.¹⁸ The four Pacific planning areas (Washington-Oregon, Northern California, Central California, and Southern California) contain 11 percent, and the three Atlantic planning areas (South, Mid-, and North Atlantic) contain 7 percent.

Figure 5-11: Unleashed UERR by Planning Area (\$100 Oil Price Case)



Notes: St. George Basin, Kodiak, Navarin Basin, Hope Basin, Shumagin, Norton Basin, and Straits of Florida planning areas are excluded from this figure because they have only negligible development value and less than 0.5 percent of available UERR. Aleutian Arc, Aleutian Basin, Bowers Basin, and the St. Matthew-Hall planning areas are estimated to have only negligible resources and are excluded from this figure. Numbers may not sum due to rounding.

5.2.7 Exploration and Development Scenarios

Because the DPP analyses are conducted before the first programmatic decision (the DPP decision), BOEM provides the Secretary with relative rankings of planning areas, based on estimated unleashed UERR quantity and value.¹⁹ These rankings will assist the Secretary in his decision as to which planning areas should be further considered in the preparation of the new National OCS Program. To estimate the social value of planning area resources, it is necessary to calculate both the economic value and the social costs of obtaining them. To estimate these costs, BOEM constructs exploration and development (E&D) scenarios, which describe the development and production activities required to explore for, extract, and transport to market the resources estimated within a planning area. To avoid presupposing Secretarial decisions on the timing of lease sales, the scenarios assume that all currently available (unleashed) UERR

¹⁸ Numbers do not sum to 100 percent due to rounding.

¹⁹ Subsequent analysis performed at the Proposed Program and PFP stages focus on the value of production and related activities anticipated to result from each decision option, based on forthcoming Secretarial decisions.

are leased during the initial year of the National OCS Program (2019) and then explored, developed, and produced expeditiously while taking into account the basic constraints (for example, available infrastructure, seasonal closures) of the particular region. For the DPP analyses, three E&D scenarios are constructed for each of the 15 planning areas with estimated development value, based on the full unleased UERR within each planning area. The three scenarios reflect different sets of assumptions regarding prevailing oil and gas prices. The E&D scenarios provide a quantitative analysis of activities expressed in aggregated terms. Some examples include exploration wells drilled, production wells drilled, platforms installed and removed, pipelines installed, and oil and gas produced at the \$40, \$100, and \$160 oil price cases. The aggregate values and scenarios are calculated by assuming hypothetical schedules of activities that recognize historical trends and regional differences. The schedules of activities cover exploration, development, production, and transportation of the UERR. The activity estimates derived from the E&D scenarios are used for the comprehensive analyses that describe the range of direct and indirect social, economic, and environmental impacts that could result from lease sales proposed in the National OCS Program. Historical leasing trends, drilling trends, oil and gas discovery volumes, production activity, and other BOEM short-term forecasts are analyzed to generate the data and information used in the development of E&D scenarios.

The DPP decision is the initial decision for the National OCS Program development process. All subsequent analyses (i.e., for the Proposed Program and PFP) require E&D scenarios based on anticipated production for the specified Program Options rather than the UERR. Table 5-2 provides a summary of the differences in foundational composition of the E&D scenarios for each of the program development phases.

Table 5-2: Development of Oil and Gas Exploration and Development Scenarios

National OCS Program Analytical Phase	E&D Scenario Description
Draft Proposed Program	E&D scenarios are based on all UERR in all unleased blocks in all 15 planning areas.
Proposed Program	E&D scenarios are based on anticipated production in each program area for each Program Option for the Proposed Program analysis. In addition, there are two sets of scenarios for the Programmatic EIS. Single Lease Sale case – E&D scenario is based on anticipated production and activity based on a “typical” sale in each program area for which multiple sales are proposed. Cumulative case – E&D scenario is based on future activities resulting from all lease sales, including past sales, sales in the current National OCS Program, and all future sales.
Proposed Final Program	Similar to the Proposed Program phase, E&D scenarios are based on anticipated production in each program area for each of the Program Options included for the PFP analysis.

5.3 NET SOCIAL VALUE

The NSV analysis is one of several analyses employed by the Secretary in considering the Section 18 factors. The NSV analysis provides the Secretary with a quantitative ranking of planning areas based on resources and the economic, environmental, and social costs required to extract those resources. The analysis looks at the NSV associated with the resources in each planning area by computing the benefits less private, social, and environmental costs of extracting these resources. This quantitative ranking compares planning areas and assumes the ultimate recovery of all UERR estimated to be available as of July 2019, as shown in Table 5-1. For the purpose of this ranking, the NSV analysis presented here assumes that all UERR currently unleased will be leased during the initial year of the National OCS Program (2019) and then explored, developed, and produced. As noted in Figure 5-8, this differs from future stages of National OCS Program analysis when BOEM considers only production anticipated to be leased in the proposed lease sales. 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 DPP decision. Hence, the benefits and costs derived from these previously leased resources are not included in this analysis.

The NSV analysis for the DPP is presented without pre-supposing any decision on the size, timing, and location of lease sales. Accordingly, the NSV is an appraisal of each planning area's value after considering the resources and the costs associated with extracting those resources. This information is used in preparation for the Secretary's initial decision on size, timing, and location of lease sales for the 2019–2024 Program. The results of the NSV analysis, included in Sections 5.3.3 and 5.3.4, are presented in the form of a ranking of planning areas by NSV.

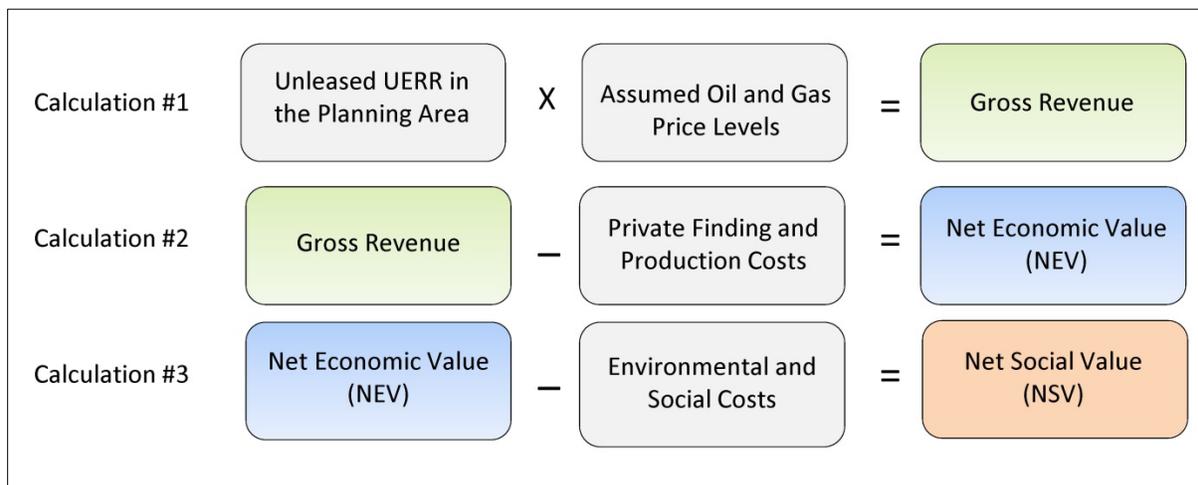
All 26 OCS planning areas are included in the DPP analysis of hydrocarbon and economic potential, but 4 of the planning areas are estimated to have negligible resources and 7 others to have negligible development potential. Therefore, NSV is only calculated for the remaining 15 planning areas, all of which have more than 100 million BOE at the inflation-adjusted price-pairing of \$100/bbl oil and \$5.34/mcf of natural gas.

The three-step NSV calculation is fully explained in Appendix B. Results of the NSV analysis are shown at three distinct price levels, discounted at a rate of 3 percent, representing the estimated available resources at those price levels. The three price levels are designed to provide planning area-specific information to the Secretary of the value of OCS resources under three different sets of energy market conditions.

The first stage (shown as calculation number 1 in Figure 5-12) of the NSV analysis calculates potential gross revenues by multiplying the unleased UERR associated with each price level by the applicable oil and gas prices related to the specific price level. The second stage (shown as calculation number 2 in Figure 5-12) in the calculation subtracts the private costs of exploration, development, production, and transportation of the UERR from gross revenues to find the NEV. The third stage (shown as calculation number 3 in Figure 5-12) in the analysis subtracts the external costs from the NEV. The external costs are the environmental and social costs that companies do not generally pay for but are still associated with the exploration, development, production, and transportation of resources from the OCS, as described in

Section 5.3.2. The resulting value is the NSV. Each component of the NSV analysis is briefly described below along with a ranking of planning areas at each stage under the \$100/bbl oil price case.

Figure 5-12: Components of the DPP Net Social Value Analysis



5.3.1 Net Economic Value Calculation

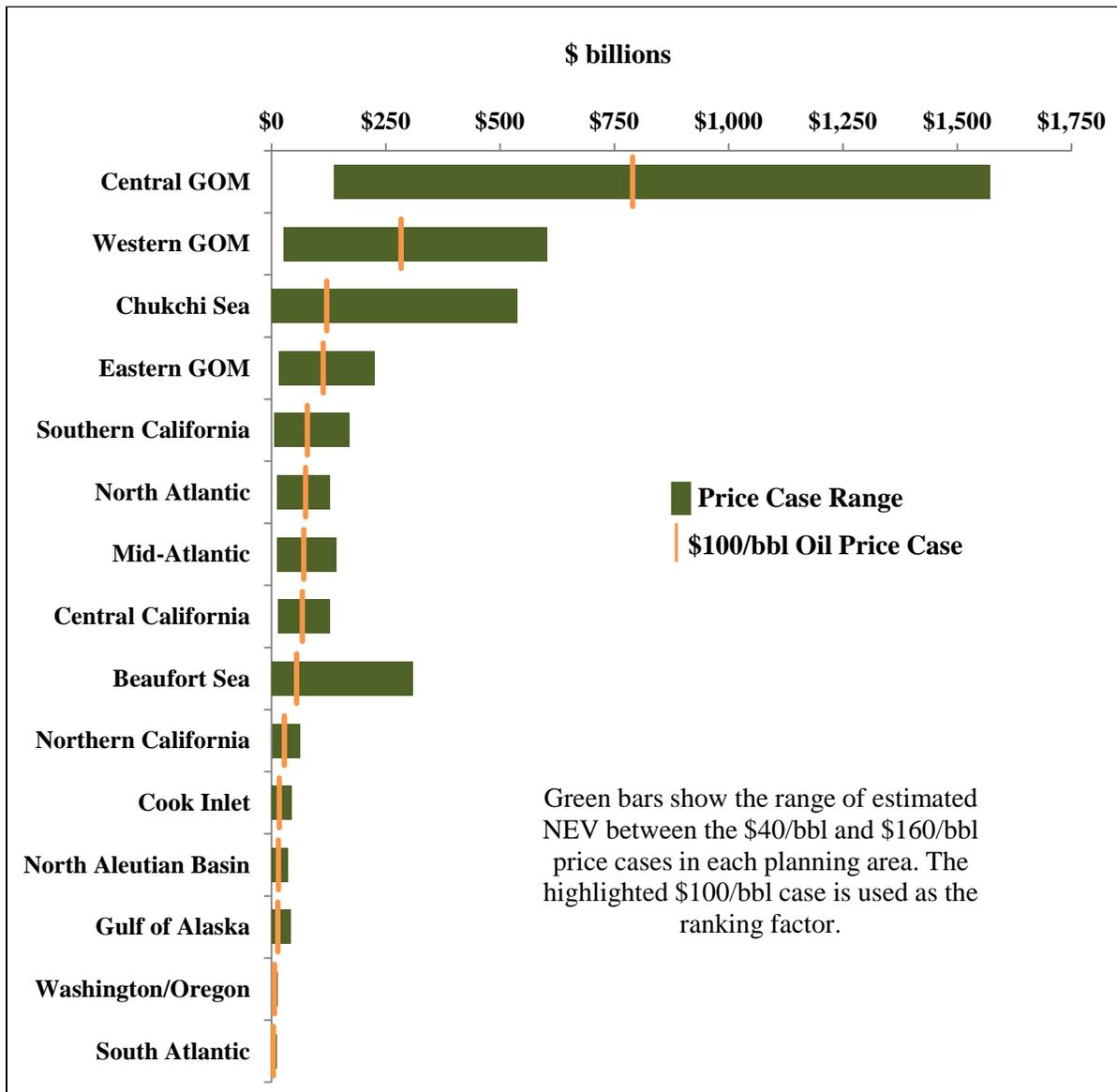
The NEV is the private value to society derived from developing hydrocarbon resources found in the OCS. The NEV equals the discounted gross revenues from the produced oil and natural gas minus the costs required to realize the economic value of the resources. These costs include the discounted costs 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 all available unleased UERR. A portion of the NEV goes to the U.S. government, as lessor, in the form of bonus bids, rents, royalties, and taxes. The lessees, as private firms, retain the remainder of NEV as economic profits that can be distributed to shareholders around the country.²⁰

Figure 5-13 shows the range of estimated NEV for each of the 15 planning areas between the \$40/bbl oil and \$160/bbl oil price cases. The areas are ranked based on NEV under the \$100/bbl oil price case, which is indicated in the figure with the orange line.

The NEV ranking of planning areas is slightly different than the resource rankings presented in Table 5-1. For example, the Chukchi Sea and Beaufort Sea planning areas rank second and fourth in total resources, but drop to third and ninth in the ranking of NEV, respectively. Considerable operational challenges drive higher operating costs in the Arctic, which generate a lower NEV per BOE produced. In contrast, mature areas like the GOM generally have lower operating costs, and thus generate a higher NEV.

²⁰ Appendix B discusses the 0.95 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 this DPP analysis, is only the domestic value.

Figure 5-13: Net Economic Value Ranges by Planning Area (Ranked by \$100/bbl Oil Price Case)



Notes: Estimated NEV is provided as a range from the \$40/bbl oil price case to the \$160/bbl oil price case. The \$100/bbl oil price case is represented in between by the orange line. Each of these price cases assumes an inflation-adjusted price for oil and for natural gas. St. George Basin, Kodiak, Navarin Basin, Hope Basin, Shumagin, and Norton Basin planning areas in Alaska and the Straits of Florida Planning Area are excluded from this figure because they have an estimated negligible development value. Aleutian Arc, Aleutian Basin, Bowers Basin, and the St. Matthew-Hall planning areas are excluded from this figure because they are estimated to contain only negligible resources. The Gulf of Alaska, Chukchi Sea, and South Atlantic planning areas have negligible developmental value at \$40/bbl oil price case and are not modeled; instead, they are shown as 0 at the \$40/bbl oil price case. All values are discounted at a real discount rate of 3 percent.

Similar to the resource-to-price relationship, the NEV-to-price relationship is not linear. While costs do rise as prices increase, higher prices prompt companies to pursue resources that are more difficult and more expensive to develop and produce. If prices advance toward the levels of the \$160/bbl oil price case, they will allow for a mix of lower-cost and higher-cost fields to be developed at the same time. Conversely, if prices settle near or below the \$40/bbl oil price case, as they did in late 2015 into 2016, companies will focus more of their efforts on the most profitable projects. Given the differences in resources and costs under the different price cases, the estimates of NEV for each area and price case are provided in the first three columns of Table 5-3.

While the NEV analysis treats the private expenditures from exploration, development, production, and transportation as costs, this spending can 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 contributes to the national income. Also, this spending generates regional economic impacts and multiplier effects that arise from factors such as the creation of jobs and investment in infrastructure. Additional benefits of OCS production are addressed in Appendix B under the discussion of non-monetized benefits.

5.3.2 Environmental and Social Costs Calculation

Beyond the private costs used to calculate the NEV, society incurs environmental and social costs from the activities and facilities associated with OCS oil and natural gas exploration and development. These can include, but are not limited to, impacts on air quality, water quality, commercial fisheries, and beach recreation. BOEM uses its in-house Offshore Environmental Cost Model (OECM) to calculate the environmental and social costs associated with OCS oil and gas activity. The OECM was developed in 2001, revised substantially in 2012, and underwent minor revisions in 2014.²¹ 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.

While the model captures a wide range of environmental and social costs, it is not designed to represent impacts on unique resources such as threatened or endangered species, nor on cultural values that are not reflected in market transactions. These types of impacts are discussed in Chapter 7 and will be discussed in more detail in the Programmatic EIS prepared in conjunction with the Proposed Program. Further, these impacts could be subject to mitigation measures at later stages in the development 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 NSV 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 risk and impact of catastrophic oil spills are not considered in the NSV analysis. Catastrophic oil spills are discussed and considered in Chapter 7

²¹ A discussion of the OECM is included in the Economic Analysis Methodology paper (BOEM 2016b), as well as *Forecasting Environmental and Social Externalities Associated with Outer Continental Shelf (OCS) Oil and Gas Development - Volume 1: The 2015 Revised Offshore Environmental Cost Model (OECM)* (Industrial Economics, Inc. and SC&A, Inc. 2015a).

and in the following papers: *Economic Inventory of Environmental and Social Resources Potentially Impacted by a Catastrophic Discharge Event within OCS Regions* (BOEM 2014), *Forecasting Environmental and Social Externalities Associated with Outer Continental Shelf (OCS) Oil and Gas Development – Volume 2: Supplemental Information to the 2015 Revised Offshore Environmental Cost Model (OECM)* (Industrial Economics and SC&A 2015b), and Economic Analysis Methodology paper (BOEM 2016). Additional information related to catastrophic oil spills, including but not limited to potential impacts on endangered species, will be analyzed at the Proposed Program and PFP stages in the Programmatic EIS.

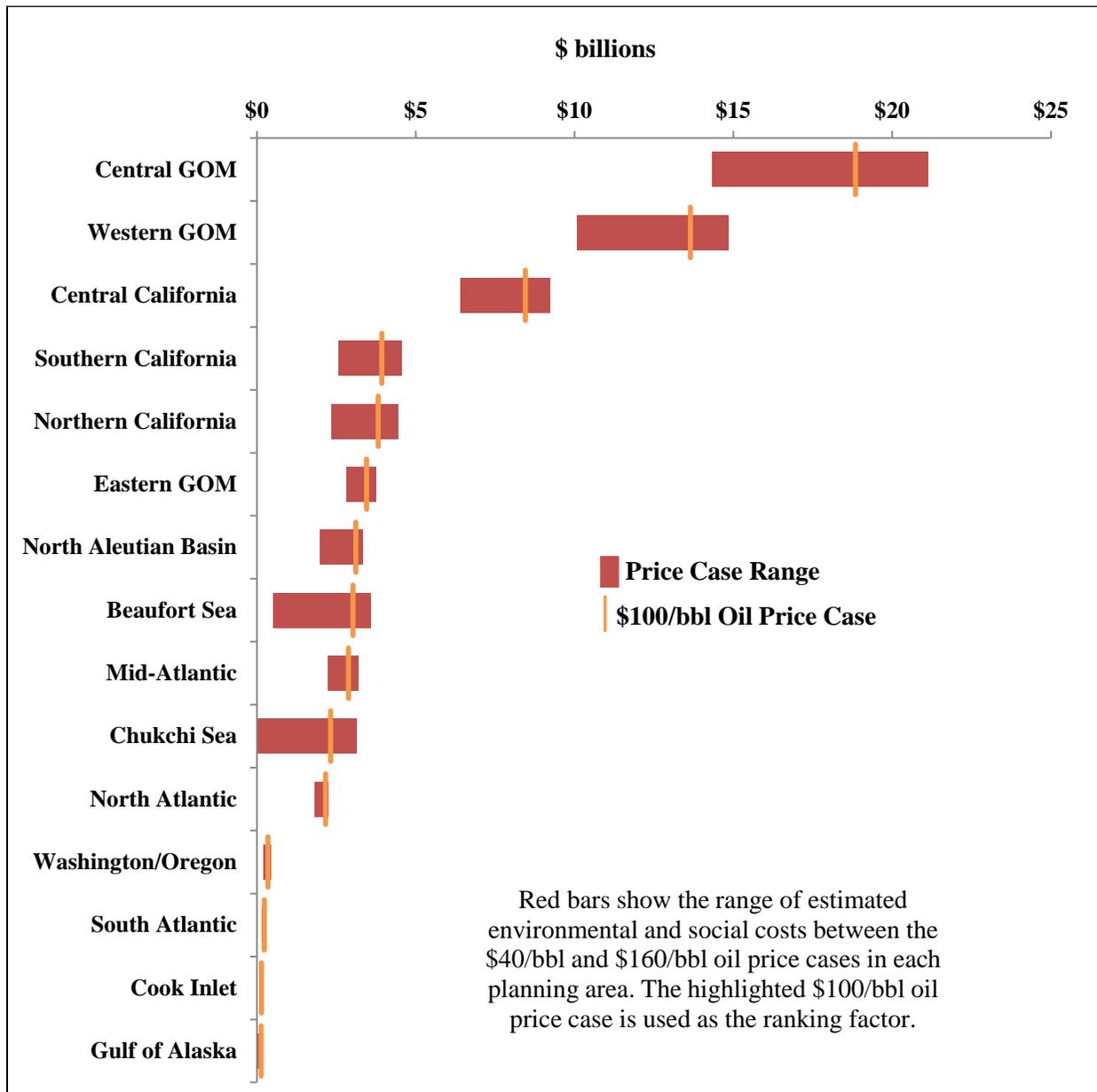
Figure 5-14 shows a ranking of the range of environmental and social costs for the three price levels based on the environmental and social costs of the \$100/bbl oil price case. The environmental and social costs for each of the three different price cases are also shown in the middle three columns of Table 5-2 in Section 5.3.4. The OECM results for total environmental and social costs originating from OCS activities are subtracted from the NEV to calculate the NSV. Additional information about the calculation of the environmental and social costs can be found in Appendix B.

The ranking of the planning areas in terms of environmental and social costs in Figure 5-14 varies from their rankings based on UERR resources in Figure 5-9. Notably, the Arctic planning areas (the Beaufort Sea and Chukchi Sea planning areas) rank eighth and tenth in total environmental and social costs, but rank fourth and second in UERR, respectively. The Mid-Atlantic Planning Area, which ranks seventh in UERR, ranks ninth in environmental and social costs. The ranking differences stem from the relative environmental and social impact of OCS activities in the different planning areas. For example, recreation and air quality impacts are two of the largest monetized components of the OECM and vary widely between planning areas. Additionally, an oil spill in the Mid-Atlantic Planning Area could threaten recreational activities, but a spill of equal magnitude in the Arctic potentially would not have the same effect on activities such as recreational fishing and beach visitation because fewer people participate in these activities in the Arctic. As such, the OECM will show a greater reduction in social welfare in the Mid-Atlantic Planning Area when compared to the Arctic even though the Arctic would incur other costs such as damages to subsistence harvests.

The OECM contains an air quality model based on the Air Pollution Emission Experiments and Policy Analysis Model (now called AP2) that evaluates the onshore damages caused by dispersed criteria pollutants emitted offshore. Because the Mid-Atlantic seaboard is more developed and populous than the Arctic, air emissions create larger monetized environmental impacts on human health, agriculture, and material damage. Also, the model monetizes potential subsistence harvest impacts from those spills modeled in the OECM (of less than 100,000 barrels) for Alaska, but not for other regions.²² Additional information on the OECM environmental and social cost components and calculations is included in Appendix B, as well as the OECM model documentation.

²² The OECM is limited to subsistence harvests in Alaska planning areas because of the relative importance of subsistence harvests in Alaska and the availability of Alaskan subsistence harvest data (Industrial Economics, Inc. et al. 2015). Although other OCS regions have some subsistence harvests, data of the type needed for the OECM are not available. BOEM continues to review existing information on subsistence harvests in other regions, and if data on the scope and value of these harvests become available, BOEM can modify the OECM to incorporate these impacts. Some information on the presence of subsistence harvests in the other regions is discussed in the separate report, *Forecasting Environmental and Social Externalities Associated with Outer Continental Shelf (OCS) Oil and Gas Development – Volume 2: Supplemental Information to the 2015 Revised Offshore Environmental Cost Model (OECM)* (Industrial Economics, Inc. and SC&A, Inc. 2015b).

Figure 5-14: Environmental and Social Costs by Planning Area (Ranked by \$100/bbl Oil Price Case)



Notes: The range of estimated environmental and social costs is shown from the \$40/bbl oil price case to the \$160/bbl oil price case. The \$100/bbl oil price case is represented in between by the orange line. Each of these price cases assumes an inflation-adjusted price for oil and for natural gas. St. George Basin, Kodiak, Navarin Basin, Hope Basin, Shumagin, and Norton Basin planning areas in Alaska and the Straits of Florida Planning Area are excluded from this figure because they have an estimated negligible development value. Aleutian Arc, Aleutian Basin, Bowers Basin, and the St. Matthew-Hall planning areas in Alaska are excluded from this figure because they are estimated to contain only negligible resources. The Gulf of Alaska, Chukchi Sea, and South Atlantic planning areas have negligible developmental value at \$40/bbl and are not modeled; instead, they are shown as 0 at the \$40/bbl oil price level. All values are discounted at a real discount rate of 3 percent.

The NSV does not include cost estimates for greenhouse gas (GHG) emissions. However, Appendix B shows the consideration of the GHG emissions from upstream activities (i.e., emissions associated with the initial exploration, production, and transport of OCS oil and gas resources). Those interested in GHG estimates for the full lifecycle of OCS oil and gas can refer to the report entitled *OCS Oil and Natural Gas: Potential Lifecycle Greenhouse Gas Emissions and Social Cost of Carbon* (Wolvovsky and Anderson 2016).

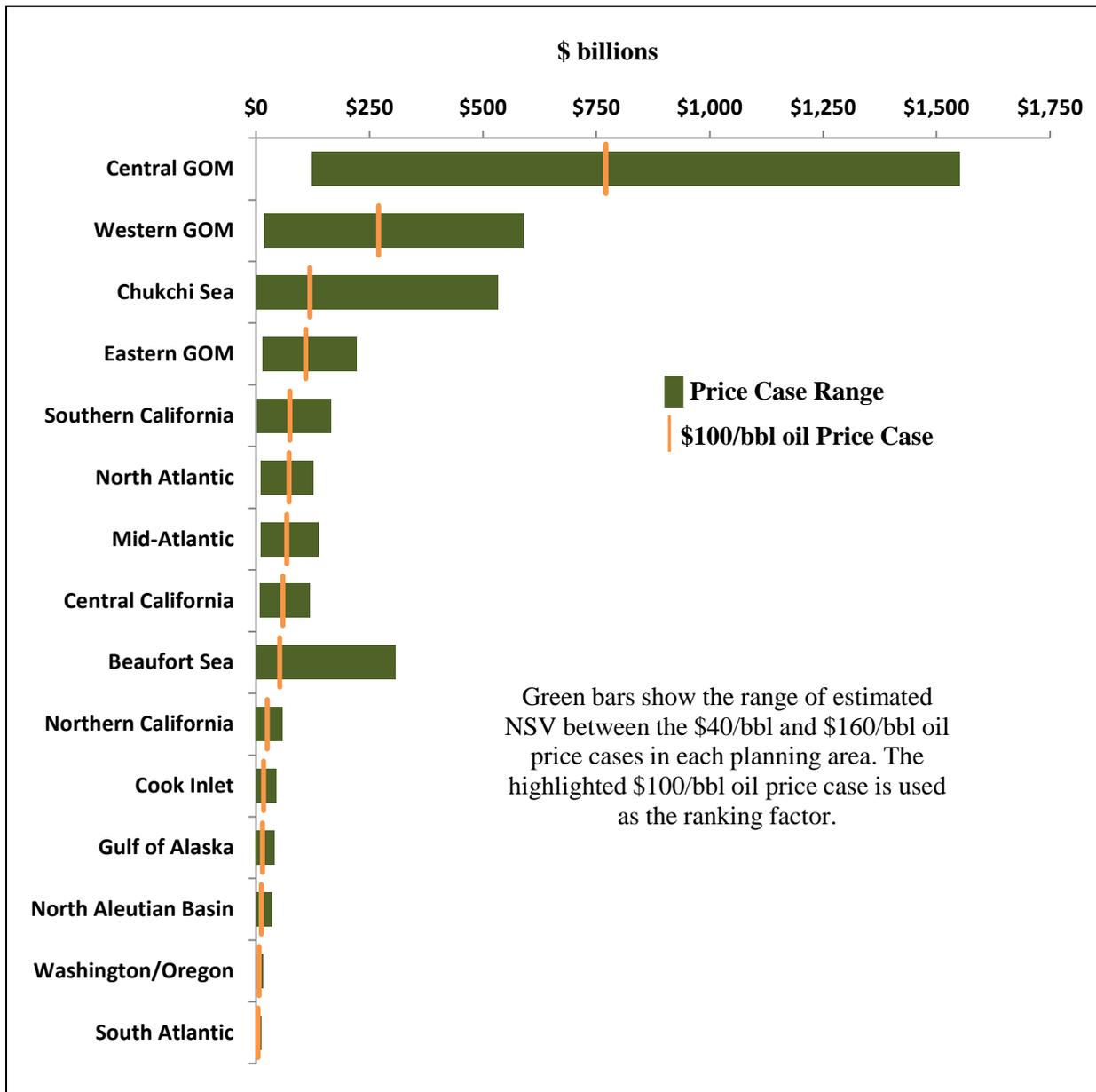
There is an important difference between the environmental social cost calculation done for the DPP analyses and that which is done for the subsequent phases of National OCS Program development (i.e., Proposed Program and PFP analyses). The DPP only considers the environmental and social costs of extracting OCS resources, while the Proposed Program and PFP consider those costs less the relevant environmental and social costs from calculated energy market substitutes, resulting in an estimate of the incremental environmental and social costs. Incremental environmental and social costs are the environmental and social costs from the anticipated activities generated from leases in this National OCS Program minus the environmental and social costs from the most likely energy market substitutions replacing OCS production in the event that no leasing occurs under an approved National OCS Program. Only the incremental environmental and social costs are included because some environmental and social costs would occur regardless of whether the 2019–2024 Program was approved. In the absence of OCS production, substitute energy sources, which have their own environmental and social costs, would be needed to fulfill U.S. demand. This “incremental” analysis is conducted for the Proposed Program and PFP analyses when anticipated production stemming from this National OCS Program is analyzed.

As stated above, the scope of analysis in the DPP is inherently different than in later National OCS Program development stages. The DPP analysis estimates the value of the resources less the private and social costs of extraction. This analysis considers the large volumes of all available UERR with no leasing or market constraints such as rig or worker availability, and defers until later development stages the assessment of specific planning area proposals and options. At the Proposed Program and PFP stages, the analysis shifts to one that considers domestic demand, the supply of other energy resources, including imports, and the energy market substitutions that would be required to replace OCS production in the absence of lease sales under an approved National OCS Program. This analysis at later stages includes the substitutions analysis and calculation of net environmental and social costs for a subset of all available UERR (anticipated production).

5.3.3 Net Social Value Calculation

The final result at this National OCS Program stage, the NSV, is the NEV less the present value of environmental and social costs anticipated from the planning area. The range of NSV is shown in Figure 5-15, ranked under the \$100/bbl oil price case from largest to smallest. The entire NSV analysis is described in more detail in Appendix B, which also includes a discussion of relevant costs and benefits that are not monetized in the DPP analysis. Some of the other costs and benefits do not lend themselves easily to quantification and monetization, whereas others are more appropriately estimated in later National OCS Program stages.

Figure 5-15: Net Social Value Ranges by Planning Area (Ranked by \$100/bbl Oil Price Case)



Notes: Estimated NSV is provided as a range from the \$40/bbl oil price case to the \$160/bbl oil price case. The \$100/bbl oil price case is represented in between by the orange line. Each of these price cases assumes an inflation-adjusted price for oil and for natural gas. St. George Basin, Kodiak, Navarin Basin, Hope Basin, Shumagin, and Norton Basin planning areas in Alaska and the Straits of Florida Planning Area are excluded from this figure because they have an estimated negligible development value. Aleutian Arc, Aleutian Basin, Bowers Basin, and the St. Matthew-Hall planning areas are excluded from this figure because they are estimated to contain only negligible resources. The Gulf of Alaska, Chukchi Sea, and South Atlantic planning areas have negligible developmental value at \$40/bbl oil price case and are not modeled; instead, they are shown as 0 at the \$40/bbl oil price case. All values are discounted at a real discount rate of 3 percent.

In addition to the inclusion of incremental environmental and social costs, the NSV analysis is expanded for the Proposed Program and PFP analyses to include domestic consumer surplus. Domestic consumer surplus measures the additional benefits that U.S. consumers receive from the slight energy market price decreases that occur through the production of OCS resources. Calculating consumer surplus is not applicable at the DPP stage since BOEM’s consideration of all available resources would skew the results when combined with other real-world energy market information and forecasts. More information on the treatment of incremental environmental and social costs and consumer surplus in later National OCS Program stages can be found in the Economic Analysis Methodology paper for the 2017–2022 Program (BOEM 2016b). A new paper will be prepared for the Proposed Program and PFP analyses.

5.3.1 Results and Conclusion

Detailed measures of the NEV, environmental and social costs, and NSV for each planning area are shown in Table 5-3. Planning areas are ranked by the NSV of the \$100/bbl oil price case. The first three columns show the NEV per planning area, second three columns show the environmental and social costs, and the final three columns show the results of the NSV calculation (NEV less environmental and social costs). The three different price cases show what the estimated benefits and costs would be under three vastly different energy market conditions. However, these estimates are rooted in uncertainty at many levels beyond just price. In addition to the price uncertainty, there is also resource uncertainty, extraction cost uncertainty, environmental and social cost uncertainty, and others. Actual values different from those used in the NSV analysis can greatly affect the NSV. The nature of these uncertainties is discussed in Chapter 10.

The valuation of planning areas is provided as one metric that the Secretary can use to help evaluate multiple Section 18 factors. As this is only part of the information the Secretary considers in making a decision, simply because a planning area ranks high, or low, does not determine its inclusion or exclusion in the National OCS Program.

Table 5-3: Ranking of Planning Areas by \$100/bbl Oil Price Case Net Social Value for Unleased UERR as of July 2019

Rank	Planning Area	Net Economic Value (\$ billion)			Environmental and Social Costs (\$ billion)			Net Social Value (\$ billion)		
		\$40/bbl \$2.14/mcf	\$100/bbl \$5.34/mcf	\$160/bbl \$8.54/mcf	\$40/bbl \$2.14/mcf	\$100/bbl \$5.34/mcf	\$160/bbl \$8.54/mcf	\$40/bbl \$2.14/mcf	\$100/bbl \$5.34/mcf	\$160/bbl \$8.54/mcf
1	Central GOM	\$137.1	\$789.9	\$1,571.7	\$14.3	\$18.8	\$21.1	\$122.8	\$771.1	\$1,550.6
2	Western GOM	\$27.5	\$283.7	\$604.2	\$10.1	\$13.7	\$14.8	\$17.4	\$270.0	\$589.3
3	Chukchi Sea	*	\$121.2	\$535.5	*	\$2.3	\$3.1	*	\$118.9	\$532.3
4	Eastern GOM	\$16.1	\$113.0	\$224.4	\$2.8	\$3.5	\$3.8	\$13.3	\$109.5	\$220.6
5	Southern California	\$5.4	\$78.5	\$170.5	\$2.6	\$3.9	\$4.6	\$2.8	\$74.6	\$165.9
6	North Atlantic	\$11.3	\$74.6	\$127.4	\$1.8	\$2.2	\$2.3	\$9.5	\$72.5	\$125.1
7	Mid-Atlantic	\$11.3	\$70.8	\$140.8	\$2.2	\$2.9	\$3.2	\$9.1	\$67.9	\$137.6
8	Central California	\$13.7	\$67.2	\$127.3	\$6.4	\$8.4	\$9.2	\$7.3	\$58.8	\$118.1
9	Beaufort Sea	\$0.0	\$54.9	\$310.3	\$0.5	\$3.0	\$3.6	-\$0.5	\$51.9	\$306.7
10	Northern California	\$1.5	\$28.3	\$61.8	\$2.3	\$3.8	\$4.5	-\$0.8	\$24.5	\$57.3
11	Cook Inlet	\$0.0	\$16.8	\$43.8	\$0.1	\$0.1	\$0.1	-\$0.1	\$16.6	\$43.7
13	Gulf of Alaska	*	\$14.1	\$40.8	*	\$0.1	\$0.2	*	\$14.0	\$40.6
12	North Aleutian Basin	\$0.2	\$14.9	\$35.6	\$2.0	\$3.1	\$3.3	-\$1.7	\$11.8	\$32.3
14	Washington/Oregon	\$0.7	\$6.9	\$14.5	\$0.2	\$0.3	\$0.4	\$0.5	\$6.6	\$14.1
15	South Atlantic	*	\$4.1	\$10.9	*	\$0.2	\$0.3	*	\$3.9	\$10.6

Notes: St. George Basin, Kodiak, Navarin Basin, Hope Basin, Shumagin, and Norton Basin planning areas in Alaska and the Straits of Florida Planning Area are excluded from this table because they have only an estimated negligible development value. Aleutian Arc, Aleutian Basin, Bowers Basin, and the St. Matthew-Hall planning areas are excluded from this table because they are estimated to contain only negligible resources. All values are discounted at a real discount rate of 3 percent. All price levels represent a constant, inflation-adjusted price throughout the life of the National OCS Program.

* For the Chukchi Sea, Gulf of Alaska, and South Atlantic planning areas, there is negligible developmental value in the \$40/bbl oil–\$2.14/mcf gas price case. As a result, NSV is not calculated for these areas at the \$40/bbl oil price case.

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Chapter 6 Planning Area Location Considerations

Chapter 6 includes a 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 associated with regional and national energy markets and other uses of the OCS.

6.1 NATIONAL ENERGY MARKETS

The following sections discuss national energy markets and the location of OCS planning areas relative to the needs of national energy markets, a factor the Secretary must consider under Section 18(a)(2)(C). U.S. energy markets are considered in the presence of a persistent, although recently shrinking, gap between domestic oil 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 his decisions on the size, timing, and location of lease sales, this chapter includes an analysis of the markets for crude oil, natural gas, and refined petroleum products.²³

6.1.1 *Recent Developments in Oil Markets*

Oil markets change frequently, but have recently been affected by a few defining characteristics. First, onshore production in the United States has grown rapidly. This has caused ripple effects throughout national and global oil markets, leading in part to a second fundamental change in oil markets, low, and relatively stable, prices. A third, more recent change is the elimination of oil export limitations in the United States. This change has had a smaller impact on the oil markets, but is still notable.

Over the past decade, the United States has experienced a significant increase in oil and natural gas production from shale and other tight formations. This development has resulted in a significant decline in U.S. dependence on imported crude oil (EIA 2017a). EIA forecasts that U.S. crude oil production will increase in 2017 and that the current record, set in 1970, will be surpassed in 2018 (EIA 2017b). The greatest near-term U.S. production growth is expected to come from the Permian region in Texas and from the OCS.

The low oil prices, which began in late 2014, have been a major characteristic of recent oil markets. These low oil prices have affected offshore and onshore production in different ways, given a different level of price sensitivity between the two production sources. Onshore production, specifically from tight formations, is a more price-responsive source of supply than OCS production, given the short time required to drill and complete tight oil wells and the fact that planned or existing projects can be ramped up or down relatively quickly (EIA 2016a). Alternatively, 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. While still affected by the low-price environment, OCS projects generally provide a steady and more predictable source of oil and gas for long periods once production begins. This

²³ Petroleum products are the output of refineries and made from crude oil (e.g., gasoline, diesel fuel, jet fuel, kerosene). The OCS Lands Act focuses on crude oil and natural gas; nevertheless, 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.

effect is apparent as OCS oil production is expected to increase in 2017 and again in 2018 mostly from projects sanctioned prior to 2014 (EIA 2017c).

Another change in oil markets is the December 2015 legislative change eliminating the decades-old oil export limitations. The recent removal of export restrictions will impact net imports, but the actual degree of that impact is largely unknown due to the influence of other market factors. Since the elimination of the export restrictions, U.S. crude oil has been exported to the Caribbean, Latin America, Europe, and Asia (EIA 2017d). BOEM continues to study the change to oil markets in response to the elimination of the oil export limitations.

With increased domestic production, both net and gross imports of crude oil have been declining, reducing U.S. dependence on imported petroleum. However, net imports of crude oil are expected to remain above zero throughout the period (2016–2050) covered by EIA’s AEO 2017 (EIA 2017e). A recent EIA report (EIA 2015a) showed that the elimination of the oil export limitations would result in only a very low rate of decline in net imports 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 prices remain lower than anticipated, it could provide both downward pressure on domestic production and upward pressure on demand, leading to higher imports. Additional information on oil imports and exports is included in the next section.

6.1.2 Relevant Developments in Domestic Petroleum Markets

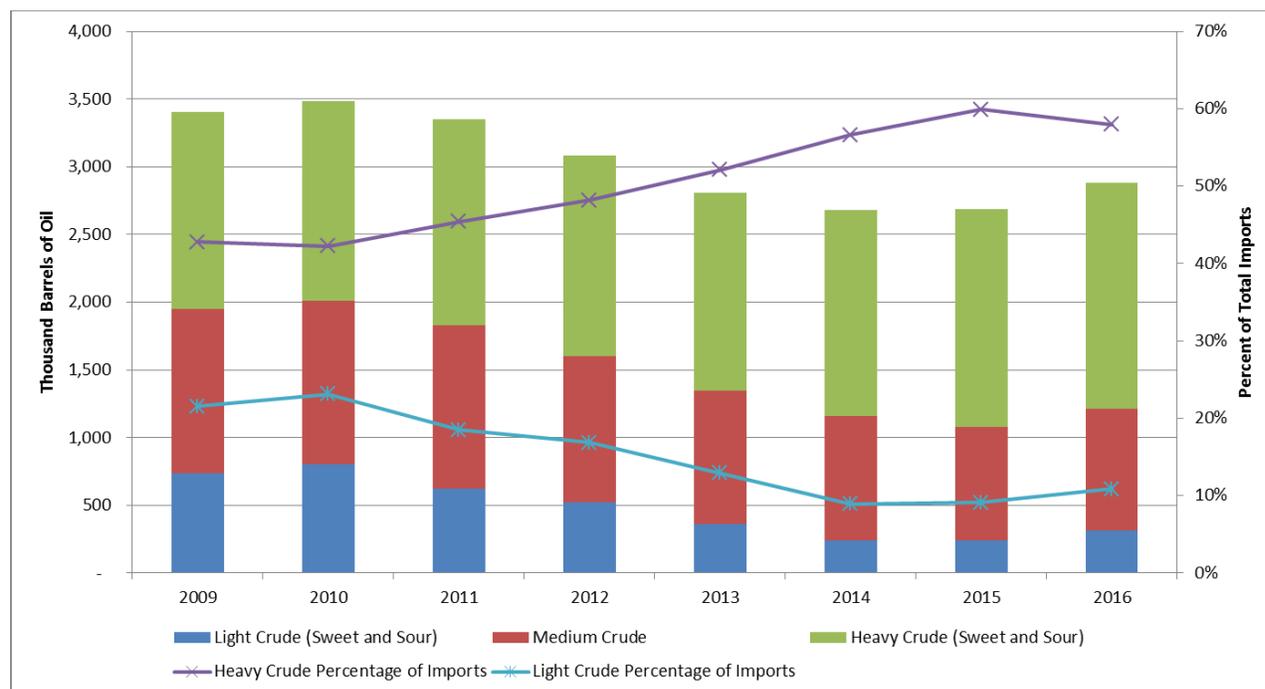
Petroleum refineries are the primary market for crude oil, which generally is not consumed in its raw state. Refineries use crude oil as feedstock to create an array of petroleum products shipped to various markets around the country and the world. The refined petroleum products market changed significantly over the past several years as the abundance of domestic oil production changed the supply and consumption patterns in domestic crude oil 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 increase in 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 the domestic oil markets 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 consisted of light, sweet grades, which are higher-quality crudes than the medium-to-heavy sour crude traditionally found on the OCS (EIA 2015b). As a result, many domestic refineries spent tens of billions of dollars retooling or expanding their medium/heavy refinery facilities to handle the increased quantities of domestic light crude (Auers and Couture 2015).

This phenomenon has reduced the overall need for imported oil, and, beginning in 2011, U.S. exports of refined petroleum products have exceeded imports. However, these 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 have replaced light crude imports. As shown in the graph, in 2009, light crude imports accounted for more than 20 percent of all imports. However, given the recent increase in domestic light crude production, light crude imports have fallen to approximately 11 percent of all

imports. The decline in medium and heavy crude imports has been much smaller, with heavy crudes now making up more than half of all imports. While it is possible the trend of increased onshore production and reduced domestic consumption will continue to reduce the need for imported oil overall, the volume of heavy and medium crude imports indicate there is still a need for the medium-to-heavy crudes found on the OCS.²⁴

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



Source: EIA 2017f

6.1.3 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 target projects that yielded the more valuable liquids in association with natural gas. Nevertheless, plentiful domestic natural gas production has kept domestic natural gas prices below benchmark prices in other parts of the world. Companies are constructing permitted liquefied natural gas export terminals, hoping to take advantage of world prices that can be more than twice the level of U.S. prices.

Less expensive natural gas has reduced manufacturing energy and feedstock costs and has enabled manufacturing companies to increase U.S. operations or return manufacturing from overseas. Natural gas directly powers many large manufacturing facilities and most refineries. Natural gas feedstock is also used for non-fuel products such as fertilizer and plastics. This natural gas renaissance is helping to stem

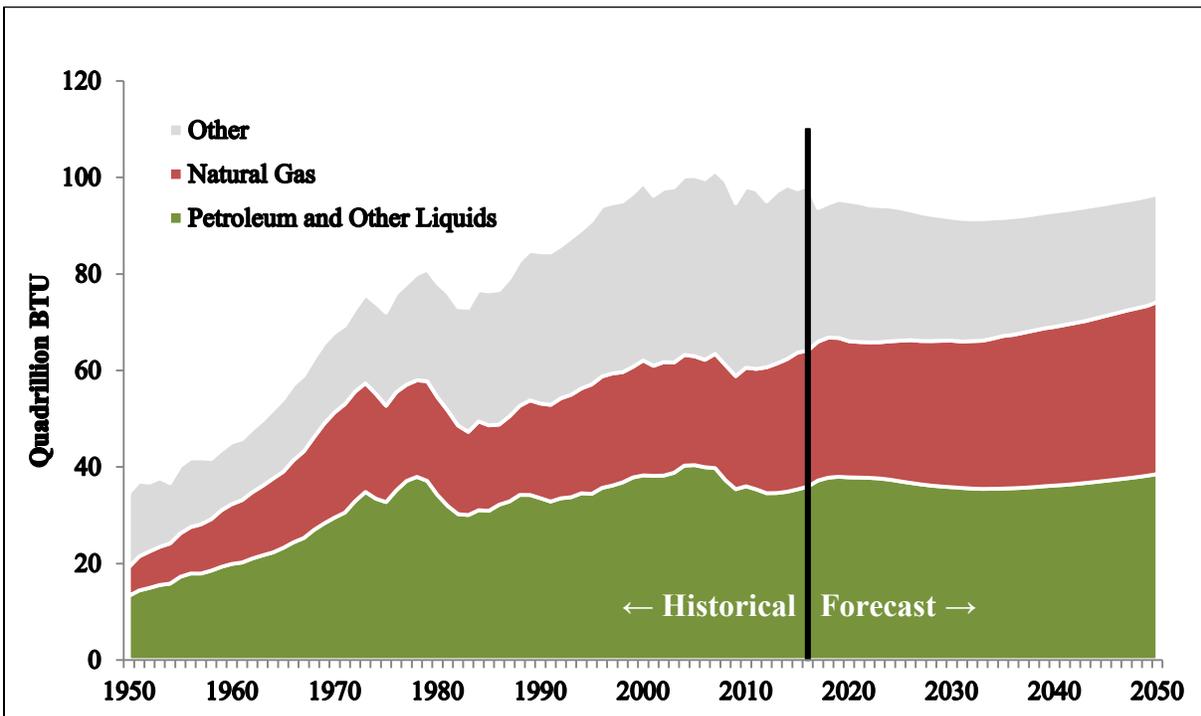
²⁴ Markets for crude oil and refined petroleum products should not be confused. The focus of the OCS Lands Act is on crude oil and natural gas; therefore, the focus of this discussion of oil markets and refineries generally is on the demand for, and availability of, crude oil as an input, and the discussion does not include extensive information on refined products.

the long-term decline in U.S. manufacturing jobs and helping to provide a competitive advantage for the U.S. manufacturing industry (Motavalli 2012).

6.1.4 Oil and Natural Gas Consumption and Production Estimates

EIA’s reference case analysis projects that the United States will continue to heavily rely on oil and natural gas to meet its energy needs under current laws and regulations. In 2016, 65 percent of energy consumed in the United States came from petroleum/other liquids and natural gas; the EIA forecasts that this percentage will increase through 2050, based on current laws and regulations. Figure 6-2 shows total U.S. energy consumption by fuel source from 1950 to 2016 and includes the EIA’s AEO 2017 projections from 2017 through 2050. The projections shown in Figure 6-2 indicate that the share of energy obtained from oil will remain roughly consistent, whereas domestic natural gas consumption is expected to grow through 2050. The projections shown in Figure 6-2 are from the EIA’s AEO 2017 reference case, which includes current laws and regulations as of the development of the outlook.

Figure 6-2: Historical and Forecasted U.S. Energy Consumption by Fuel Type



Source: EIA 2017e, EIA 2017g

Oil and gas production in the United States has increased rapidly in recent years. As shown in Figure 1-4, OCS oil production as a percent of total oil production peaked in 2009 at 30 percent of domestic production, but the OCS’s relative contribution has fallen in recent years, due to increases in onshore production. The OCS contribution to domestic natural gas production peaked at 27 percent in 1990, but has fallen drastically given both declines in OCS natural gas production and increases in onshore domestic production. The EIA projections show OCS natural gas production will continue to provide a minimal contribution to domestic natural gas production through 2050. Projections show a short-term increase in OCS oil production, but then a decline and relatively stable levels of OCS oil production through 2050. Figures 1-4 and 1-5 in Chapter 1 show EIA’s projections of U.S. offshore and onshore oil

and natural gas production from 2017 through 2050. Again, these projections are based on current laws, regulations, and policies and assume resources are not subject to further leasing restrictions.²⁵

6.1.5 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); geopolitical events; access to oil and gas resources; and laws, regulations, and policies.

Improvements to existing technology have allowed access to hydrocarbon resources previously deemed too expensive or difficult to develop by more traditional means. This renaissance has reversed the long-term decline in U.S. oil production, catapulting the United States to the position as the world's top producer of petroleum and natural gas hydrocarbons (EIA 2017h).

The factors affecting oil and gas prices are complex and often unpredictable. Major changes often take many years and can be costly and disruptive if they require elements such as new infrastructure or transportation networks. 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, energy policies that maximize, rather than limit, the availability of energy resources increase the ability of markets to respond to the challenges of the future.

In addition to the future unpredictability of markets and prices, future policies outside of those directly related to OCS leasing could affect OCS exploration and production. Many countries will consider new policies to address GHG emissions, and other national policies could affect either the demand for or supply of certain forms of energy. Substantial policy changes could affect U.S. energy markets and the contribution of oil and gas to those markets. While the information provided in the present analysis does not include speculation about specific future policies, throughout the implementation of the National OCS Program, the Secretary has flexibility to re-evaluate the Nation's energy needs and current market developments, and can revise lease sale offerings in accordance with the Section 18 process. Revised energy policies could prompt companies to bid on fewer leases, develop fewer projects on those leases, or abandon fields sooner, regardless of decisions in this National OCS Program. Changes in energy policies will continue to be studied in future analyses with regard to this and future National OCS Programs.

6.1.6 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. OCS production is an important part of the President's America-First Offshore Energy Strategy to promote energy security and economic growth (E.O. 13795). All domestic production serves to reduce exposure to the unpredictability of foreign oil sources and resulting price volatility. OCS oil production complements onshore oil production, leading to greater stability in world markets overall. Broadly defined, the United States now has two general sources of domestically produced oil and natural gas supply: relatively quick turn-around, 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 on the OCS provide a fairly stable source of oil and gas that is less

²⁵ EIA projections are based on current laws, regulations, and policies and, therefore, assume that all OCS areas are available for leasing at the end of the 2017–2022 Program except those that are withdrawn or still under moratoria at that time.

susceptible to changes in markets or assumptions including those for undiscovered resources, prices, technology, and recovery rates.²⁶ This overall stability allows for longer-term planning for infrastructure and other needs. More information on the importance of OCS production is described in the next two sections. Also, as described in Section 1.2, in addition to its contribution to energy markets by providing oil and gas fuel and refinery feedstock, the National OCS Program provides for significant benefits, including billions of dollars of revenues to Federal, state, and local governments, as well as important employment benefits.

6.1.6.1 *Ability of OCS Production to Fulfill Short-term Needs*

OCS areas can provide oil and natural gas base load production for decades to come. As described in Section 6.1.1, OCS production is not as responsive to price changes as is production from onshore tight formations, because a relatively longer time commitment is required for production offshore. However, both industry and USDOJ are able to more quickly respond to low prices and a reduction in demand for OCS oil and gas than high prices and an increase in demand.

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. 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.

Similarly, the OCS leasing and development processes are lengthy and make it difficult to quickly make available additional undiscovered resources in response to changing energy needs. Should conditions warrant the need for energy production from areas not fully analyzed in the National OCS Program analyses, absent new legislation, the multi-year process of preparing a new National OCS Program must be undertaken, and it would take years before new lease sales could be held and leases awarded. Even if an area were fully analyzed during program development, the sale development process is lengthy and adds to the time needed to realize new leasing opportunities. 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 planning areas. 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 National OCS Program, an important consideration is the value of a National OCS Program that provides 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 Secretary 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 primary term of the lease). Operators can also decide to postpone or abandon plans to explore, develop, or produce on leased blocks. For example, recent GOM Region bidding and exploration activity has declined in response to relatively low oil and natural gas prices. The decline in bidding activity is greatest on the mature GOM shelf, which is predominantly a natural gas province.

²⁶ Many of the resource estimates for tight oil are necessarily tentative, given the associated data availability and unforeseen technological/efficiency advances.

6.1.6.2 Importance of OCS Production

Although overall net petroleum import levels have been decreasing, 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 needed in U.S. refineries. This is partly because much of GOM refinery capacity remains equipped for medium and heavy crude rather than the light, sweet crude being produced in such abundance in recent years.

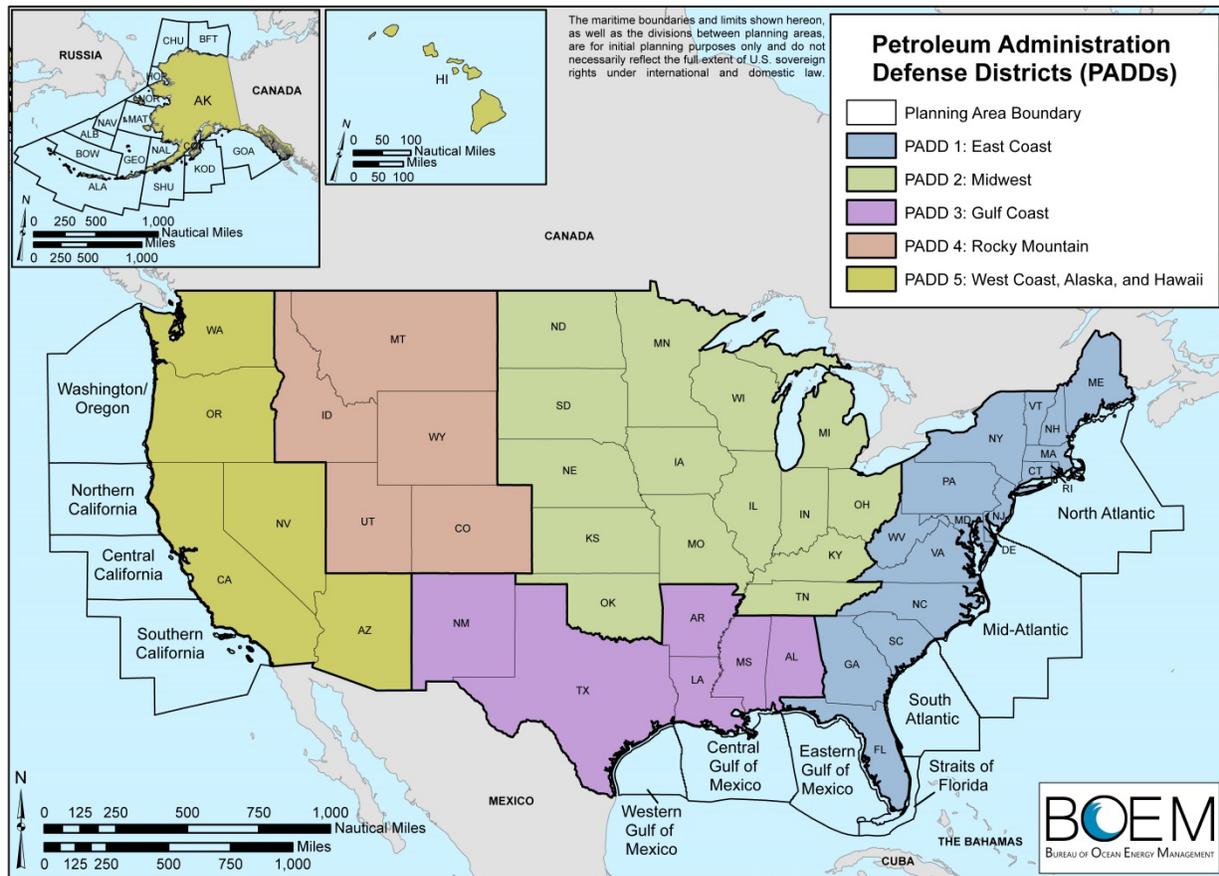
New production from the OCS would help meet the United States' continued energy demand and maintain a diversity of supply. Diversity of supply mitigates the effects of import disruptions and cushions the consequences of other disruptive forces. Volatile energy prices and continued dependence on foreign 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 greater price stability, because supply disruptions of a given volume no longer cause the same percentage change in overall supply. Increases and decreases in U.S. production affect the world market for oil, influencing prices, and the flexibility of the United States to respond to international problems. This relationship could become even more direct with the recent lifting of oil export restrictions. Any significant declines in OCS oil production therefore would prevent the United States from fully enjoying the benefits of the U.S. fracking boom.

6.2 REGIONAL ENERGY MARKETS AND THE LOCATION OF OCS REGIONS

In making the decisions on size, timing, and location of OCS oil and gas leasing for the National OCS 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). The following "regional energy considerations" discussion provides information on the immediate markets for crude oil and natural gas as well as 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 5 separate districts.²⁷ The PADDs, shown in Figure 6-3, allow users, including BOEM, to analyze regional movements of natural gas and petroleum.

²⁷ Alaska is separated from other states in the West Coast PADD in Figure 6-4 through 6-7 because it has its own OCS region, and because its large oil production and low consumption masks 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.

Figure 6-3: Petroleum Administration Defense Districts

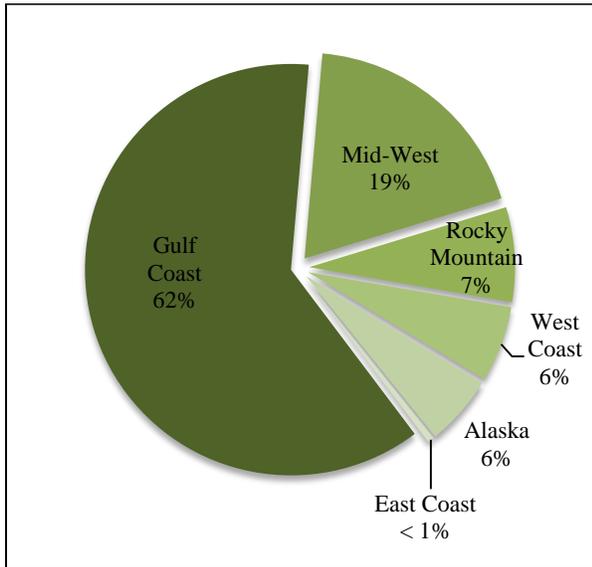


Source: EIA 2016

6.2.1 Regional Production and Consumption

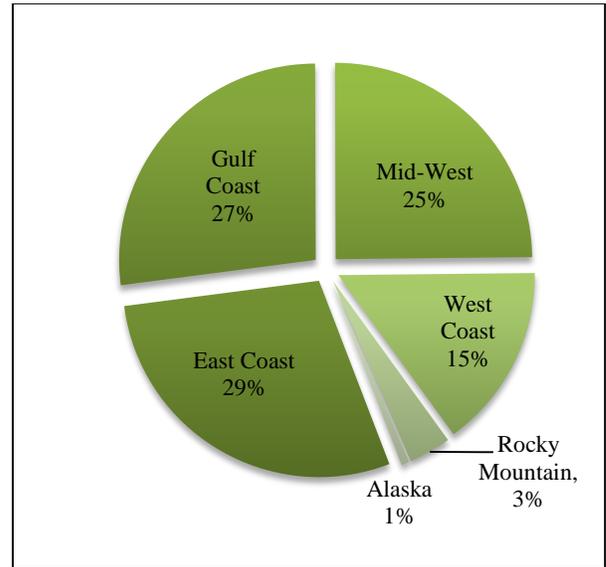
Regional energy markets are defined by the amount of crude production, refining, and consumption that occurs in each region. Figures 6-4 and 6-6 show proportional petroleum production and consumption by region in the United States in 2016. Figures 6-5 and 6-7 similarly show production and consumption 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 6-4 through 6-7. One noticeable theme is that the Gulf Coast PADD, which includes the GOM OCS, 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 close to 70 percent of the domestic oil and natural gas used in the United States, but supply only about 26 percent of domestic oil and 34 percent of natural gas production. As shown in Chapter 5, the coastal PADDs all have significant OCS resources that could be used to meet regional energy needs.

Figure 6-4: Contribution to Oil Production by PADD



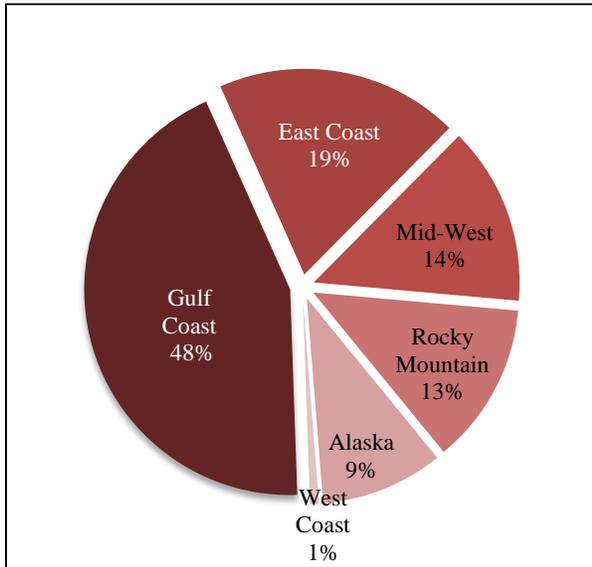
Source: EIA 2017i

Figure 6-5: Oil Consumption by PADD



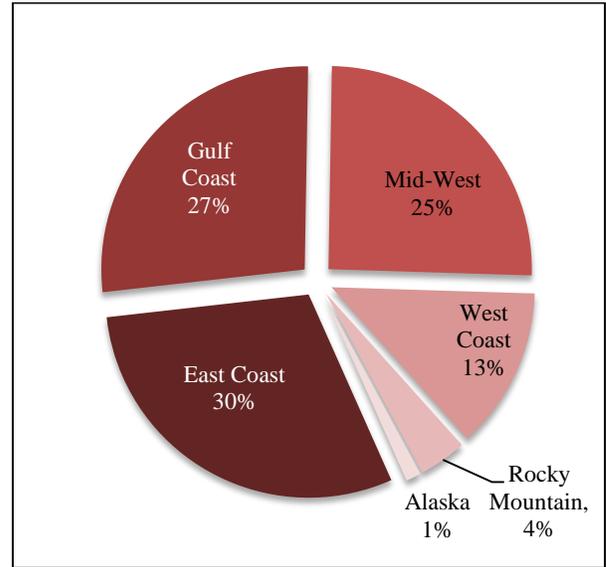
Source: EIA 2017j

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



Source: EIA 2017k

Figure 6-7: Natural Gas Consumption by PADD



Source: EIA 2017j

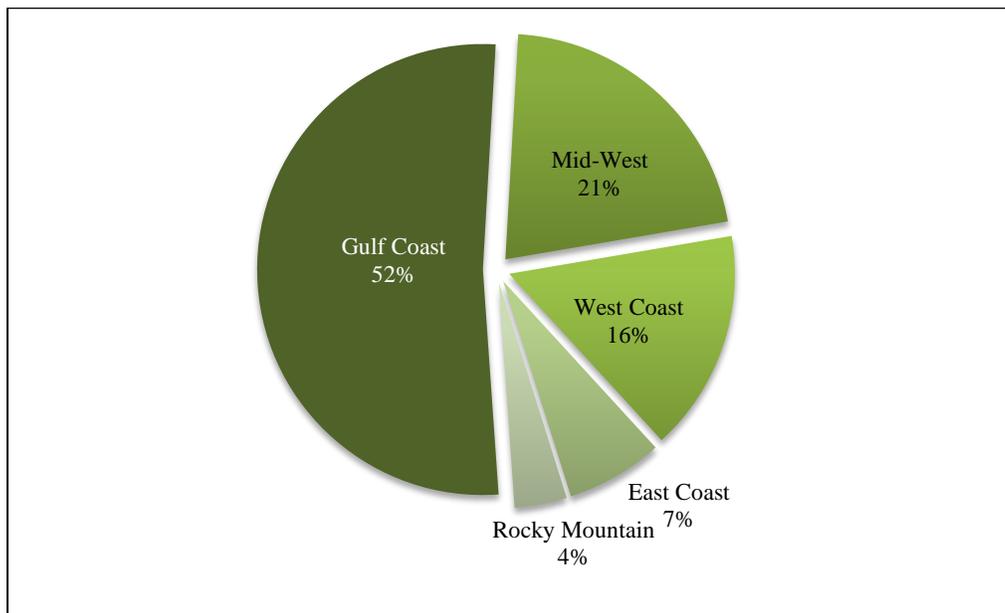
6.2.2 Regional Transportation

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 meet 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 later 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 6-8 shows the percent of U.S. refining capacity in each PADD.

Even though the East Coast accounts for 29 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.

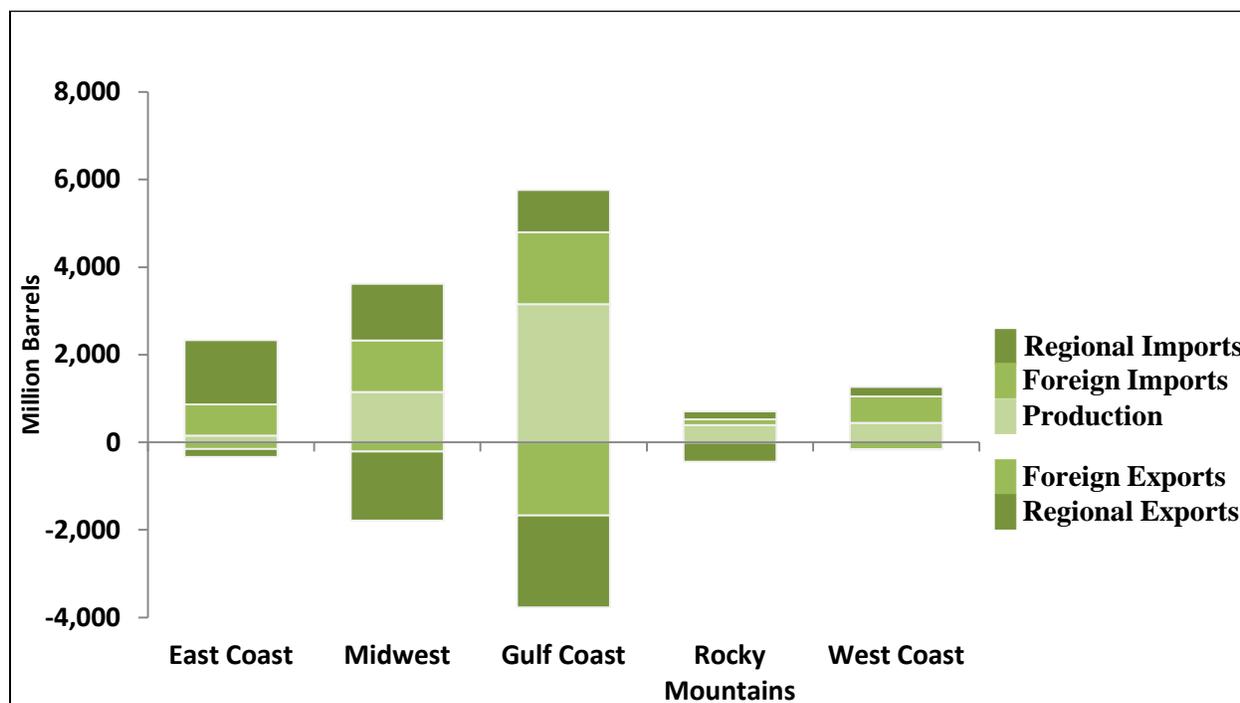
Each of the PADD regions receives crude oil and petroleum products in three different ways: production, regional imports, and foreign imports. Similarly, most of the regions have at least some regional and foreign exports. Figure 6-9 shows the crude oil and petroleum production and movement by pipeline, 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 6-8: U.S. Refining Capacity by PADD, 2016



Source: EIA 2017I

Figure 6-9: U.S. Crude Oil and Petroleum Production and Import/Export by Region, 2016



Note: This reflects crude oil and petroleum production and movement by pipeline, tanker, barge, and rail for each PADD region.
Sources: EIA 2017m, EIA 2017n, EIA 2017o

Examining in particular the regional movement, Table 6-1 shows the 2016 inter-PADD movement of petroleum products by tanker, pipeline, barge, and rail.²⁸ Table 6-2 shows the 2016 inter-PADD movements of crude oil. Approximately 60 percent of the petroleum product movements by tanker, pipeline, barge, and rail originated in the Gulf Coast PADD, which, again, includes the GOM OCS. Approximately 80 percent of these shipments from the Gulf Coast PADD went to the East Coast PADD.

Table 6-1: 2016 Petroleum Product 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)	N/A	168	1,168	0	0	1,336
To PADD 2 (Mid-West)	164	N/A	261	86	0	512
To PADD 3 (Gulf Coast)	5	350	N/A	84	0	439
To PADD 4 (Rocky Mountain)	0	80	0	N/A	0	81
To PADD 5 (West Coast)	0	55	68	25	N/A	147
Total Shipments	169	653	1,497	195	0	2,514

Source: EIA 2017n

²⁸ EIA does not track transport of petroleum products by truck.

Table 6-2: 2016 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)	N/A	65	13	1	0	78
To PADD 2 (Mid-West)	2	N/A	291	201	0	493
To PADD 3 (Gulf Coast)	1	371	N/A	18	0	391
To PADD 4 (Rocky Mountain)	0	86	0	N/A	0	86
To PADD 5 (West Coast)	0	49	1	0	N/A	49
Total Shipments	3	571	304	220	0	1,098

Source: EIA 2017o

While Tables 6-1 and 6-2 show the inter-PADD movements, the United States exports additional petroleum products internationally, as shown in Figure 6-9. 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 international advantage 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 Act²⁹ [P.L. 66-261, 46 U.S.C. 883]), 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). Although data are not currently available, energy markets are becoming increasingly global now that U.S. limitations on crude oil exports have been removed. BOEM is continuing to analyze how this change will affect domestic and regional energy markets.

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.”

6.2.3 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

²⁹ The Merchant Marine Act requires that all goods transported by water between U.S. ports be carried on U.S. flagships, constructed in the United States, owned by U.S. citizens, and crewed by U.S. citizens and U.S. permanent residents.

largest factor affecting prices is the cost of crude oil. The EIA estimates that in 2016, approximately 45 percent of the price of a gallon of gasoline was the cost of crude oil, 21 percent was from Federal and state taxes, 18 percent was from refining costs and profits, and 16 percent was distribution and marketing (EIA 2017p). 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 output³⁰ 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 final cost (EIA 2017p).

6.2.4 Alaska Regional Energy Markets

As shown previously in Table 5-1, the Alaska planning 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 at higher prices. In particular, Arctic OCS oil could be important to Alaska for continued operation of the TAPS. Declining onshore production from Prudhoe Bay is affecting the viability of TAPS, which requires a certain level of throughput to operate without posing major technological challenges. Depending on circumstances such as timing and oil prices, new OCS production could help 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 National OCS Program.

Many Alaska OCS areas have the potential to contribute significantly to U.S. energy needs in the future; however, more exploration is required, and additional infrastructure would be needed before major new production could begin. Outside of Cook Inlet, which is close to commercial markets as well as to infrastructure that accommodates activities on state leases, the Alaska OCS is fairly remote.

In the remaining planning areas, significant new infrastructure investments would be required. In the Chukchi Sea, infrastructure construction would be necessary to produce and transport hydrocarbon resources to TAPS. In the Beaufort Sea, an existing network of onshore and nearshore infrastructure based out of Prudhoe Bay serves to improve the economic viability of OCS development relative to the Chukchi Sea. Similarly, the Gulf of Alaska and North Aleutian Basin planning areas would require pipeline and infrastructure development to connect these areas to potential markets. The remaining Alaska planning areas are not anticipated to have significant development potential and would likely not support the production of oil and gas to support Alaska or other energy markets.

6.2.5 Pacific Regional Energy Markets

West Coast gasoline prices are considerably higher than those in all other PADDs. In particular, California gasoline prices are higher than those in any other of the contiguous states. California requires gasoline to be “reformulated” to reduce the environmental impact of the burned gasoline. This process

³⁰ 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.

requires a special blend of fuels, which is only produced at a limited number of refineries. In addition, California refineries are already running at capacity to meet demand. Because supplies are already limited, any disruption in supply can cause prices to spike even higher. Given the large distance between the West Coast PADD and the majority of refineries in the Gulf Coast PADD, as well as a lack of pipelines crossing the Rocky Mountains, replacement supplies are farther away and can cause the price spikes to last longer (EIA 2012b).

The Pacific OCS has significant oil and natural gas resources (see Table 5-1), which could help meet regional energy needs, but the West Coast PADD would need additional refinery capacity to allow the region to use those resources.

6.2.6 Gulf of Mexico Regional Energy Markets

The GOM Region has by far the greatest ability to use its resource potential to supply oil and gas to the United States' top three consuming PADDs: the East Coast, Gulf Coast, and Midwest. 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 medium/heavy and sour crudes.

6.2.7 Atlantic Regional Energy Markets

The East Coast PADD is heavily dependent on foreign imports of crude for its refineries. 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 of refined products from Canada and Europe. The imports are especially needed during the winter when demand increases and regional imports are insufficient to meet the increases in demand (EIA 2014).

The Atlantic OCS contains significant resources, as shown in Table 5-1. Depending on refinery capability, production from OCS areas along the Atlantic coast could potentially feed directly into the market with the greatest import demand for petroleum products, distillate, and propane.

6.3 POSSIBLE OCS PRODUCTION SUBSTITUTES

A reduction in OCS oil and gas production would not lead to an equal reduction in the quantity of oil and gas demanded by energy markets. Instead, other energy sources—for example, more imports, onshore production, and coal, as well as a reduction in consumption—would substitute for most of the forgone OCS production. BOEM uses its Market Simulation Model (*MarketSim*) at the Proposed Program and PFP stages to estimate the amount and percentage of substitutes the economy would adopt in the absence of all, or even some, new OCS production. *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. *MarketSim* calculates what fuel sources would replace forgone OCS production. This includes increases in onshore oil and natural gas production, imports of oil and natural gas, fuel switching to coal or other sources of electricity, and reduced consumption. At the Proposed Program stage, BOEM will evaluate the energy market substitutions that would be required to replace the OCS production based on the Secretary's decision on OCS leasing (see Part I).

Available documentation provides a detailed discussion of the data and methodology underlying *MarketSim* (Industrial Economics, Inc. 2017). In addition, the forthcoming Proposed Program and PFP analyses will contain specific estimates of production and quantities of other energy sources substituted for oil and gas should the Secretary select the “No Sale” option for any program area.

Using the current laws, regulations, and technology assumptions inherent in the AEO’s Reference Case, the lost future OCS production in the absence of leasing under a new National OCS Program will be made up from energy industries likely to increase production or generation incrementally in response to small market changes. While this could, in some instances, be the more mature renewable energy technologies, the reality of many renewable energy sources is that their growth is predicated on policy initiatives rather than small relative changes in price. Additional renewable energy production is likely throughout the life of the leases issued under this National OCS Program, as domestic and global markets adjust to potential future policies and the technologies mature. Policies or other factors such as technological change could substantially increase the use of renewable energy sources during the life of this National OCS 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* (Industrial Economics, Inc. and SC&A, Inc. 2015).

Data from EIA indicate, however, that renewable energy sources are not likely to be a major substitute for forgone OCS production. This likely is because different kinds of energy are used differently. For example, in terms of end use, about 24 percent of total U.S. energy consumption in 2016 was for transportation, of which 92 percent is fueled by petroleum (EIA 2017b).³¹ The predominant use of renewable energy in the U.S. is to generate electricity.³²

6.4 ENERGY MARKETS CONCLUSION

The President’s energy strategy seeks to encourage energy exploration and production to maintain the United States’ position as a global energy leader. By providing opportunities for exploration, leasing, and development, and establishing regulatory certainty, additional domestic energy production provides energy security, jobs, and revenue for the United States. Through continued and expanded production, the OCS can enhance energy security by reducing dependence on foreign fuel sources. Further, the strategy recognizes that the United States needs to continue to pursue traditional sources of energy while encouraging development of renewable energy. New energy alternatives are gaining market share, but will take decades to displace oil and gas. Furthermore, oil and gas are used to make non-fuel products, such as plastics and fertilizer. All current commercial substitutes for oil and gas have market penetration limits, and none provide the prospect of fully replacing the versatility of oil and gas in the foreseeable future.

The OCS Lands Act requires long-term planning for OCS oil and gas lease sales in the form of a National OCS Program. The program development process allows the Secretary to consider the current and likely

³¹ 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.

³² 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.

future energy needs of the United States. This market analysis, consistent with the 2017 AEO, is focused in large part on assumptions reflecting current laws and policies. These assumptions provide consistent data for the Secretary to consider at this programmatic stage and allow him to see the potential impacts of his decisions. Within the five years of lease sales in the National OCS Program, the Secretary has the authority to limit the number of lease sales or areas available for lease for many reasons, which allows him to re-evaluate specific decisions to schedule lease sales once new information is available (e.g., prices, industry interest, future policies). Although domestic energy markets have undergone major changes in recent years with an abundance of new onshore production and low oil prices, the OCS remains a vital source of stable energy production. Regionally, OCS production contributes to the local energy markets. In the absence of leases under a new National OCS Program, energy markets would adjust and substitute energy sources would be necessary.

6.5 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 National Aeronautics and Space Administration (NASA) activities, tourism and recreation, commercial shipping and transport, coastal recreation (including recreational fishing and diving), and subsistence use. 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 planning areas is BOEM’s report entitled *Economic Inventory of Environmental and Social Resources Potentially Impacted by a Catastrophic Discharge Event within OCS Regions* (BOEM 2014; hereafter referred to as the Economic Inventory Report). See the full Economic Inventory Report for detailed information and data on the economic and public use categories for each of the OCS planning areas.

This section also provides information on the status of BOEM’s renewable energy leasing and non-energy marine minerals leasing³³ in the planning areas. In 2009, USDOJ announced the final regulations for the OCS Renewable Energy Program, which was authorized by the Energy Policy Act of 2005. These regulations provide a framework for issuing leases, easements, and rights-of-way for OCS activities that support production and transmission of energy from sources other than oil and natural gas. BOEM is responsible for overseeing OCS renewable energy development in Federal waters. Since the regulations were enacted, BOEM has worked diligently to oversee responsible renewable energy development on the OCS.

Additionally, the OCS Lands Act assigns USDOJ (which is then delegated to BOEM) responsibility for developing non-energy minerals on the OCS, such as sand, and to ensure related environmental protection associated with this development. Section 8(k) of the OCS Lands Act sets forth specific requirements for this activity. To date, all of the leases and agreements issued by BOEM’s Marine Minerals Program (MMP) have been negotiated, noncompetitive agreements for sand for beach nourishment and coastal restoration projects. Sand resource areas (often called borrow areas) dredged for these projects are

³³ BOEM’s MMP 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/>.

typically in less than 100 feet of water depth. The MMP is also responsible for executing competitive lease agreements for other non-energy minerals such as strategic mineral resources containing copper, lead, zinc, gold, platinum, and rare earth minerals. Developers have periodically expressed interest in obtaining leases to develop these resources; however, there have been no leases issued for these resources, and there are no pending lease requests at this time. For more information, see <https://www.boem.gov/Marine-Minerals-Program/>.

Appendix A contains a summary of the individual comments that BOEM received in response to the RFI related to other uses of the OCS and potential conflicts between these other uses and oil and gas leasing 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.

6.5.1 Alaska Region

For purposes of this discussion, the 15 planning areas that comprise the Alaska OCS Region are grouped into three subregions: (1) the Arctic subregion comprised of Beaufort Sea, Chukchi Sea, and Hope Basin; (2) the Bering Shelf subregion comprised of Navarin Basin, North Aleutian Basin, St. George Basin, Norton Basin, St. Matthew-Hall, Aleutian Basin, and Bowers Basin; and (3) the Pacific Margin subregion comprised of Cook Inlet, Gulf of Alaska, Shumagin, Kodiak, and Aleutian Arc. Table 6-3 shows the other uses of the OCS for the Alaska Region.

6.5.1.1 Commercial, Recreational, and Subsistence Uses

Arctic Subregion

Commercial activity in the Arctic subregion is limited. There is oil and gas production in state waters adjacent to the Beaufort Sea Planning Area. Fishing activity is limited to subsistence and recreational fishing because commercial fishing is prohibited in U.S. waters north of the Bering Strait (NPFMC 2009).

Most recreational activity in the Arctic is limited by the harsh Arctic climate, difficulty of physically accessing the area, and logistics costs. 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 during ice-free months is an important means of transporting fuel and supplies for area residents.

As part of the U.S. National Strategy for the Arctic Region, the Federal Government is preparing studies to understand baseline conditions and prepare for increased marine activity (ICCT 2015). Although diminished sea ice could result in an expanded timeframe for unaided navigation in the Arctic, constraints to increased vessel traffic include limited and/or outdated nautical charts, environmental factors such as weather conditions, and the lack of support infrastructure (ICCT 2015).

Table 6-3: Other Uses of the OCS within the Alaska Region

Alaska Planning Area	Activity							
	Commercial Fishing	Recreational Fishing	Federal Agency Activity	State Oil and Gas Activity	Current OCS Oil and Gas Activity	Subsistence	Ports/ Shipping Routes	Tourism
Beaufort Sea			X (NASA)	X	X	X		X
Chukchi Sea			X (DHS)			X		
Hope Basin			X (DHS)			X		
Norton Basin						X	X	X
St. Georges Basin	X	X				X	X	
North Aleutian Basin	X					X	X	X
Cook Inlet	X	X		X	X	X	X	X
Shumagin	X					X	X	
Kodiak	X	X				X	X	X
Gulf of Alaska	X	X	X (DOD)			X	X	X

Note: The Navarin Basin Planning Area is surrounded by open ocean, with negligible commercial activity or public uses. Due to negligible petroleum potential, the following planning areas are omitted from this table: St. Matthew-Hall, Aleutian Basin, Bowers Basin, and Aleutian Arc.

Among Alaska Native communities such as the Iñupiat along the Beaufort and Chukchi seas, subsistence fishing and hunting practices hold a high cultural value and provide a substantial portion of many communities' annual diets. A survey conducted by the Alaska Department of Fish and Game found that 63 percent of households in the Arctic harvested game, and 92 percent of households used game; this demonstrates the wide sharing of subsistence foods (ADF&G 2014). Subsistence sharing and cooperation was further studied for three Arctic communities (Kaktovik, Wainwright, and Venetie). This study found that 30 percent of the households in these communities contributed between 76 and 93 percent of harvested food to be shared and distributed among the community (Kofinas et al. 2016). This reliance on harvesters could make the subsistence system vulnerable.

Bering Shelf Subregion

Because the Navarin Basin Planning Area is surrounded by open ocean, commercial activity and public use of marine resources in the planning area are both negligible. In addition, BOEM estimates that the UTRR in the Bowers Basin Planning Area and the Aleutian Basin Planning Area are negligible, thus the Economic Inventory Report and this analysis do not present information on these planning areas. Hence, the discussion of the economic and public use of resources in and along the Bering Shelf subregion focuses on the remaining four planning areas (North Aleutian Basin, St. George Basin, St. Matthew-Hall, and Norton Basin). The most important other use of the OCS in terms of economic significance in these planning areas is commercial fishing (BOEM 2014). Commercial fishing is the primary source of employment for residents of the North Aleutian Basin area, and the Bristol Bay area is one of the largest Alaska fisheries in terms of total fish harvested and processed. Combined with Bristol Bay, Kuskokwim Bay (St. Matthew-Hall region) is considered part of the largest sockeye salmon fishery in the world.

While tourism and commercial shipping are less significant overall, they are important to many local economies. Tourism revolves almost exclusively around outdoor recreation, including recreational fishing, sport hunting, hiking, and wildlife viewing in the North Aleutian Basin and the Norton Basin (concentrated in Nome), and the St. Matthew-Hall area is one of the great birding areas of North America. Recreational activity in and near the St. George Basin Planning Area is limited due to its remoteness, with most fishing and hunting for subsistence rather than for recreation. The Port of Bristol Bay (North Aleutian Basin) and the Port of Nome (Norton Basin) service nearby villages and communities. The St. George Basin and the St. Matthew-Hall areas do not have any major commercial ports; however, the “Great Circle” shipping route between the Pacific Northwest and Asia passes through the St. George Basin Planning Area.

Recreational angling represents the most economically significant public use of natural resources in and near the Bristol Bay area (St. Matthew-Hall Basin). In 2009, approximately \$60 million was spent in Alaska specifically for the purpose of recreational fishing trips in the Bristol Bay area (USEPA 2014). Most of the fishing by local residents in the other areas is for subsistence rather than for recreation. Subsistence fishing and hunting is a critically important public use of coastal and marine resources across all four planning areas. Communities engage in subsistence hunting and fishing for their economic, social, cultural, and spiritual value, and to meet basic nutritional needs. In 2010, Alaska Native peoples comprised approximately 15 percent of the state’s population (USCB 2010). Alaska Native peoples comprise a large percentage of the population along the North Aleutian Basin and St. Matthew-Hall planning areas (USCB 2015).

Pacific Margin Subregion

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 the Gulf of Alaska, Aleutian Arc, Kodiak, and Shumagin planning areas, and while somewhat less important along Cook Inlet, they are still economically important. Commercial fishing in the Gulf of Alaska and near the Aleutian Arc Planning Area is critical to the regional and state economy (BOEM 2014). Fish harvesting and processing also represent the largest source of jobs and earnings on Kodiak Island (particularly processing) and are the most important commercial industries in the Shumagin Planning Area. Tourism is a critical component of the Cook Inlet and Gulf of Alaska planning areas’ economies, but is fairly limited in and near the Kodiak, Shumagin, and Aleutian Arc planning areas.

For the Gulf of Alaska area, visitor industry-related employment accounts for 13 percent of all employment in Juneau and roughly 20 percent of all sales tax revenue collected by the city (JC&VB 2015). The subregion is also important for commercial shipping. The Port of Valdez in the Gulf of Alaska is the largest port in Alaska and one of the 20 largest in the United States as defined by total traffic, largely due to oil shipments. Oil and gas production in state waters adjacent to the Pacific Margin subregion currently is limited to the Cook Inlet Planning Area. The Port of Anchorage on the eastern end of Cook Inlet is an essential port for many Alaska residents, since more than 85 percent of all consumer goods are provided to Alaska’s population through the port (Port of Anchorage 2016). In addition, thousands of commercial vessels pass through the Gulf of Alaska, Kodiak, Shumagin, and Aleutian Arc annually along the “Great Circle” shipping route from the Pacific Northwest to Asia.

Important public uses in and along the subregion include coastal recreation, recreational fishing and hunting, and subsistence fishing and hunting. The Cook Inlet Planning Area is a popular site for outdoor recreational activities, particularly fishing, hiking, boating, hunting, and wildlife viewing. Subsistence fishing and hunting are critically important public uses of coastal and marine resources in the Cook Inlet Planning 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 Planning Area, halibut and shellfish (particularly crab) are also important. Subsistence fishing and hunting make up a substantial portion of many communities' annual diets. As described in the Final Environmental Impact Statement for Cook Inlet Lease Sale 244, data indicate that large amounts of subsistence foods are harvested in the geographic areas adjacent to the Cook Inlet Planning Area (BOEM 2016).

6.5.1.2 *Military and NASA Uses*

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. DOD commented in response to the RFI that a detailed assessment of the compatibility of military and OCS oil and gas development will be submitted. The U.S. Navy utilizes the airspace, sea surface, subsurface, 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 and coordinates with the U.S. Navy to conduct ice thickness and acoustic surveys.

BOEM received comments from NASA regarding concern for potential conflicts that could occur in the Beaufort Sea Planning Area from NASA activities at the Poker Flat Research Range, a University of Alaska Fairbanks-owned facility outside of Fairbanks, Alaska. NASA indicated it will provide an updated analysis of mission compatibility with OCS oil and gas development for the planning areas that are included in the DPP decision.

6.5.1.3 *Renewable Energy*

BOEM has not received applications for renewable energy or marine mineral leasing in any of the Alaska planning 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 planning areas during the 2019–2024 timeframe. Any renewable energy leasing that could occur during the approximate 40- to 70-year lifespan of the producing leases issued during the 2019–2024 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).

6.5.1.4 *Non-energy Marine Minerals*

Although BOEM has not issued any leases or agreements for non-energy, marine minerals in the Alaska planning areas, there have been recent inquiries regarding potential prospecting and competitive leasing

of strategic mineral resources (e.g., gold) offshore Nome in the Norton Basin Planning Area. It is possible that competitive leasing for gold could be further developed within the timeframe of the 2019–2024 Program.

6.5.2 Pacific Region

The Pacific OCS Region comprises four planning areas: Washington-Oregon, Northern California, Central California, and Southern California. Table 6-4 shows the other uses of the OCS within the Pacific Region.

Table 6-4: Other Uses of the OCS within the Pacific Region

Activity	Planning Area			
	Washington/ Oregon	Northern California	Central California	Southern California
Commercial Fishing	X			X
Recreational Fishing	X	X	X	X
Federal Agency Activity	X (DOD)		X (DOD)	X (DOD)
Current OCS Oil and Gas Activity				X
Potential OCS Renewable Energy	X		X	
Subsistence	X			
Ports/ Shipping Routes	X		X	X
Tourism	X	X	X	X

6.5.2.1 Commercial, Recreational, and Subsistence Uses

Although important throughout the region, commercial fisheries in and near the Washington/Oregon Planning Area (especially near Washington) and the Southern California Planning Area are particularly essential from an economic perspective. In 2009, the commercial fishing industry provided roughly \$3 billion in value added to Washington (contribution to state GDP), while the waters in and near the Southern California Planning Area account for roughly 75 percent of California’s total commercial fishing landings, by pound, and contribute more than \$5 billion in total value added to California’s state GDP (BOEM 2014).

The ocean-dependent tourism and recreation sector is also significant, with counties near the Central California and Southern California planning areas each accounting for more than \$7 billion in total value added in 2009, and counties near the Washington/Oregon Planning Area accounting for more than \$3.5 billion in total value added in 2009 (BOEM 2014). Within California, commercial shipping activity is concentrated in ports near the Central California Planning Area (San Francisco) and the Southern California Planning Area (Los Angeles and Long Beach, two of the United States’ ten largest ports measured in terms of cargo tonnage). Seattle, the 26th largest port in the United States based on cargo tonnage, is the largest port near the Washington/Oregon Planning Area.

Outdoor coastal recreation is an important use of coastal resources along the Washington, Oregon, and California coasts. Washington and Oregon have almost a dozen national wildlife refuges (NWRs) and a few large national parks (NPs) along their coasts that support coastal recreational activities such as beach visitation, bird watching, and wildlife and scenery viewing. Washington is one of the top five states in the United States for scuba diving in terms of the number of participants. The coast of California is also home to a variety of NWRs and NPs that help support a range of outdoor recreational activities, particularly hiking, boating, and wildlife viewing in the northern region, as well as beach visitation, swimming, and surfing in the central and southern regions. Recreational fishing represents one of the most significant public uses of coastal resources in and near the Pacific Region, particularly in Washington and southern California in terms of economic impacts (with annual expenditures in 2011 exceeding \$1.8 billion for Washington and \$4.4 billion for California) (ASA 2017).

Data on subsistence fishing and shellfish harvesting in the Pacific region is generally limited and primarily anecdotal. Washington and Oregon are home to a variety of indigenous, Asian, and Pacific Islander communities who rely on subsistence fishing as both a cultural tradition and an important economic staple. In California, official information on subsistence fishing is included within recreational fishing data. Subsistence fishing could be most prevalent in those areas designated as “fishing communities” by the National Oceanic and Atmospheric Administration (NOAA), defined as cities and towns with strong ties to commercial and/or recreational fishing.

6.5.2.2 *Military Uses*

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 to national security. The U.S. Navy utilizes the airspace, sea surface, subsurface, 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 DOD include U.S. Navy at-sea Operational Areas (OPAREAs). Testing and training does not occur on all days of the year, but could occur during any season. These activities vary depending on where in the OPAREA they occur (e.g., open versus nearshore water) and could be concentrated within a smaller geographic area than the OPAREA footprint. The Pacific Northwest OPAREA is off the Washington and Oregon coasts, and the Southern California-Point Mugu OPAREA is off the central and southern California coasts and extends into waters south of the U.S.-Mexico border. Vandenberg Air Force Base is on the coast in the Southern California Planning Area and has an active launch program that has been taken into account via lease sale stipulations in the past. DOD commented in response to the RFI that a detailed assessment of the compatibility of military and OCS oil and gas development will be submitted.

6.5.2.3 *Renewable Energy*

In the Pacific, BOEM continues to work closely with states and other stakeholders to facilitate OCS renewable energy development off Oregon and California.³⁴ In Oregon, the Northwest National Marine

³⁴ BOEM is also working to develop renewable energy offshore Hawaii; however, there are negligible oil and gas resources offshore Hawaii so this area is not analyzed for the National OCS Program. See Chapter 1 for a brief discussion.

Renewable Energy Center at Oregon State University (NNMREC-OSU) has applied to BOEM for a research lease offshore Newport, Oregon. The proposed research lease would consist of four test berths to demonstrate the viability of wave energy off the coast of the United States by providing a grid-connected ocean test facility for prototype and utility scale wave energy devices. In 2014, BOEM determined that there was no competitive interest offshore Newport, Oregon, where NNMREC-OSU has proposed the research facility. BOEM is working with the Federal Energy Regulatory Commission as a Cooperating Agency in preparing environmental documents for the proposed project. The location of the project area is shown in Figure 6-10.

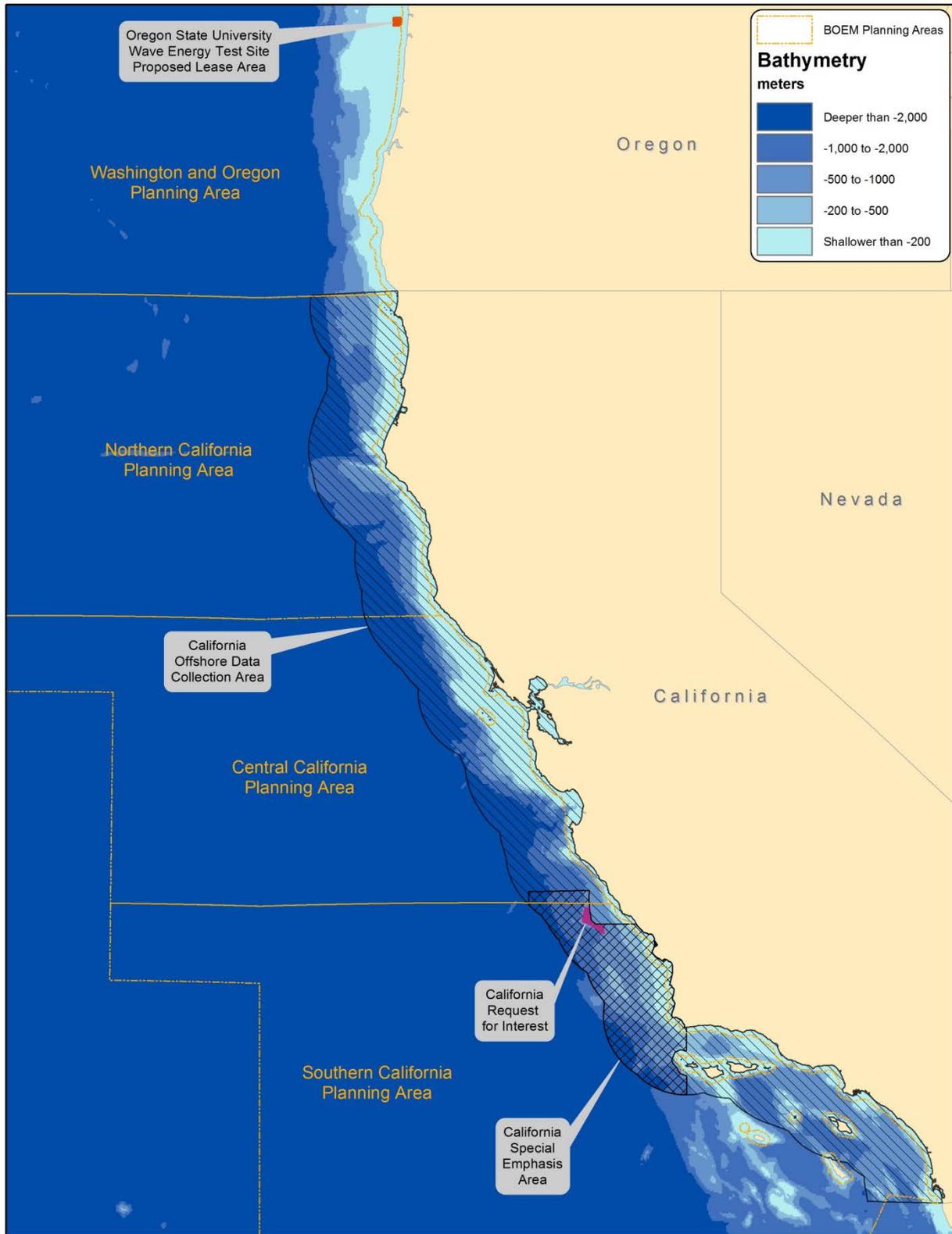
In California, BOEM received an unsolicited request for a commercial offshore wind lease from Trident Winds, LLC (Trident Winds) in January 2016. To determine competitive interest, BOEM published a Request for Interest in the *Federal Register* on August 18, 2016, to determine whether or not other companies were interested in developing in areas proposed in the unsolicited lease request. BOEM received one expression of interest from Statoil Wind US, LLC. Therefore, BOEM has initiated the competitive planning and leasing process with the State of California for possible future leasing for offshore wind development. BOEM and the state are working together with stakeholders to identify and collect relevant data and information on existing ocean resources and uses. These data sets are being collected in an online data portal to facilitate future decision making about offshore wind development along the California coast. Planning activities are shown in Figure 6-10.

6.5.2.4 *Non-Energy Marine Minerals*

BOEM has not issued any leases or agreements for non-energy marine minerals in the Pacific planning areas; however, the State of California has expressed interest in identifying OCS sand resources for remedial nourishment of severely eroded coastal beaches. The management of coastal sand resources is under consideration by the Coastal Sediment Management Workgroup³⁵ and the potential identification of OCS sand resources to support future needs is currently being evaluated.

³⁵ The Coastal Sediment Management Workgroup is a taskforce of state, federal, regional, and local entities chaired by the U.S. Army Corps of Engineers South Pacific Division and the California Natural Resources agency. BOEM is a part of the workgroup.

Figure 6-10: Pacific Region Renewable Energy Planning Activities and Project Lease Area



6.5.3 Gulf of Mexico Region

The GOM Region comprises three planning areas: the Western, Central, and Eastern GOM planning areas. The most notable other uses of the OCS in terms of economic contribution are coastal tourism and recreation, commercial fishing and seafood harvesting, and commercial shipping. Table 6-5 shows the other uses of the OCS within the GOM Region.

Table 6-5: Other Uses of the OCS within the Gulf of Mexico Region

Activity	Planning Area		
	Western GOM	Central GOM	Eastern GOM
Commercial Fishing	X	X	X
Recreational Fishing	X	X	X
Federal Agency Activity	X (DOD)	X (DOD)	X (DOD)
State Oil and Gas Activity	X	X	X
Current OCS Oil and Gas Activity	X	X	X
Marine Minerals Program Recipient	X	X	X
Subsistence		X	
Ports/ Shipping Routes	X	X	
Tourism	X	X	X

6.5.3.1 Commercial, Recreational, and Subsistence Uses

The commercial fishing and seafood industries 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 for the area [BOEM 2014]). The commercial fishery sector is largest in Louisiana, followed by Texas and then Florida. However, Florida's seafood industry contributes most to GDP because of its contributions further along the seafood supply chain (e.g., processors, retailers). Aquaculture, or the farming of seafood species, is becoming more common along the Gulf coast. As stated in its comment letter, NMFS would work with BOEM to identify potential conflicts between oil and gas activities and aquaculture activities. This coordination would occur during the later stages of BOEM's oil and gas leasing process (e.g., lease sale, exploration plan, and development and production plan stages). Commercial shipping is also important economically. As measured by the amount of cargo flowing through Gulf 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 2014). Three of the five Gulf coast states—Alabama, Louisiana, and Texas—have had some historical oil and gas exploration activity and currently produce oil and gas in state submerged lands.³⁶

³⁶ For recent information on state oil and gas leasing programs in the GOM, see Chapter 3 of BOEM's Final Multisale Environmental Impact Statement for Gulf of Mexico Lease Sales 249, 250, 251, 252, 253, 254, 256, 257, 259, and 261 (BOEM 2017).

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 Alabama or Mississippi. However, the tourism and recreation industries in Alabama and Mississippi still compose 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 \$6 billion in GDP for the Eastern GOM Planning Area, generated from the counties in western Florida (BOEM 2014).

While very little data exist to track their economic contributions, subsistence fishing and seafood harvesting are also important public uses 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). Several groups living along the Louisiana coast are central to the culture of the region and rely on fisheries and related marine resources. The Cajun population fishes and recreationally harvests fish and shellfish from the bayous as part of its subsistence (Henry and Bankston 2002). The United Houma Nation and the Chitimacha Tribe in southeastern Louisiana depend on subsistence diets, recovering foods from coastal areas. Vietnamese fishers, who fish in the near offshore, retain up to 25 percent of their catch for their families and also to use when bartering (Alexander-Bloch 2010).

6.5.3.2 *Military Uses*

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 to national security. The U.S. Navy utilizes the airspace, sea surface, subsurface, 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 DOD include U.S. Navy at-sea training areas. Training and testing could occur throughout the GOM OCS waters, but will be concentrated in OPAREAs and testing ranges. These activities could vary depending on where they occur (e.g., open versus nearshore water). Major testing and training areas in the GOM include the Gulf of Mexico Range Complex, the Naval Surface Warfare Center, Panama City Division, and the Key West Complex off the southwestern tip of Florida.

DOD and USDOJ will continue to coordinate extensively under the 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. DOD commented in response to the RFI that a detailed assessment of the compatibility of military and OCS oil and gas development will be submitted.

6.5.3.3 *Renewable Energy*

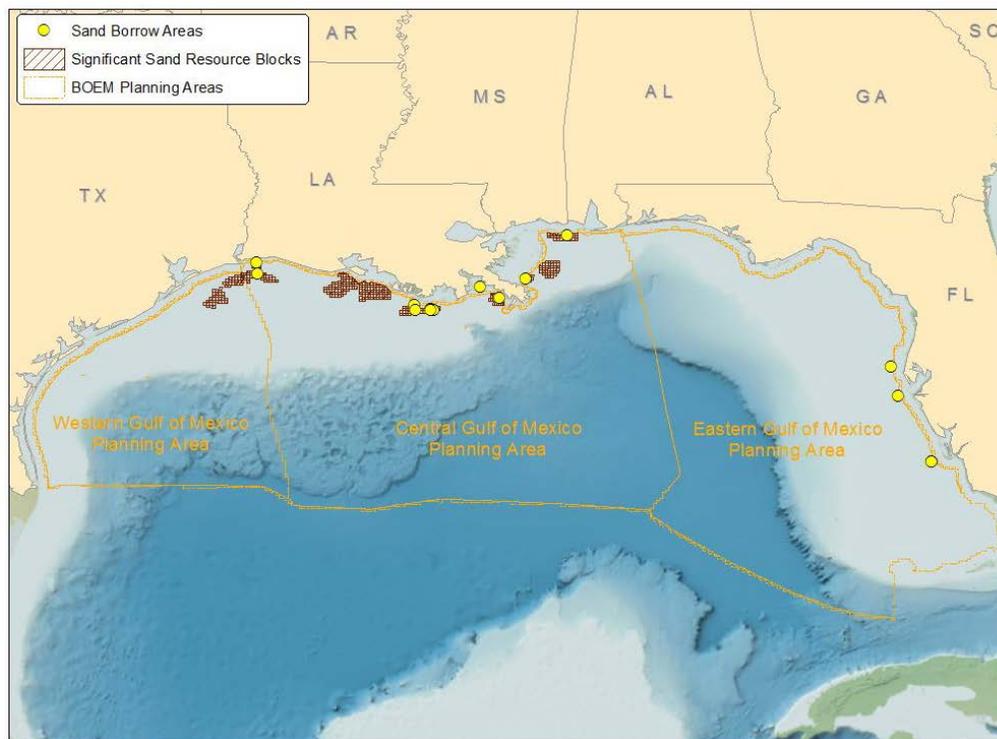
BOEM has not received applications for renewable wind energy leasing in the GOM Region and is not aware of any specific plans or proposals to develop OCS renewable energy resources in this area at this

time. However, BOEM is conducting renewable energy studies in the GOM and anticipates future renewable energy leases. 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 40- to 70-year lifespan of the producing leases issued during the 2019–2024 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).

6.5.3.4 Non-Energy Marine Minerals

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, and the coasts of Mississippi and Louisiana (see Figure 6-11). BOEM’s GOM MMP 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, 126 Stat. 407 [2012]) are used for restoration projects by coastal states. Typically, resource borrow areas are in water depths of less than 100 feet and are in close proximity to the coast. Significant sediment resources, shown in Figure 6-11, are those sand resources that are essential to coastal restoration initiatives in the GOM Region. OCS sediment resources refer to the sediment deposit(s), including clay, silt, sand, and gravel-size particles and shell, found on or below the surface of the seabed on the OCS as defined in Section 2(a) of the OCS Lands Act (43 U.S.C. § 1331(a)). BOEM has issued a Notice to Lessees and Operators and Pipeline Right-of-Way Holders to provide guidance for the avoidance and protection of significant sand resources.

Figure 6-11: Gulf of Mexico Region Sand Borrow Areas and Significant Sand Resources



6.5.4 Atlantic Region

The Atlantic OCS Region comprises four planning areas: North Atlantic, Mid-Atlantic, South Atlantic, and Straits of Florida. Table 6-6 shows the other uses of the OCS within the Atlantic Region.

Table 6-6: Other Uses of the OCS within the Atlantic Region

Activity	Planning Area			
	North Atlantic	Mid-Atlantic	South Atlantic	Straits of Florida
Commercial Fishing	X	X	X	X
Recreational Fishing	X	X	X	X
Federal Agency Activity	X (DOD)	X (DOD, NASA)	X (DOD)	X (NASA)
Potential OCS Renewable Energy	X	X	X	
Marine Minerals Program Recipient	X	X	X	X
Subsistence	X		X	X
Ports/ Shipping Routes	X	X	X	X
Tourism	X	X	X	X

6.5.4.1 Commercial, Recreational, and Subsistence Uses

Commercial and recreational fishing, ocean-dependent tourism, and commercial shipping and transportation are important economic uses in and along all the Atlantic planning areas. The North Atlantic supplies much of the fish and shellfish consumed in the United States, with Maine having the highest landings value (almost \$600 million), followed by Massachusetts (more than \$500 million) for 2015 (NMFS 2015). The economic impacts of commercial fishing along the entire Mid-Atlantic Planning Area total almost \$7 million in total value added (GDP); the industry is especially large in New York and New Jersey, which contribute \$2.2 and \$2.8 million to the GDP, respectively (NOAA 2012).

North Atlantic Planning Area ports handle roughly 10 percent of the United States' total imports and exports, and the Port of New York is one of the United States' five largest ports. Ports located 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. The Straits of Florida is one of the most heavily trafficked shipping areas in the world, with more than 40 percent of the world's marine commerce passing through the region every year.

Ocean-dependent tourism in and along the North Atlantic Planning Area is an enormous industry, with the economic impacts for New York by far the highest (more than \$16 billion in total value added in 2009). Ocean-dependent tourism is also a significant economic use for the Mid-Atlantic, South Atlantic, and Straits of Florida planning areas (accounting for over \$6.7 billion, \$4.4 billion, and \$6 billion in value added in 2009, respectively, to adjacent coastal areas) (BOEM 2014). Ocean-dependent tourism is a

particularly important contribution to each state's GDP for New York (\$33.9 billion), New Jersey (\$10.8 billion), Florida (\$7.7 billion), Virginia (\$2.9 billion), Maryland (\$2.5 billion), and South Carolina (\$2.2 billion) (BOEM 2014).

The Atlantic coastal region contains numerous NWRs (roughly 70), NPs, and national seashores (NSs), as well as many state parks and recreational areas where the public engages in various recreational activities. Beach visitation, swimming, wildlife viewing, boating, and fishing are the most popular coastal activities across the Atlantic states. Beach recreation is critically important to the Florida economy. Among the states adjacent to the North Atlantic Planning Area, the economic impacts of recreational fishing were highest in New York, followed by New Jersey and Massachusetts for 2011 (ASA 2017). In 2009, 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); more than \$1.3 billion in the South Atlantic economy (with eastern Florida accounting for the vast majority); and nearly \$2 billion to the economies in the counties near the Straits of Florida Planning Area (BOEM 2014).

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 could be most prevalent in those areas designated as "fishing communities" by NOAA, which are defined as such due to their strong ties to commercial and recreational fishing. Overall, NOAA has identified 47 fishing communities near the South Atlantic Planning Area and 9 near the Straits of Florida Planning Area (Jepson et al. 2005). 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.

6.5.4.2 *Military and NASA Uses*

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 to national security. The U.S. Navy utilizes the airspace, sea surface, subsurface, 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 DOD include U.S. Navy at-sea training areas. Training and testing could occur throughout the U.S. east coast OCS waters, but will be concentrated in OPAREAs and testing ranges. On the east coast, a major testing range includes the Naval Undersea Warfare Center, Division Newport. In the North Atlantic, U.S. Navy range complexes include Atlantic City, Narragansett Bay, and Boston; in the Mid-Atlantic, range complexes include Virginia Capes, Cherry Point, and portions of Chesapeake Bay; in the South Atlantic, range complexes include the Jacksonville Range Complex. DOD commented in response to the RFI that a detailed assessment of the compatibility of military and OCS oil and gas development will be submitted.

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 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 U.S. Navy activities in the Virginia Capes OPAREA. Farther south in the Straits of Florida Planning Area, NASA operates the Kennedy Space Center, which is on Cape Canaveral and most well-known for its function as a former launch site for the U.S. space shuttles. The waters around the Kennedy Space Center are recognized as a *de facto* marine reserve since human entry is prohibited there.

BOEM received comments from NASA stating that a primary concern is that future oil and gas development in the Atlantic Ocean would result in the need to protect additional persons and property when conducting launch operations. NASA indicated it will provide an updated analysis of mission compatibility with OCS oil and gas development for the relevant planning areas that are included in the DPP decision.

6.5.4.3 Renewable Energy

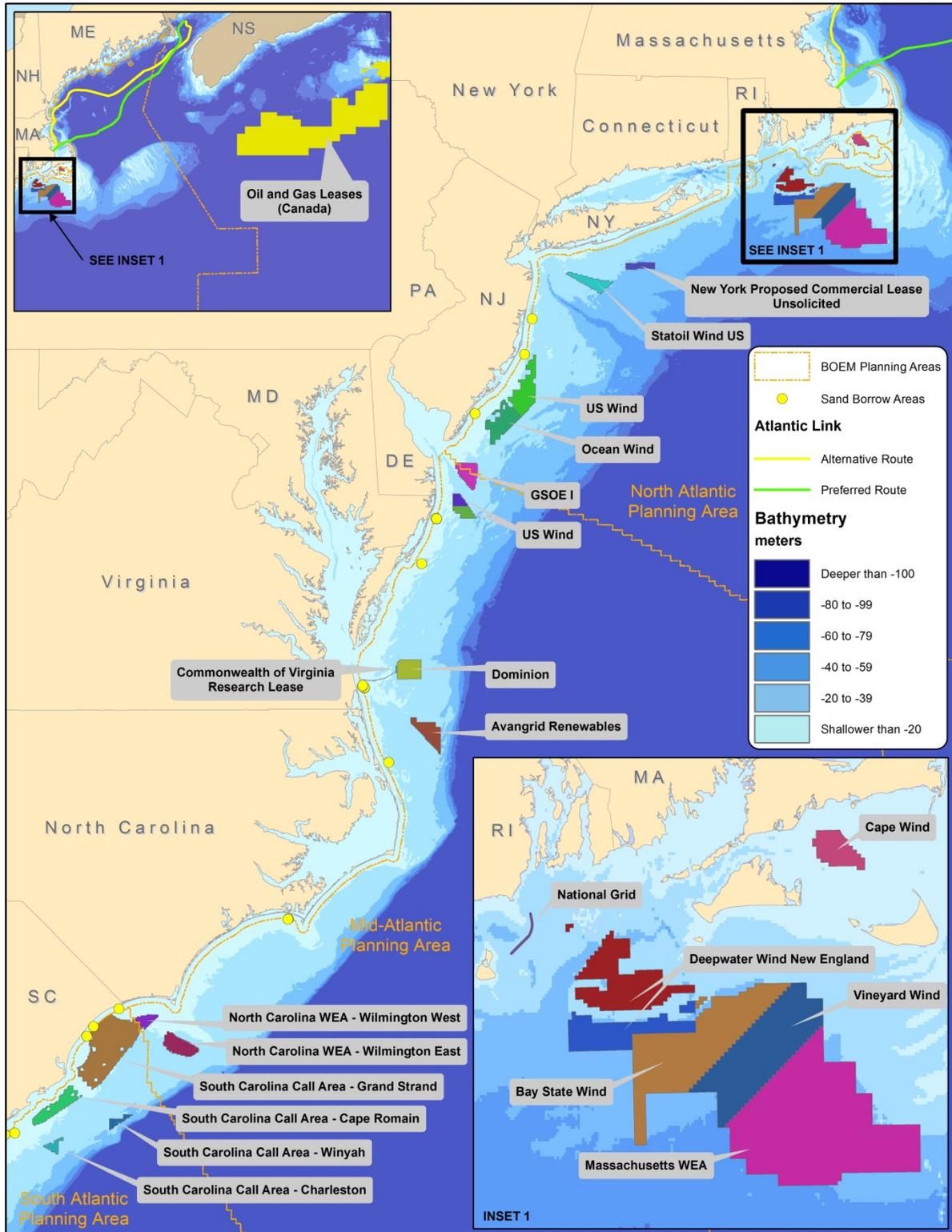
To date, BOEM activities include issuing 13 wind energy leases off the Atlantic coast, with site characterization surveys and site assessment activities (i.e., construction and operation of meteorological towers and buoys) occurring during the 2019–2024 timeframe. Up to three construction and operations plans are anticipated to be submitted in late 2017 and early 2018, and construction of offshore wind facilities could begin in the 2019–2024 timeframe. BOEM is considering offering additional areas for lease, and is processing unsolicited requests for leases and rights-of-way grants. An overview of the current and proposed lease areas is provided in Figure 6-12, which also shows oil and gas leases in Canadian waters. Information is provided for individual planning areas to capture the relevant level of detail.

North Atlantic Planning Area

In 2010, the first commercial OCS renewable energy lease in the United States was issued to Cape Wind Associates. On September 9, 2014, BOEM completed its review of the Facility Design Report and Fabrication and Installation Report submitted by Cape Wind Associates for a proposed 468-MW wind power facility, allowing Cape Wind Associates to proceed with its project. The project is in a non-competitive leased area of Nantucket Sound off the coast of Massachusetts.

On July 31, 2013, BOEM held an auction for the Rhode Island/Massachusetts Wind Energy Area, which was the first competitive lease sale in the U.S. In September, 2013, BOEM executed two commercial wind energy leases for Deepwater Wind New England, LLC (Deepwater Wind). On December 19, 2014, BOEM executed a right-of-way grant for an 8-nm-long, 200-foot-wide corridor in Federal waters to Deepwater Wind for the Block Island Transmission System to install a submarine cable in support of the Nation's first operational offshore wind farm, Block Island Wind Farm, in Rhode Island state waters. In March, 2015, BOEM executed commercial wind energy leases with RES America Developments, Inc. (RES) and Offshore MW, LLC approximately 13 miles off the coast Massachusetts. In June 2015, BOEM approved the assignment of the RES commercial lease to Bay State Wind, LLC. In January 2017, BOEM executed a commercial wind energy lease with Statoil approximately 11 miles off the coast of New York.

Figure 6-12: Current and Proposed Renewable Energy Projects on the Atlantic OCS



Finally, several companies have expressed interest in additional leasing areas and BOEM anticipates holding one or more competitive auctions and potentially executing additional leases in the North Atlantic during the next several years, possibly within the 2019–2024 timeframe. Renewable energy leasing that could occur during the approximately 40- to 70-year lifespan of the producing leases issued during the 2019–2024 Program will need to be coordinated during the later stages of BOEM’s oil and gas leasing process, if oil and gas leasing occurs (e.g., lease sale, exploration plan, and development and production plan stages).

Mid-Atlantic Planning Area

In November 2012, BOEM executed a commercial wind energy development lease with Bluewater Wind, LLC (Bluewater) approximately 11 nm off the coast of Delaware. In December 2016, BOEM approved the assignment of Bluewater’s lease to Garden State Offshore Energy (GSOE). In November 2013, BOEM executed a commercial wind energy development lease with Dominion Energy for an area approximately 26 miles off the coast of Virginia Beach, Virginia. In August 2014, BOEM held a lease sale for the Maryland wind energy area, about 10 nm off the coast of Ocean City. U.S. Wind, Inc. submitted the winning bid for both lease areas.

In addition to commercial leasing BOEM also issues renewable energy leases when appropriate to state and Federal agencies for research purposes that support the future production, transportation, or transmission of renewable energy. BOEM executed a research lease with the Virginia Department of Mines, Minerals, and Energy (DMME). Within the research lease, DMME has proposed to demonstrate a grid-connected, 12-MW offshore wind test facility in an area adjacent to the Dominion Energy commercial lease, with construction to be completed in 2020. In March 2016, BOEM approved the Research Activities Plan and executed a project easement for the transmission line to shore. Any additional renewable energy leasing that could occur during the approximately 40- to 70-year lifespan of the producing leases issued during the 2019–2024 Program will need to be coordinated during the later stages of BOEM’s oil and gas leasing process, if oil and gas leasing occurs (e.g., lease sale, exploration plan, and development and production plan stages).

South Atlantic Planning Area

In March 2017, BOEM held an auction for the Kitty Hawk Lease Area approximately 27 nm offshore North Carolina. The winner of that auction was Avangrid Renewables, LLC. The Wilmington East Wind Energy Area and Wilmington West Wind Energy Area are both being evaluated for commercial competitive leasing offshore North Carolina and stakeholder discussions continue. In South Carolina, a Call and an NOI to prepare an EA were both published in December 2015. BOEM received a single qualified nomination for the Grand Strand Call Area from U.S. Wind Inc. and is evaluating the comments and nomination received on the area for commercial leasing. Planning with respect to renewable energy development in both of these areas is in the early stages, and the prospects are uncertain; however, commercial leasing could proceed during the 2019–2024 timeframe.

Straits of Florida Planning Area

Four areas along the Straits of Florida Planning Area’s southeastern coast were previously nominated for interim policy leasing relating to ocean current power. Experts believe these locations are within one of

the prime areas for ocean current power development due to the large volume and steady flow of the Gulf Stream. While the ocean current power industry is perhaps the most nascent of the offshore renewable energy sources, multiple developers, utilities, and academic institutions have expressed interest in the resource potential. Although BOEM is aware of some commercial interest in marine hydrokinetics project leasing offshore Florida, renewable energy development in this area is not certain at this time.

6.5.4.1 Non-Energy Marine Minerals

Through November 2017, BOEM has issued 39 agreements for approximately 69 million cubic yards of OCS sand for beach nourishment and coastal restoration projects along the Atlantic coast from New Jersey south to Florida. Atlantic coast states that have utilized OCS sand include New Jersey, Maryland, Virginia, North Carolina, South Carolina, and Florida. Typically, the borrow areas are in less than 100 feet of water and within 10 miles of the coast. Some recent interest has been expressed in the potential future use of OCS sand offshore New York, Delaware, and the New England states. BOEM has also been working closely with the states and other Federal partners to identify new potential Federal sand resource areas. There has been an increasing interest in sand from the OCS for beach nourishment and coastal restoration projects, especially in light of recent storm activity such as Hurricanes Sandy, Matthew, and Irma.

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Chapter 7 Environmental Consideration Factors and Concerns

7.1 ENVIRONMENTAL SETTING AND ECOLOGICAL CHARACTERISTICS

The environmental setting of an area where oil and gas leasing activities could occur is defined by various geological, geographical, and ecological characteristics. Section 5.1 includes a discussion of the hydrocarbon resources and a basic explanation of the geologic plays in each of the planning areas. The geographical setting includes the location of the region and its associated planning areas, as well as any unique physical characteristics.

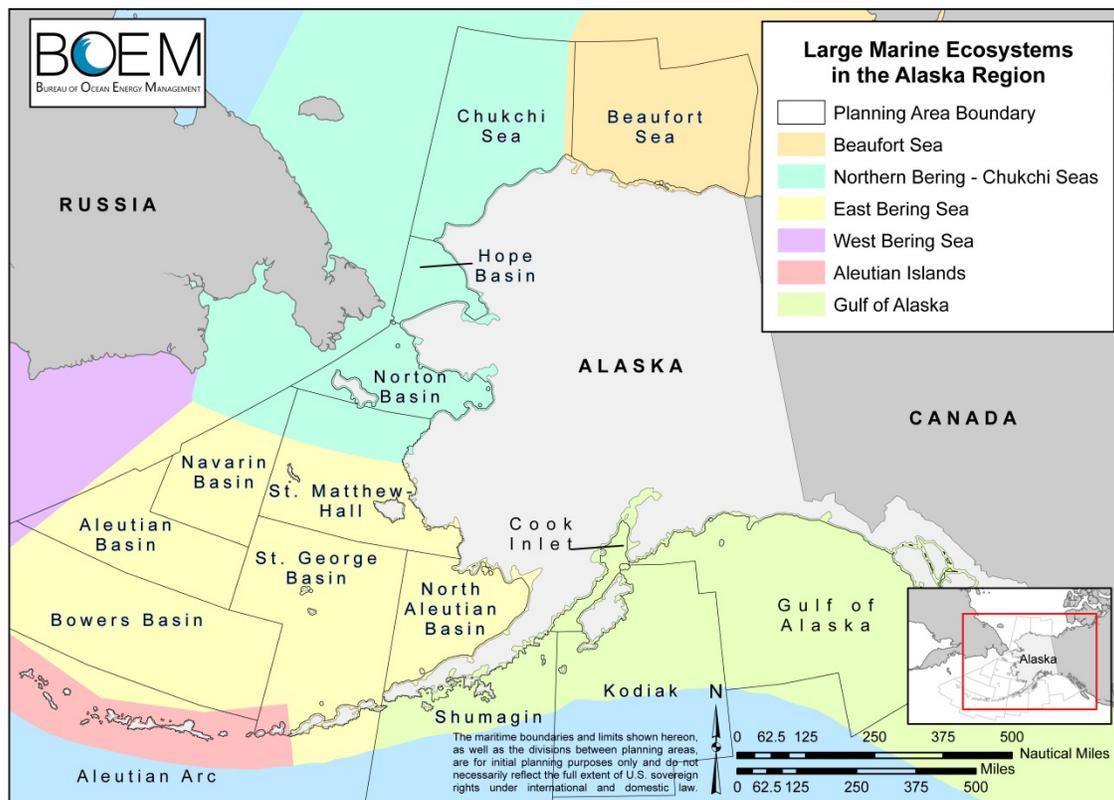
The ecological characteristics that define the environmental setting encompass all facets of a particular group of related species, habitats, or other ecologically significant parameters. The same general environmental resource areas (e.g., marine mammals, air quality) exist for all of the regions in which oil and gas leasing could occur; however, the relative importance of a given resource can vary depending on the geographic location. This can be due to many factors, such as relative abundance, sensitivity, the presence of federally protected species, the level of activity that occurs, or the presence of multiple human uses in an area that could impact the same resources. Resources include the physical and biological components of the larger ecosystem; environmental resource areas are defined components that are closely related, such as species groups (e.g., marine mammals) or interrelated habitats such as those that occur on the sea floor.

The sections below provide a brief overview of the environmental setting by region. Relevance of the characteristics of a region are often defined through distinctiveness of a resource, ecological importance, potential for impact, resiliency, state or Federal laws and policies, and ecosystem service value. For example, the Endangered Species Act (P.L. 93-205, 16 U.S.C. 1531–1544) affords legal protection to individual animals and their habitats based on their current status and the threats those animals could face in the future. Species or species segments (distinct population segments [DPSs]) can be classified as endangered, threatened, candidate, or proposed for listing. Additional information on the environmental resources that could be found in the planning areas is provided in the documents listed in Section 7.2, which also discusses the Programmatic EIS that will be developed for this National OCS Program. The Programmatic EIS will include additional, more detailed analysis of the environmental setting and potential impacts that could arise from oil and gas leasing activities. A Programmatic EIS was completed for the 2017–2022 Program (BOEM 2016) and it is hereby incorporated by reference. The Programmatic EIS for the 2019–2024 Program will identify sensitive areas that could warrant exclusion from development and mitigation measures for activities within leased areas that could have environmental impacts. The analysis will address whether mitigation measures are appropriate at the National OCS Program stage or should be deferred to the leasing or plan approval stages. The Programmatic EIS will address cumulative effects and effects that cross BOEM planning area boundaries, such as potential impacts on migratory animals.

7.1.1 Alaska Region

Geographic Area. The Alaska Region includes 15 planning areas that collectively fall within six Large Marine Ecosystems (LMEs) (see Figure 7-1). Eight of the planning areas cross the boundaries of two different LMEs (Beaufort Sea, Chukchi Sea, St. Mathew-Hall, Navarin Basin, Aleutian Basin, Bowers Basin, Aleutian Arc, and St. George Basin). For the discussion of the Alaska Region, these six LMEs have been combined into three BOEM ecoregions as discussed in the Environmental Sensitivity analysis found in Section 7.3 (see Figure 7-19). For ease of analysis, planning areas will be discussed below by BOEM ecoregion (Arctic, Bering Sea, and Gulf of Alaska). Table 7-1 shows planning areas per BOEM ecoregion.

Figure 7-1: NOAA Large Marine Ecosystems and BOEM Alaska Planning Areas



The three separate BOEM ecoregions within the Alaska Region are defined by geography, physical oceanography, and biological communities: (1) the Arctic, comprising the Beaufort and Chukchi seas; (2) the East Bering Sea, defined by the Bering Strait to the north and the Alaska Peninsula and Aleutian Islands to the south; and (3) the Gulf of Alaska, defined by mainland Alaska to the east and north and the Alaska Peninsula to the northwest.

Table 7-1: BOEM Ecoregions and Alaska Planning Areas

Ecological Region	Planning Areas
Arctic	Beaufort Sea, Chukchi Sea, Hope Basin
Bering Sea	Norton Basin, Navarin Basin, St. Matthew-Hall, Aleutian Basin, Bowers Basin, St. George Basin, North Aleutian Basin, Aleutian Arc (partial)
Gulf of Alaska	Aleutian Arc (partial), Shumagin, Kodiak, Gulf of Alaska, Cook Inlet

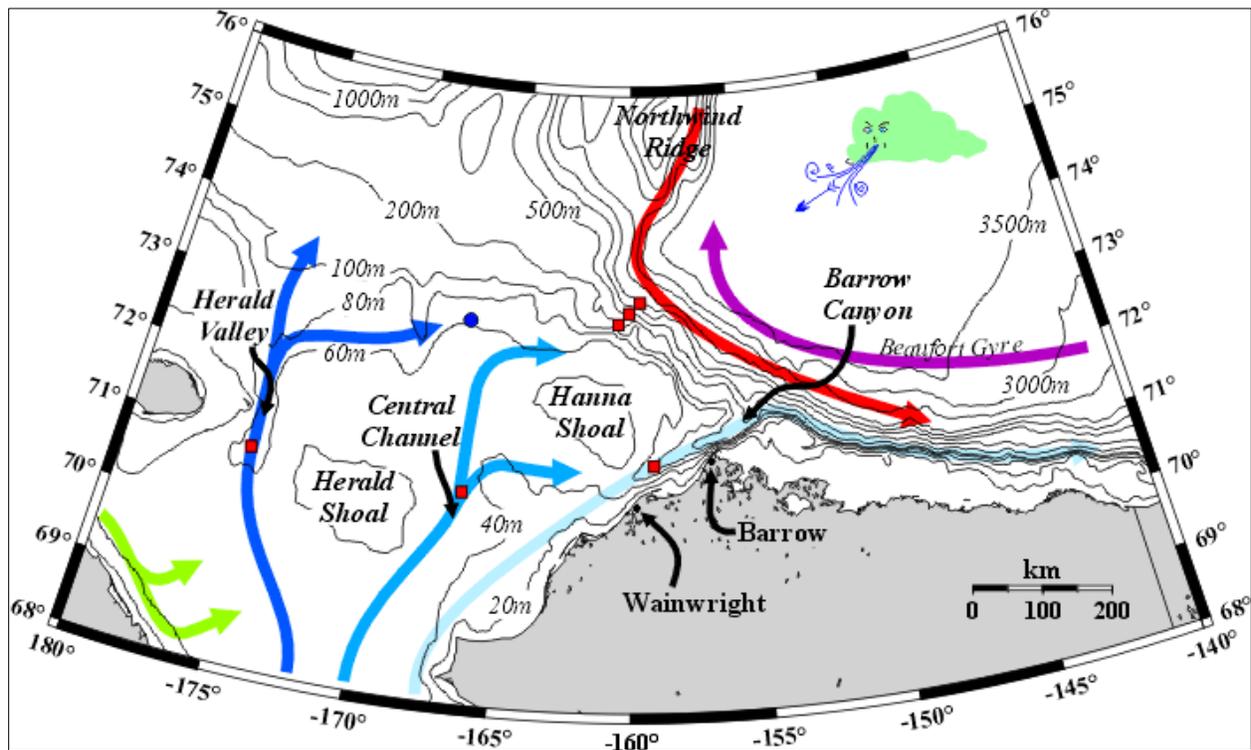
7.1.1.1 Arctic

Geographic Area. The Arctic OCS includes the Chukchi and Beaufort seas. The Hope Basin Planning Area is within the Chukchi Sea/Kotzebue Sound area. The U.S. Chukchi Sea extends from the Bering Strait north and east along the coast of Alaska to approximately Point Barrow, Alaska. The Beaufort Sea extends from approximately Point Barrow eastward along the northern coast of Alaska to Canada. The Chukchi and nearshore Beaufort regions are generally shallow, with a broad (100- to 300-mile [160- to 483-km] -wide) shallow shelf in the Chukchi Sea, and a narrower (< 60 miles [96.5 km]) shelf in the Beaufort Sea; the shallow continental shelf drops off sharply northward to the Arctic Basin.

Physical Oceanography. The Chukchi/Beaufort region is characterized by several unique physical and ecological characteristics. Seasonal pack ice moves southward into the region during the winter months from mid-November to mid-January. Sea ice covers the Chukchi and Beaufort Shelf for about eight or nine months of the year and reaches its maximum extent in March. Landfast ice (ice that forms adjacent to and extends from the land) begins to form in October and can extend 25 miles (40 km) or more from shore. The pack ice retreats during the summer, reaching its minimum extent in September. However, ice-diminished conditions are becoming more extensive during the summer months (ICCT 2015).

The Chukchi Sea water flow is characterized by several distinct currents running from south to north. The Alaska Coastal Current brings fresh, warm water from the Bering Sea into the Chukchi Sea, and continues along the shelf break into the Beaufort Sea. A central Chukchi Sea Current brings nutrient-rich waters from the Bering Sea and Anadyr Bay into the central Chukchi Sea; this current splits around Herald and Hanna shoals. The Chukchi Sea is also influenced by upwellings, which occur in shelf break canyons. In the Beaufort Sea, waters from the Canadian Beaufort Sea enter the Alaskan Beaufort Sea from the east and continue along the shelf edge and northward. Arctic waters move from the northern Arctic Ocean and along the shelf break from northwest to southeast. The Beaufort Sea gyre, shown in Figure 7-2, is wind-driven and an important fresh water concentrator (Weingartner 2017). The Mackenzie River Delta on the Canadian Beaufort Sea also contributes to the turbidity and lower salinity of the Beaufort Sea region. The movement and presence of sea ice, and the extended periods of summer daylight and winter darkness, are dominant features of the Arctic seascape and impact the physical, biological, and cultural aspects of life in the area. The presence of seasonal ice contributes to low salinities in the region.

Figure 7-2: Predominant Currents in the Beaufort and Chukchi Seas



Source: Weingartner 2017

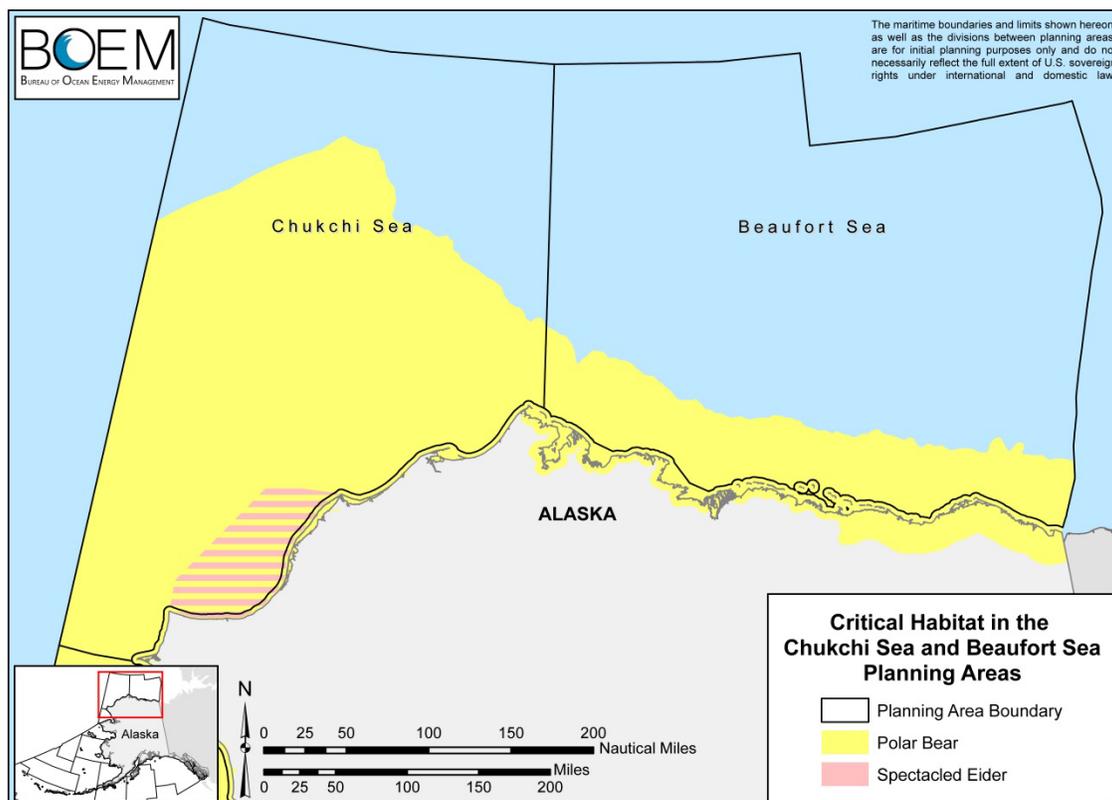
Ecological Features. The Arctic OCS is known for its ice-associated marine mammals. Polar bears and some ringed seals remain in the region year round. Many species are migratory and move southward through the Bering Strait in late fall ahead of the sea ice and northward and eastward through the Bering Strait in spring as the ice retreats. In summer, the Chukchi Sea is home to numerous mammal species, including Pacific walrus; ribbon, bearded, spotted, and ringed seals; killer, fin, gray, minke, and humpback whales; and harbor porpoise. Bowhead and beluga whales move northward through the Chukchi Sea and then typically continue eastward through the U.S. Beaufort Sea into the Canadian Beaufort Sea. The Beaufort Sea is home to ringed, spotted, and bearded seals; bowhead, beluga, and occasional gray whales; and harbor porpoise. Many bird species in large numbers are found on the shore and in the waters of the Arctic OCS, including waterfowl (e.g., eiders, long-tailed duck, swans, scoters, black brant, other geese), shorebirds (e.g., phalaropes, plovers, sandpipers, turnstones), and other marine birds (e.g., loons, fulmars, shearwaters, jaegers, gulls, murre, guillemots, puffins). The lagoons and river deltas along the Arctic coast, such as the Kaseguluk Lagoon area along the Chukchi Sea coast, the Colville River Delta, and Smith and Peard bays along the Beaufort Sea coast, are important foraging and molting areas for a variety and abundance of marine bird species. The Chukchi/Beaufort region provides habitat for 110 species of fish, such as sculpin, cod, and herring (Thorsteinson et al. 2016, Datsky2015). The northernmost presence of deepwater corals and Arctic kelp beds in Alaska are in the Beaufort Sea.

Threatened or Endangered Species. Marine species in and near the Arctic OCS that are listed under the ESA as threatened [t], endangered [e], or candidate [c] and could be impacted by potential oil- and gas-related activities include the following:

- *Birds (2)*: spectacled eider [t], Steller’s eider [t].
- *Marine mammals (8)*: bowhead whale [e], western north Pacific DPS of humpback whale [e], western North Pacific DPS of gray whale [e], fin whale [e], Beringia DPS of bearded seal [t], polar bear [t].

Critical Habitat. Designated critical habitat is shown in Figure 7-3 for Chukchi and Beaufort seas. Designated critical habitat for the spectacled eider is on the Chukchi Sea coast of Alaska. Designated critical habitat for polar bears is offshore and alongshore the Chukchi and Beaufort seas of Alaska. In addition, the USFWS designated important foraging areas for Pacific walrus in portions of the Hanna Shoal region as the Hanna Shoal Walrus Use Area (Jay et al. 2012). These areas receive additional protection through Marine Mammal Protection Act (MMPA) authorization restrictions.

Figure 7-3: Beaufort Sea and Chukchi Sea Critical Habitat



Human Use. The State of Alaska is home to 741,894 residents as of 2016 (USCB 2016a). About 40 percent of all federally recognized tribes have members who live throughout the state, with the majority residing in coastal areas (USCB 2016a). These coastal areas are populated with subsistence communities who depend largely on the natural environment, especially the marine environment, for food and materials. Each year, communities across northern Alaska participate in bowhead whale hunts that are central to their cultural tradition. In addition, fish (e.g. cod, herring, whitefish, Arctic cisco, Arctic char, and salmon), ringed seals, bearded seals, and beluga whales are all important marine subsistence species (ADF&G 2017a). The State of Alaska relies heavily on the following for its economy:

Fishing

Commercial fishing/harvesting
Hunting for marine animals
Recreational fishing

Non-Consumptive

Outdoor recreation
Tourism (cruise ships)
Indigenous cultural/spiritual uses

Industrial

Oil and gas production
Shipping

Section 6.5 includes additional information on other uses of the OCS.

Comments Received: Numerous comments were received in response to the RFI related to potential environmental impacts in the Arctic associated with the National OCS Program. A summary of substantive comments is provided in Appendix A. In addition to comments addressing the potential impacts, BOEM received several nominations for exclusion of areas on the basis of their environmental or human use significance, including the following:

- A coastal corridor in the Chukchi Sea Planning Area, including areas that have been excluded from past National OCS Programs
- Hanna Shoal in the Chukchi Sea Planning Area
- Herald Shoal in the Chukchi Sea Planning Area
- The area around and including Barrow Canyon, which crosses the boundary between the Chukchi Sea and Beaufort Sea planning areas
- Smith Bay in the Beaufort Sea Planning Area
- An area including Harrison Bay and the Colville River Delta in the Beaufort Sea Planning Area
- Several coastal locations important to subsistence use, including but not limited to the Barrow Whaling Area and Kaktovik Whaling Area that have been considered or excluded in past National OCS Programs
- Portions of the waters along the shelf break in the Beaufort Sea Planning Area.

The North Slope Borough, the Alaska Eskimo Whaling Commission, and the Arctic Slope Regional Corporation all requested that some or all of these areas be considered for protection during the development of the National OCS Program. This included requests for additional consultation, coordination, and engagement with local stakeholders to define appropriate areas for exclusion.

7.1.1.2 Bering Sea

Geographic Area. The Alaska Peninsula separates the Bering Sea from the Gulf of Alaska to the southeast. The Bering Sea is bounded by Alaska to the east and northeast, Russia's Far East and Kamchatka Peninsula to the west, the Aleutian Islands to the south, and the Bering Strait to the far north. The continental shelf in the Bering Sea is very broad, extending more than 300 miles (483 km) from shore at its widest extent. Water moves from the Bering Sea through the Bering Strait and into the Arctic Ocean via the Chukchi Sea. The planning areas within the Bering Sea ecological region include Norton Basin, North Aleutian Basin, St. George Basin, St. Matthew-Hall, Navarin Basin, Aleutian Basin, Bowers Basin, and the northern portion of the Aleutian Arc (see Table 7-1).

Physical Oceanography. Sea ice forms throughout the Bering Sea each winter, entering in the fall and retreating from the region through the Bering Strait in the late winter. Circulation in the Bering Basin is typically described as a cyclonic gyre, bounded by the Kamchatka Current flowing southward and the Bering Slope Current flowing northward. Water transport is generally northward through a number of passes between the islands of the Aleutian chain (Stabeno et al. 1999). The Yukon River provides a large source of fresh water input.

Ecological Features. The OCS waters of the Bering Sea include extensive eelgrass beds, such as those found in Izembek NWR in Bristol Bay, and host at least 450 species of fish, crustaceans, and mollusks; more than 50 species of marine birds; and 25 species of marine mammals (NRC 1996). Many of these species are protected, such as certain marine mammals and birds, or are commercially valuable, such as king crab, pollock, salmon, and cod. Species that occupy the outer shelf area and feed in the pelagic, or open-water, zone include seabirds, mammals, and fish that consume smaller, schooling fishes. One of the most important fish species is the walleye pollock, which makes up a significant portion of the total amount of marine life in the offshore system, and, along with other forage fish, is an important food source for nesting seabirds and seals. Inshore shelf waters consist more commonly of bottom-dwelling or bottom-associated species, such as demersal fishes and crabs, which feed primarily on organisms that live on or in the seafloor.

The seasonal movement of the sea ice affects the distribution of ice-associated species within the Bering Sea, including fishes, walrus, and seals. Walrus, bearded seals, ringed seals, and bowhead whales move southward with the advancing sea ice and winter in the Bering Sea. Fish and other species benefit from the ice cover and increased productivity that is a result of the seasonal sea ice. Many species occur seasonally in the Bering Sea. Gray and fin whales occupy the Bering Sea during the summer and early fall. Steller sea lions and northern fur seals move north into the Bering Sea during the summer and retreat to the Aleutian and Pribilof Islands, or farther south, during the winter.

The eastern Bering Sea also contains deepwater coral habitats. Deepwater corals are an important part of the benthic habitat in Alaska. They occur across a variety of depths (78 feet [24 m] to more than 15,000 feet [4572 m]) and provide habitat for commercial fish and crab species (NRC 1996). Soft corals are common in the Bering Sea.

Threatened or Endangered Species. Marine species in and near the Bering Sea that are listed under the ESA as threatened [t], endangered [e], or candidate [c] and could be impacted by potential oil- and gas-related activities include the following:

- *Birds (3):* Steller’s eider [t], spectacled eider [t], short-tailed albatross [e]
- *Marine mammals (12):* western north Pacific [e] and Mexico [t] DPSs of humpback whale, fin whale [e], bowhead whale [e], sperm whale [e], blue whale [e], sei whale [e], North Pacific right whale [e], western north Pacific DPS of gray whale [e], western DPS of Steller sea lion [e], Beringia DPS of bearded seal [t], southwest Alaska DPS of northern sea otter [t]
- *Sea turtles (4 species occasionally occurring in the Bering Sea, particularly in El Niño-Southern Oscillation [ENSO] years):* leatherback turtle [e], central north Pacific and east Pacific DPS of green turtle [t], North Pacific Ocean DPS of loggerhead turtle [e], olive Ridley sea turtle [t]
- *Fish (15 subspecies occasionally occurring in the Bering Sea):* 14 subspecies of steelhead and salmon from the Pacific Northwest [4e and 10t], green sturgeon [t].

Critical Habitat. A large portion of the Bering Sea between the Seward Peninsula and the Aleutian Islands is designated as critical habitat (see Figure 7-4). Critical habitat for polar bears is offshore and alongshore the Bering Sea to southwest of Saint Lawrence Island. North of the Alaska Peninsula and adjacent to Bristol Bay is critical habitat for the North Pacific right whale. The majority of the Aleutian Islands, the Pribilof Islands, St. Matthew and St. Lawrence islands, and nearshore areas on the northern shore of Bristol Bay and the Aleutian Islands are designated critical habitat for the western DPS of Steller sea lions. Designated critical habitat for Steller’s eider is on the northern shore of the Alaska Peninsula and along the shore of Yukon Delta NWR. Designated critical habitat for spectacled eider is south of Saint Lawrence Island, in Norton Sound, and along a portion of the shore of the Yukon Delta NWR. Nearshore waters along the Alaska Peninsula and Aleutian Islands are designated as critical habitat for the southwest Alaska DPS of the northern sea otter.

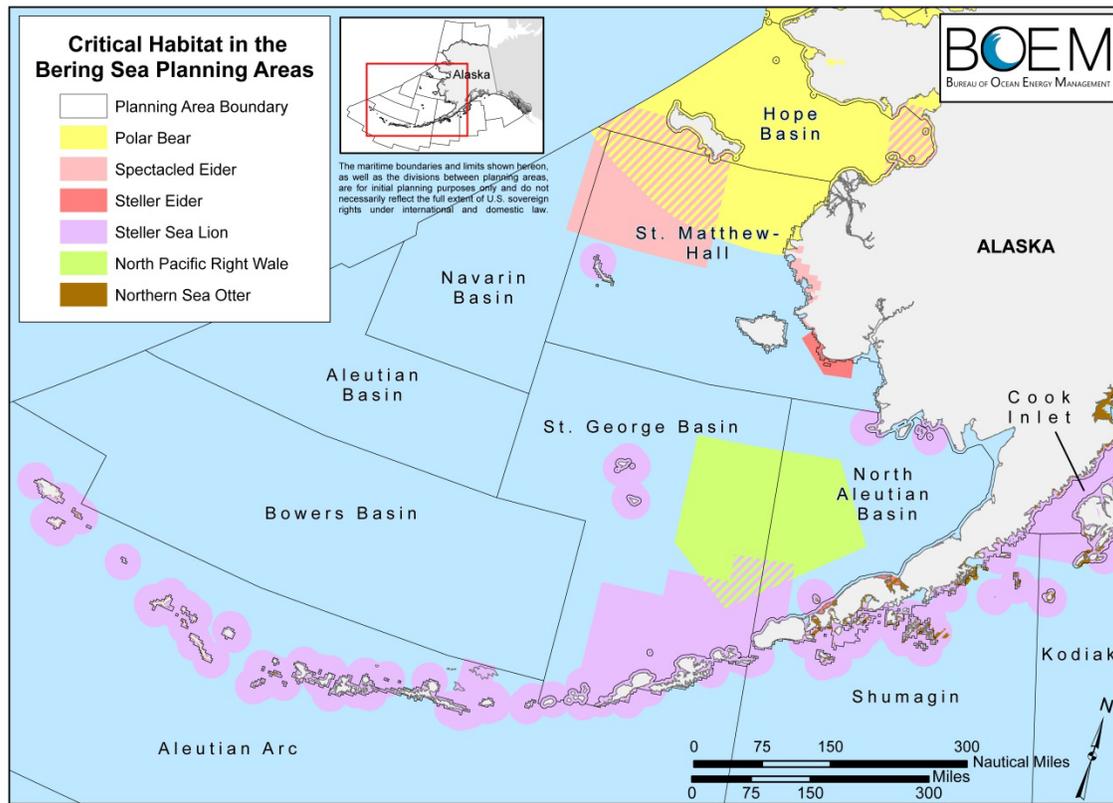
Human Use. Human coastal communities of the Bering Sea region rely on subsistence and commercial fishing. The Bering Sea has some of the most productive fisheries in the United States, most notably those for salmon, king crab, and pollock (ADF&G 2017b). Bristol Bay is an especially valuable area for commercial and sport fishing. Numerous freshwater nursery lakes and shallow estuaries make Bristol Bay the largest commercial sockeye salmon producing region in the world. Examples of human uses in the Bering Sea region include the following:

Fishing	Non-Consumptive
Commercial fishing/harvesting	Tourism
Hunting for marine animals	Indigenous cultural/spiritual uses
Recreational fishing	

Other uses of the OCS are discussed in detail in Section 6.5.

Comments Received. Numerous comments were received in response to the RFI related to potential environmental impacts in Alaska associated with the National OCS Program. A summary of substantive comments is provided in Appendix A.

Figure 7-4: Bering Sea Critical Habitat



7.1.1.3 Gulf of Alaska

Geographic Area. The Gulf of Alaska is a large, semi-circular bight bounded by the coast of mainland Alaska to the north and east and the Aleutian Islands to the west. It opens into—and is largely exposed to—the North Pacific Ocean. The Gulf of Alaska has a relatively narrow continental shelf, ranging from about 30 miles (48 km) off southeastern Alaska to more than 100 miles (160 km) near Kodiak Island. Cook Inlet is along the west-central coast of the Gulf of Alaska and bounded at the entrance by Kodiak and Afognak islands. The planning areas in the Gulf of Alaska include Cook Inlet, the Gulf of Alaska, Kodiak, Shumagin, and the southern portion of the Aleutian Arc.

Physical Oceanography. The climate of the Gulf of Alaska is warmer than the Arctic and northern Bering Sea. Sea ice does not regularly occur in the open Gulf of Alaska; however, Cook Inlet, Prince William Sound, and Glacier Bay all have ice formations of various kinds in the winter, and nearshore ice forms along the Alaska Peninsula and the Aleutian Islands in some years.

Ecological Features. The Gulf of Alaska hosts a wide variety of marine life, including as many as 24 species of marine mammals, 247 species of birds, and at least 383 species of fish, including 5 species of salmon (NRC 1996). The marine mammals that occur in the Gulf of Alaska include whales, dolphins, seals, sea lions, and otters; some of these animals remain in this area year round, while others move seasonally. The offshore, nearshore, and coastal habitats of the Gulf of Alaska OCS provide feeding, nesting, wintering, and migratory areas for a variety of seabirds, sea ducks, and shorebirds. The fish assemblages of the Gulf of Alaska are extremely diverse, including both subarctic and temperate species,

with Arctic species favoring the western portions of the Gulf of Alaska and the temperate species occurring more in the eastern portions. Many commercially valuable fish species occur in the Gulf of Alaska, including salmon, walleye pollock, cod, and crab.

The Gulf of Alaska and Aleutian Islands contain deepwater coral habitats. The Aleutian Islands have a very high diversity and abundance of deepwater corals. Deepwater corals are an important part of the seafloor (benthic) habitat in Alaska. They occur across a variety of depths (78 feet [24 m] to more than 15,000 feet [4572 m]) and provide habitat for commercial fish and crab species (NRC 1996).

Threatened or Endangered Species. Marine species in and near the Gulf of Alaska that are listed under the ESA as threatened [t] or endangered [e] and could be impacted by potential oil- and gas-related activities include the following:

- *Birds (2):* Steller's eider [t], short-tailed albatross [e]
- *Marine mammals (10):* western north Pacific [e] and Mexico [t] DPSs of humpback whale [e], fin whale [e], sperm whale [e], blue whale [e], sei whale [e], North Pacific right whale [e], Cook Inlet beluga whale [e], western north Pacific DPS of gray whale [e], western DPS of Steller sea lion [e], southwest Alaska DPS of northern sea otter [t]
- *Sea turtles (4 species occasionally occurring in the Gulf of Alaska, particularly in ENSO years):* leatherback turtle [e], central north Pacific and east Pacific DPS of green turtle [t], north Pacific Ocean DPS of loggerhead turtle [e], olive Ridley sea turtle [t]
- *Fish (15 subspecies occasionally occurring in the Gulf of Alaska):* 14 subspecies of steelhead and salmon from the Pacific Northwest [4e and 10t], green sturgeon [t].

Critical Habitat. Critical habitat is designated in or adjacent to the Gulf of Alaska for North Pacific right whales, the Steller sea lion western DPS, Steller's eider, the Cook Inlet beluga whale DPS, and the northern sea otter (see Figure 7-5).

Human Use. Tourism consists largely of sightseeing cruise ships and eco-tourism (including glacier and wildlife viewing), recreational fishing (including charter boats), camping, kayaking, and hiking. Other uses of the OCS are discussed in detail in Section 6.5. Prominent human uses in the Gulf of Alaska include the following:

Fishing

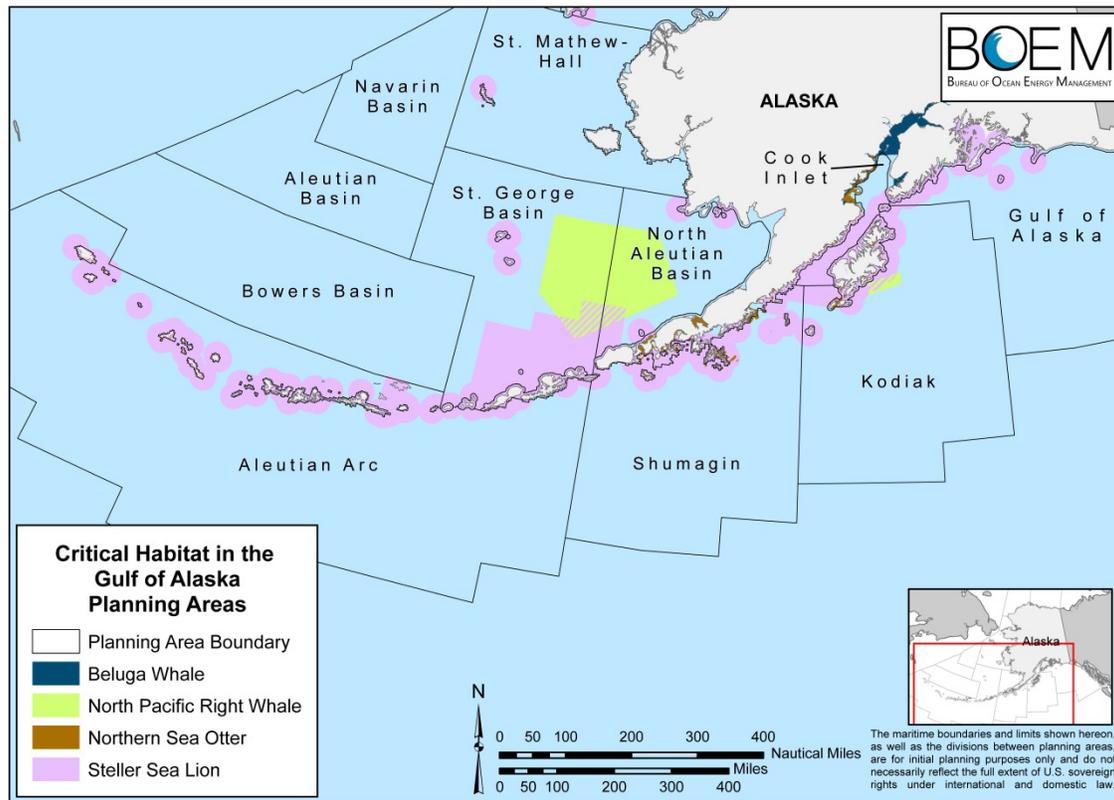
Commercial fishing/harvesting
Hunting for marine animals
Recreational fishing

Non-Consumptive

Tourism
Indigenous cultural/spiritual uses

Comments Received. Numerous comments were received in response to the RFI related to potential environmental impacts in Alaska associated with the National OCS Program. A summary of substantive comments is provided in Appendix A.

Figure 7-5: Gulf of Alaska Critical Habitat



7.1.2 Pacific Region

Geographic Area. The Pacific Region includes four planning areas that are within one LME called the California Current LME and defined by the California Current System, which moves southward along the western coast of North America from British Columbia, Canada, to Baja, California (see Figure 7-6). The U.S. west coast is approximately 1,300 miles (2,090 km) long from north to south, with the coast of California accounting for 65 percent (about 845 miles [1360 km]) of that distance. The continental shelf along the U.S. west coast is generally very narrow (10 to 70 miles [16 to 113 km] wide) and drops off steeply at the shelf break. Offshore southern California, the area beyond the shelf break consists of a topographically complex region, known as the continental borderland, which includes eight islands and associated banks and basins. This area is defined geographically as the Southern California Bight (SCB).

Physical Oceanography. The California Current System is a transitional zone between subarctic and subtropical water masses bounded by the Subarctic Current to the north and equatorial waters to the south. Due to the complexity of the continental borderland as noted above, the California Current System exhibits a northward-flowing countercurrent, eddies, and strong upwelling (Winant et al. 2006). The system can be affected by cyclical phenomena, such as the ENSO, which causes higher water temperatures and decreased upwelling within the California Current System, as well as wide swings in weather patterns. Under these circumstances, subtropical species often appear, returning southward when the normal oceanographic and weather patterns reappear.

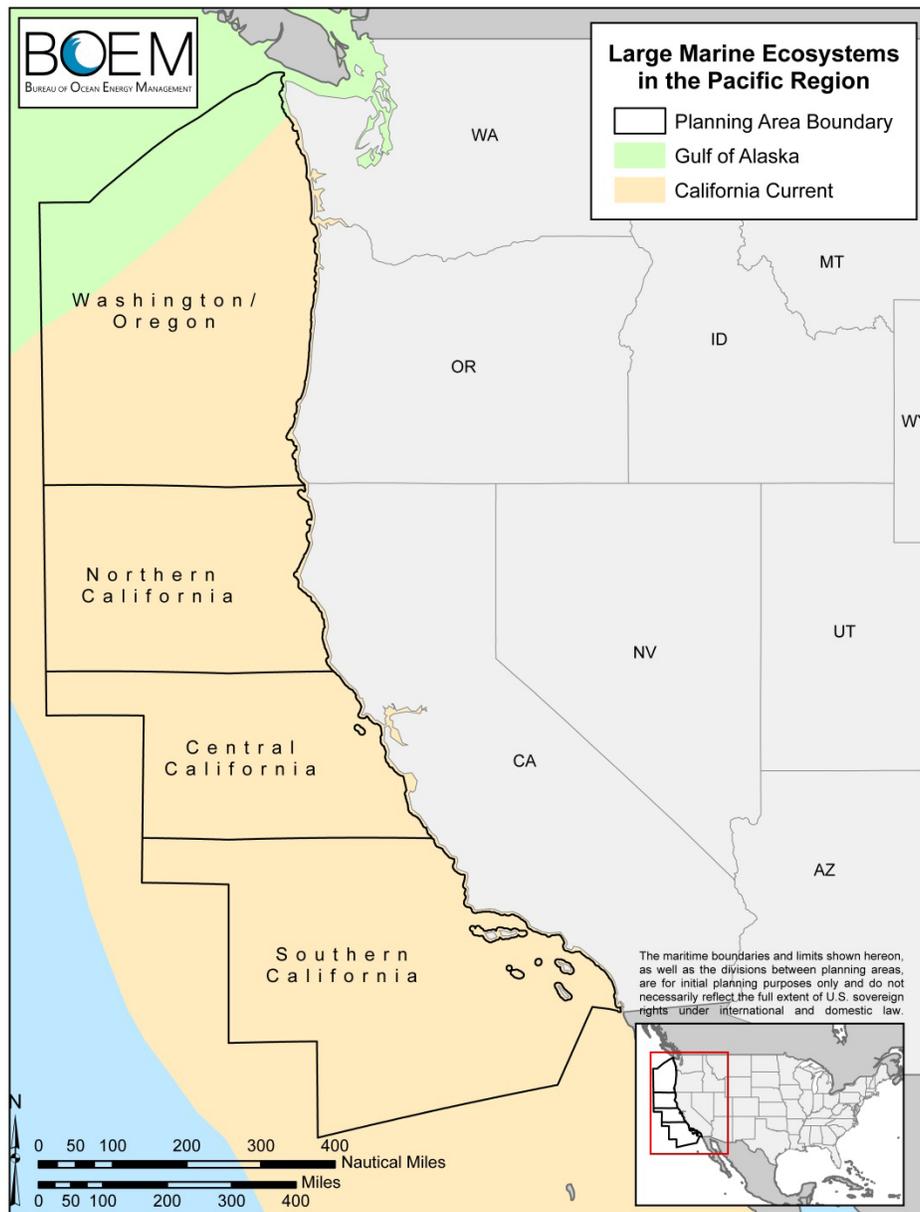
Ecological Features. In part due to its transitional nature, the California Current System hosts a wide variety of marine mammals, seabirds, sea turtles, marine fishes, and invertebrates. Strong coastal upwelling brings nutrient-rich bottom waters to the surface and supports many productive fisheries, as well as large and diverse marine mammal and seabird populations (Aquarone and Adams 2017a). Subarctic species are more common in the northern portions of the region, while temperate and subtropical species generally are found farther south. In years with warmer water temperatures, such as during an ENSO event, warm-water species could venture farther north along with the warmer water. Coastal wetlands provide habitat for resident and migratory shorebirds and waterfowl along the entire Pacific coastline. Large baleen whales such as blue, fin, and gray whales; sea lion and several kinds of seals; seabirds such as albatrosses, gulls, and brown pelicans; and large, open-water, predatory species such as great white sharks are present along the entire west coast, as are Dall's porpoise, Scoters, rockfish, herring, and salmon species.

In general, many of the species listed below can be found in greater or lesser numbers across the entire region. Therefore the listing below is in rough order of relative commonality north to south: In the northern portion of the region (the Washington/Oregon and Northern California Planning Areas), bull kelp, killer whales, salmon, and seabirds, such as the Common Murre, are integral parts of the ecological and cultural setting. The central California coast includes such temperate species as the giant kelp; sea otters, dolphins, and porpoises; and squid, crab, rockfish, and many other fish and invertebrate species. The SCB represents the northernmost and southernmost limits for the distribution of equatorial and high-latitude species, respectively. The area is also important habitat for the early life stages of many commercially valuable fish species. The islands in the continental borderland and surrounding waters serve as breeding and foraging habitat for seabirds (such as Scripps's [Xantus's] murrelet), marine mammals (including northern elephant seals, California sea lions, harbor seals, northern seals, and Guadalupe fur seals), and many species of whales and dolphins.

Deepwater coral habitats also exist offshore the U.S. west coast. Off of the Washington coast, coral communities provide habitat for many species of invertebrates and fish, including several rockfish species. There are records of deepwater corals both on and off the shelf from Puget Sound, Washington, to San Diego, California. These coral communities tend to be spread over discrete areas of suitable habitat and provide "islands" of habitat within larger areas of homogeneous substrate. They can occur in a variety of regions, including on the continental slope, in underwater canyons, or on underwater mountains known as seamounts.

Numerous commercially valuable species are found along the west coast, including Pacific salmon, hake, albacore tuna, Pacific sardine, northern anchovy, jack mackerel, chub mackerel, Pacific herring, rockfish, and Pacific halibut (Aquarone and Adams 2017a). Other species with high commercial value include shrimp, squid, crab, clam, and abalone (Aquarone and Adams 2017a). Most fisheries stocks in the area experience very high fishing pressure. Fisheries also are affected by changes in the climatic regime; this is particularly true for schooling pelagic fishes such as sardines and anchovy. A decrease in the abundance of these fish stocks can affect the entire ecological system, because many larger predators, such as birds and marine mammals, rely on them for food.

Figure 7-6: NOAA Large Marine Ecosystems and BOEM Pacific Planning Areas



Threatened and Endangered Species. Marine species in and near the Pacific OCS that are listed under the ESA as threatened [t], endangered [e], candidate [c], or proposed [p] and could be impacted by potential oil- and gas-related activities include:

- *Birds (6)*: Short-tailed Albatross [e], Hawaiian Petrel [e], Light-footed Ridgway's Rail [e], Western Snowy Plover [t], Marbled Murrelet [t], and California Least Tern [e]
- *Marine mammals (9)*: North Pacific right whale [e], humpback whale [e], sei whale [e], fin whale [e], blue whale [e], sperm whale [e], Southern Resident DPS of killer whales [e], Guadalupe fur seal [t], southern sea otter [t]

- *Sea turtles (4)*: leatherback turtle [e], green turtle [e], loggerhead turtle [t], olive ridley turtle [e]
- *Fish or invertebrates (12)*: scalloped hammerhead shark (Eastern Pacific DPS) [e], Gulf grouper [e], tidewater goby [e], steelhead [t/e], North American green sturgeon [t], white abalone [e], black abalone [e], eulachon [t], chum [t], coho salmon [t/e], sockeye salmon [t/e], chinook [t/e] salmon, Pacific Bluefin tuna [c], giant manta ray [pt], longfin smelt [c]
- *Amphibians (1)*: California red-legged frog [t]
- *Plants (1)*: salt marsh bird's-beak [e].

Critical Habitat. Critical habitat is designated in the Pacific Region for Southern Resident DPS of killer whales, eastern DPS of Steller sea lion,³⁷ leatherback sea turtle, Western Snowy Plover (Pacific Coast DPS), Marbled Murrelet, California red-legged frog, tidewater goby, North American green sturgeon (southern DPS), eulachon (southern DPS), black abalone, steelhead, and salmon within and adjacent to Pacific OCS waters (Figures 7-7 through 7-11).

Human Use. The planning areas being considered for future oil and gas leasing in the Pacific OCS are offshore of Washington, Oregon, and California. These states are home to a population of 50.6 million people and include 140 federally recognized tribes and numerous historically marginalized communities (low-income and communities of color) (USCB 2016a). Human use of these waters is extensive and can be categorized into three broad sectors: fishing, non-consumptive, and industrial (NOAA 2009). Some examples of these uses include, but are not limited to, the following:

Fishing

Commercial fishing/harvesting
Hunting for marine animals
Recreational fishing

Non-Consumptive

Beach use
Boating/sailing/kayaking
SCUBA/snorkeling
Watersports
Indigenous cultural/spiritual uses
Wildlife viewing

Industrial

Aquaculture
Cruise ships
Military use
Offshore energy
Shipping
Marine minerals
Dumping

Pollution from various onshore and offshore activities contributes to water quality degradation and air quality exceedances above the national standards in major metropolitan areas along the coast. Other uses of the OCS are discussed in detail in Section 6.5.

Comments Received. Numerous comments were received in response to the RFI related to potential environmental impacts in the Pacific Region associated with the National OCS Program. A summary of substantive comments is provided in Appendix A. In addition to comments addressing the potential impacts, BOEM received a nomination to exclude the Santa Barbara Channel from leasing consideration. All NMSs were also nominated for exclusion. In the Pacific Region, this includes the Olympic Coast, Cordell Bank, Greater Farallones, Monterey Bay, and Channel Islands NMSs.

³⁷ The eastern DPS of Steller sea lions was delisted in 2013 but designated critical habitat remains pending a NMFS rulemaking. This critical habitat was designated because it supports the western DPS's important biological functions (78 FR 66140).

Figure 7-7: Pacific Region Critical Habitat for Green Sturgeon and California Red-legged Frog

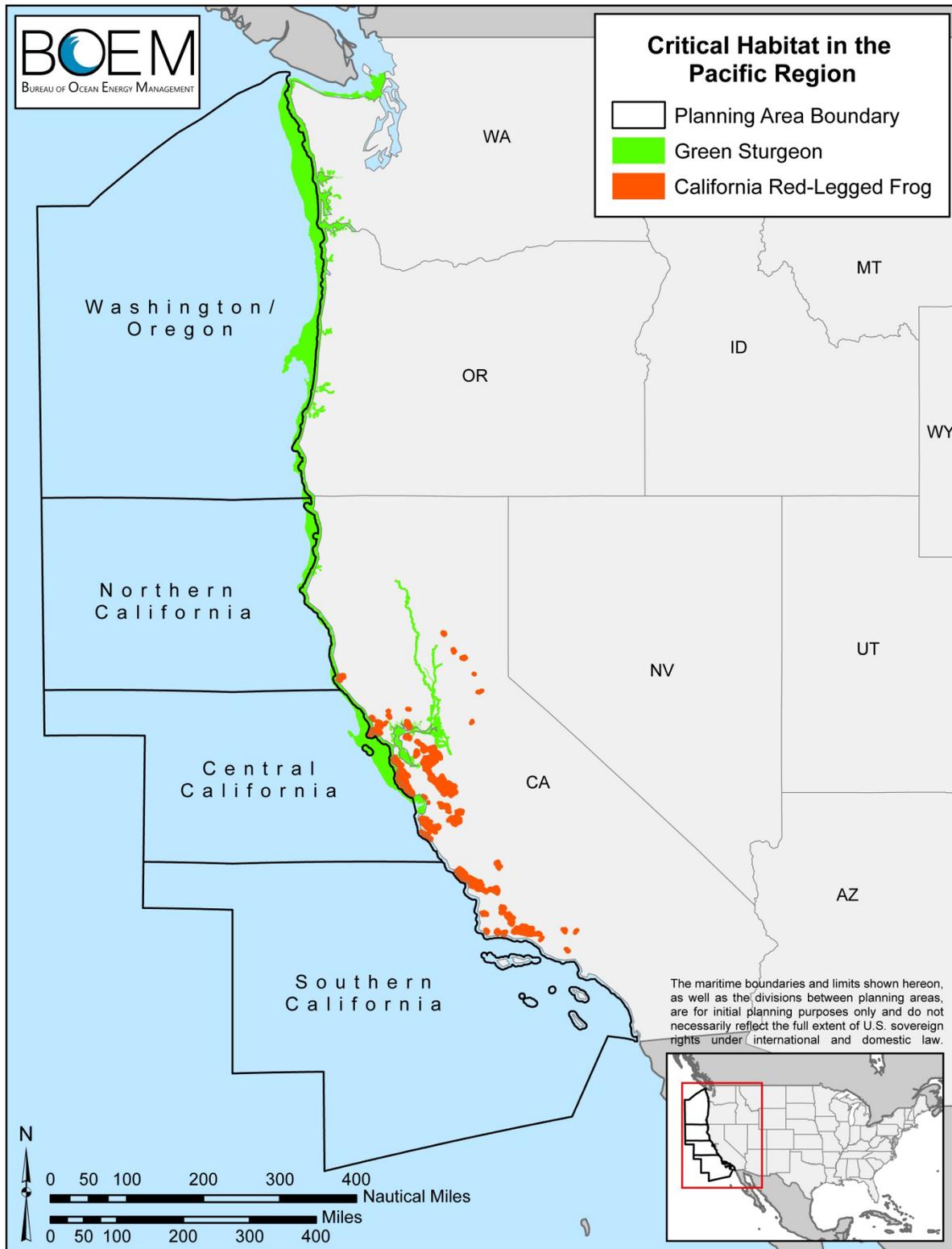


Figure 7-8: Pacific Region Critical Habitat for Killer Whale, Marbled Murrelet, and Black Abalone

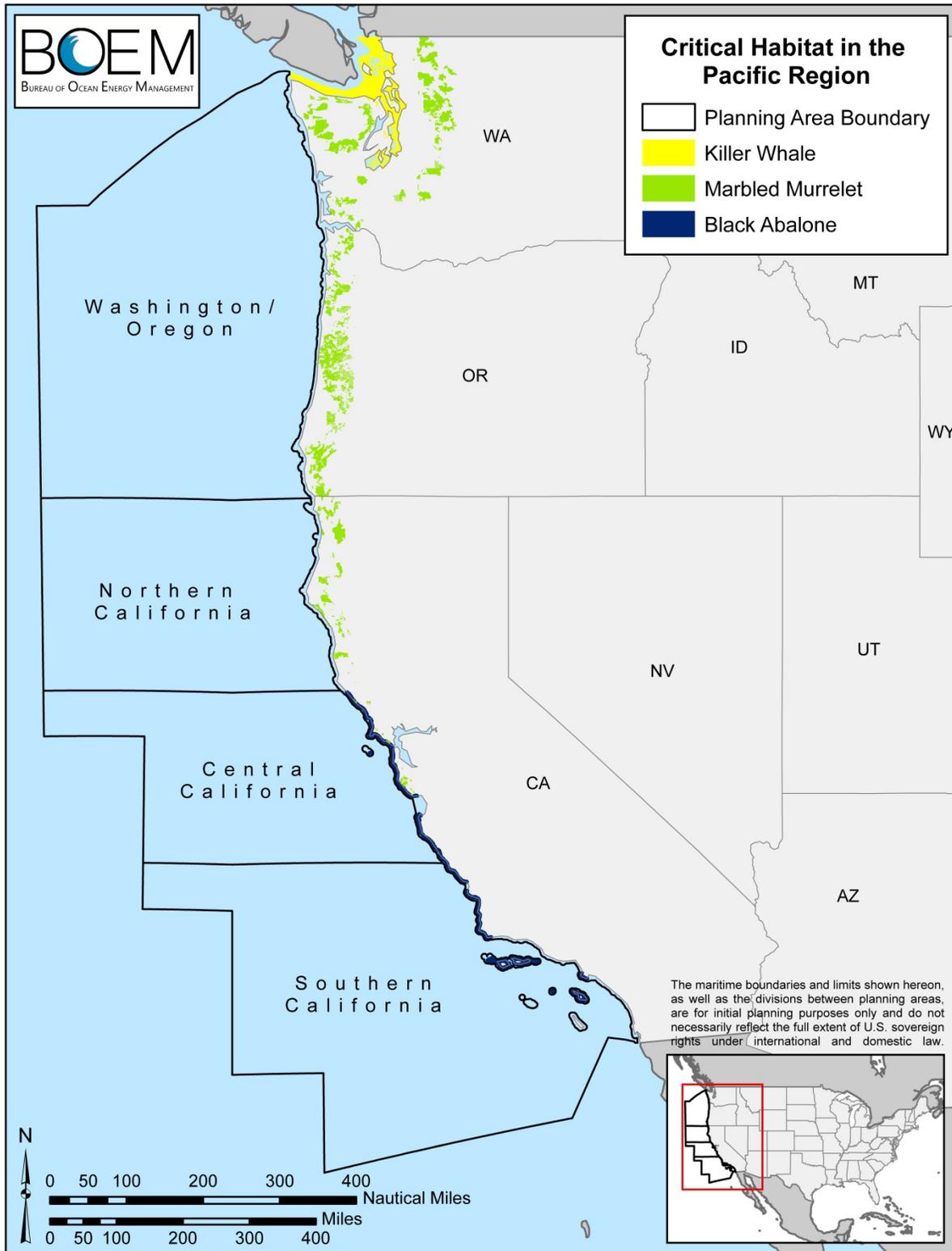


Figure 7-9: Pacific Region Critical Habitat for Eulachon, Leatherback Sea Turtle, and Steller Sea Lion

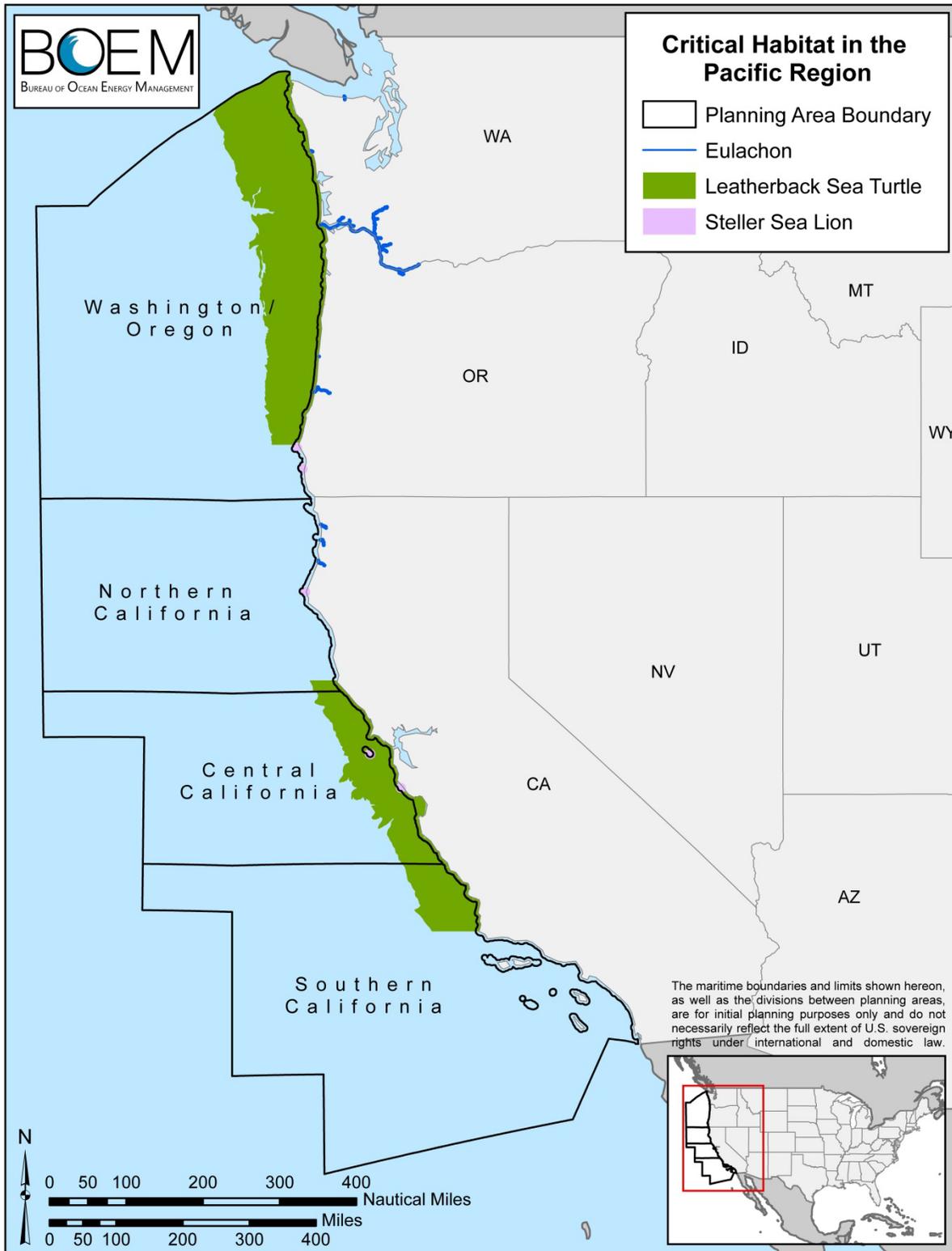


Figure 7-10: Pacific Region Critical Habitat for Salmon and Steelhead

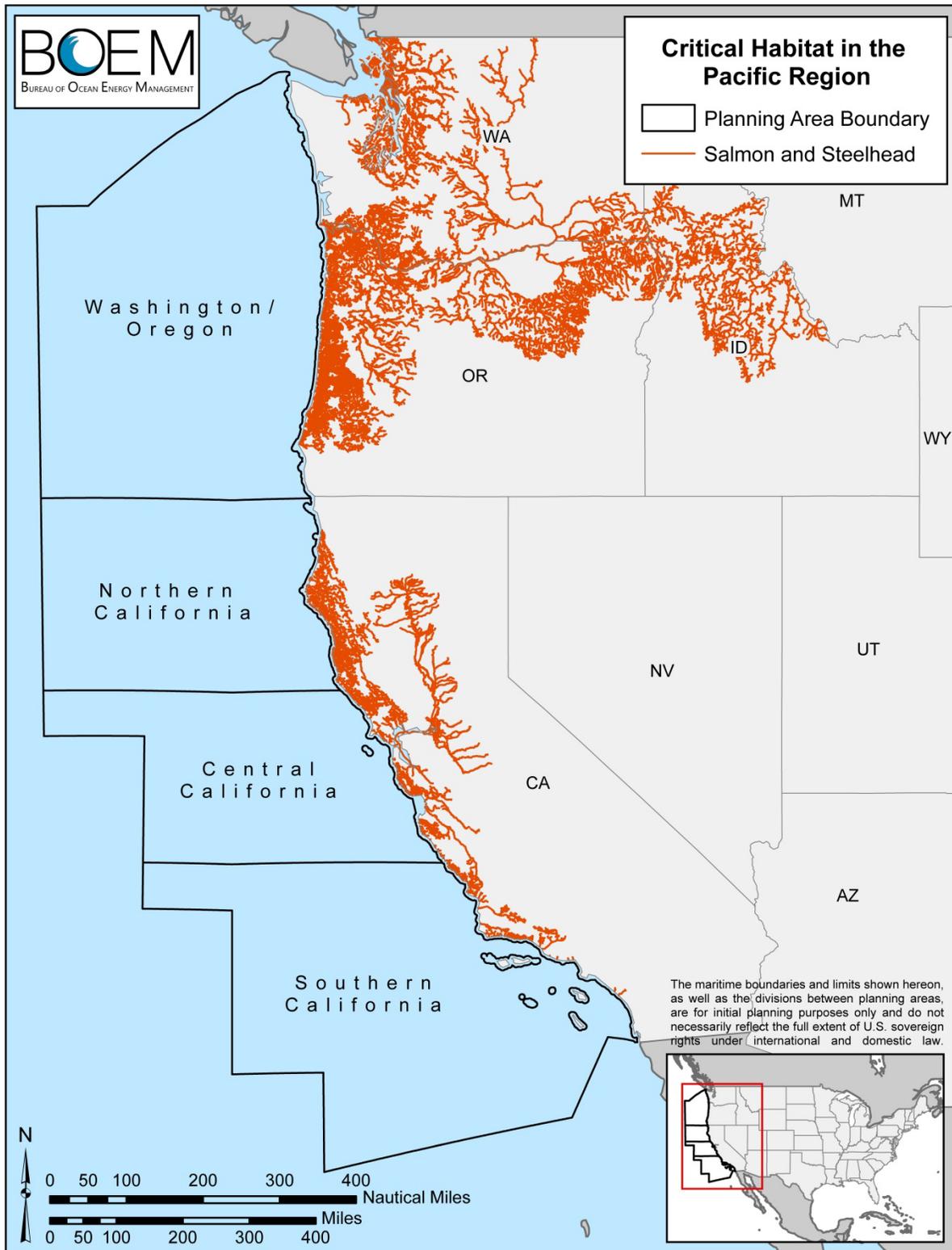
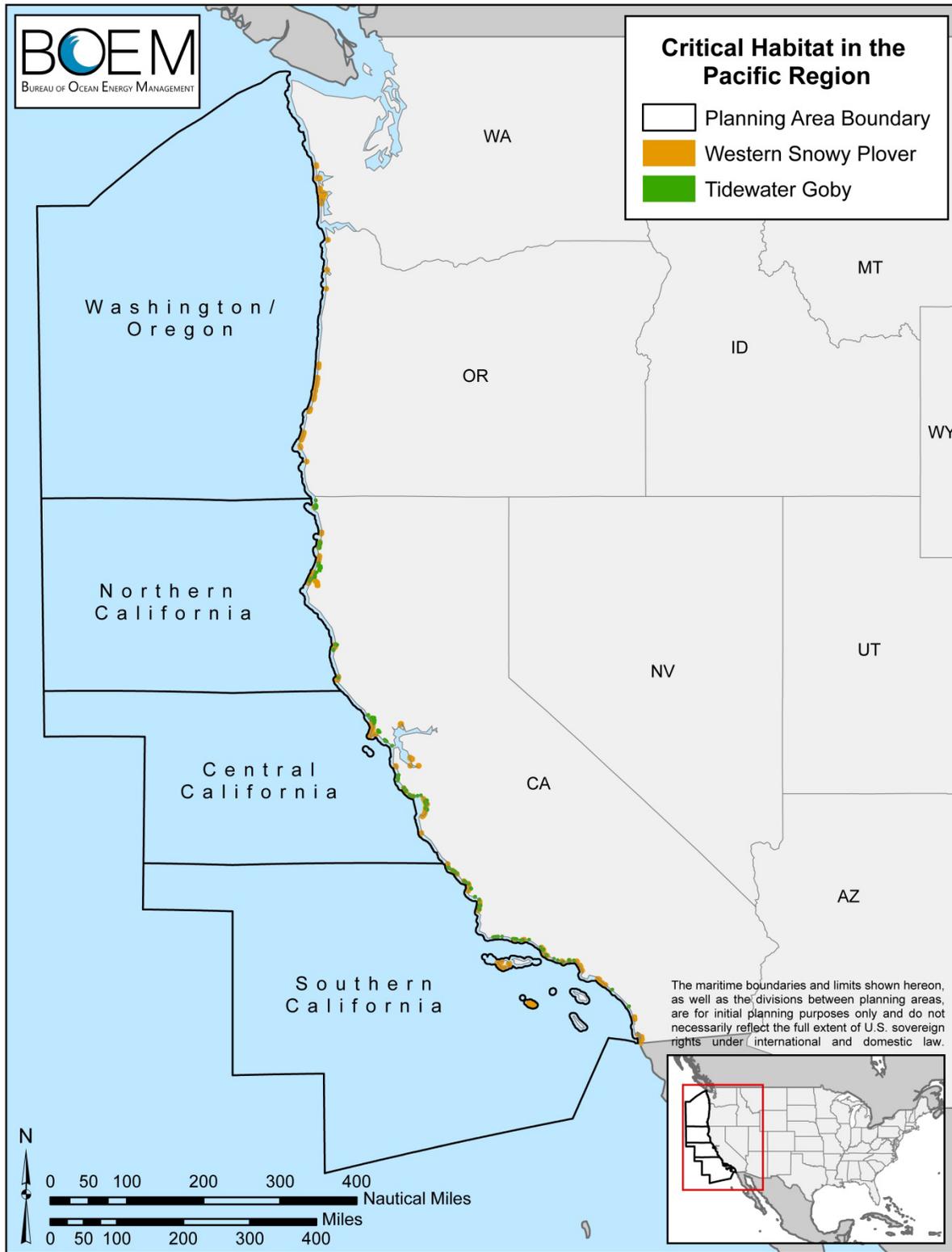


Figure 7-11: Pacific Region Critical Habitat for Western Snowy Plover and Tidewater Goby

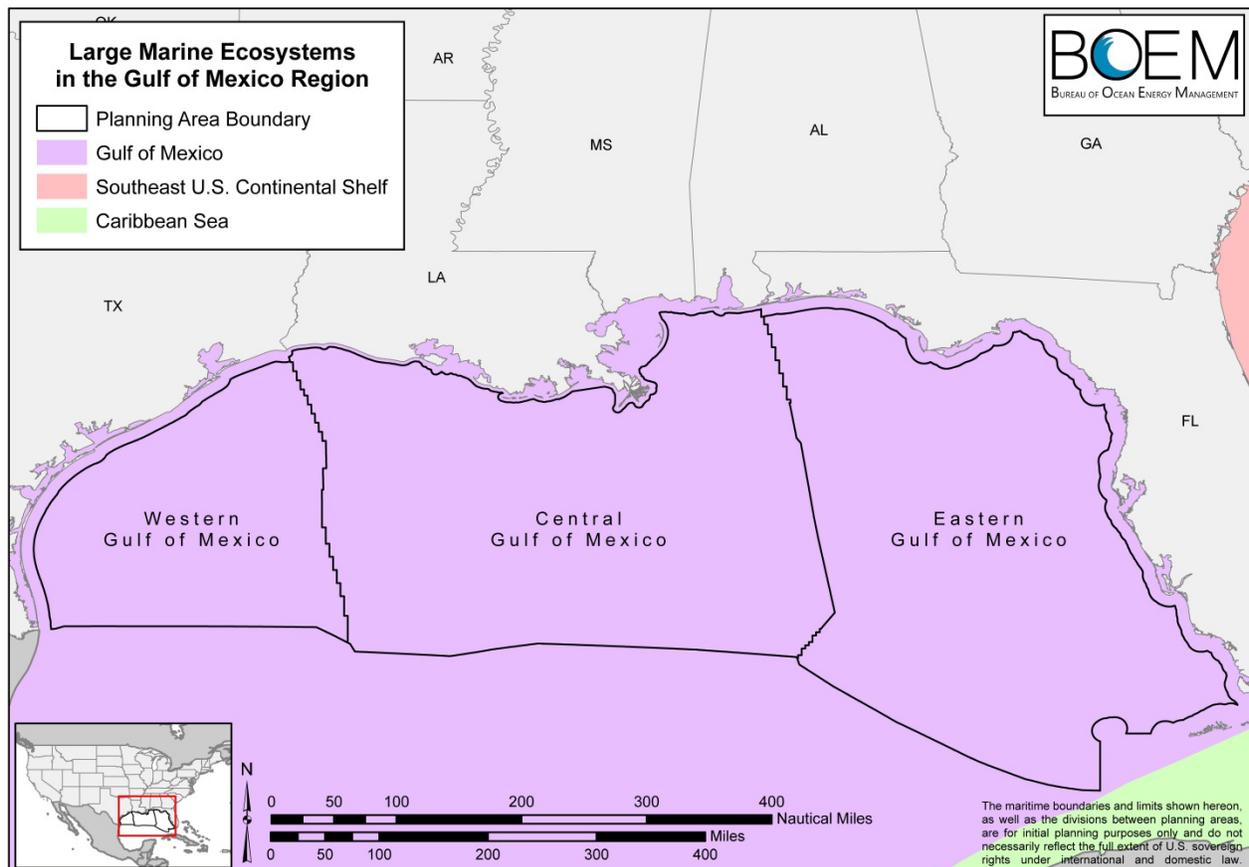


7.1.3 Gulf of Mexico Region

Geographic Area. The GOM is a semi-enclosed water body forming one LME about 950 miles (1,530 km) in diameter and encompassing more than 0.58 million mi² (1.5 million km²) (NOAA 2017a; Figure 7-12). The maximum depth is more than 12,000 feet (about 3,700 m) (Brooke and Schroeder 2007). The GOM OCS waters are only in the northern GOM. The northern GOM abuts the states of Texas, Louisiana, Mississippi, Alabama, and Florida. The focus of this analysis is on the OCS, and therefore there will be no discussion specifically on the Mexican and Cuban waters of the southern GOM. The GOM Region includes three BOEM planning areas: Western GOM, Central GOM, and Eastern GOM (see Figure 1-3).

For this DPP analysis, BOEM divided the GOM LME (Figure 7-8) into the Western GOM ecoregion and the Eastern GOM ecoregion along the Eastern and Central GOM Planning Area boundary as described in Section 7.3 (Figure 7-20). There are geologic differences between the Eastern GOM along Florida and the remainder of the northern GOM (Buster and Holmes 2011). The continental shelf in the Western GOM is broadest (up to 135 miles [217 km]) off Houston, Texas, and east to offshore the Atchafalaya Delta, Louisiana. It reaches its narrowest point (less than 10 mi [16 km]) near the mouth of the Mississippi River southeast of New Orleans, Louisiana. The continental shelf is narrow offshore Mobile Bay, Alabama, but broadens significantly offshore Florida to almost 200 mi (322 km) wide (Brooke and Schroeder 2007).

Figure 7-12: NOAA Large Marine Ecosystem and BOEM Gulf of Mexico Planning Areas



Physical Oceanography. The GOM is tropical to subtropical and receives salt water inputs from the Yucatán Channel and fresh water from large riverine systems (e.g., Mississippi River) of the United States and Mexico. Tidal range is small, usually less than two feet (0.6 m), and three major, persistent currents exist in the GOM. The most dominant is the Loop Current (Sturges et al. 2005) that flows clockwise into the GOM between Cuba and the Yucatán Peninsula, Mexico, and circulates into the Eastern GOM before exiting the GOM through the Straits of Florida, where it ultimately joins the Gulf Stream in the Atlantic Ocean. Smaller-scale, ephemeral currents known as eddies form off the Loop Current and can enter the western GOM. The GOM also experiences freshwater input from several rivers, most importantly the Mississippi River, which drains about 40 percent of the continental United States (Mitsch et al. 2001) and carries large amounts of sediment and a variety of nutrients and pollutants. The highest volume of freshwater flow from the Mississippi River into the GOM occurs during late winter into early summer and can reduce salinities considerably for dozens of miles offshore.

Ecological Features. In the entire GOM, more than 15,000 species from more than 40 phyla have been documented (Felder et al. 2009). The northern GOM supports several important commercial fisheries, including grouper, shrimp, menhaden, mullet, snapper, lobster, blue crab, and oyster (NMFS 2017b), each with more than 5 million pounds annually harvested. The GOM is also home to a diverse set of ecosystems, including coral reefs, mangroves, barrier islands, wetlands, oyster beds, and topographic features, such as corals and deepwater seeps.

Although the Eastern and Western GOM ecoregions share similar habitat and species assemblages, there are some key differences. The Western GOM ecoregion contains the Flower Garden Banks NMS, the only sanctuary site in the Western GOM. The Florida Keys NMS lies just to the southeast of the Eastern GOM (NOAA 2017b). The outer edge of the Western GOM continental shelf is dotted with numerous topographic features. Each region hosts distinct shrimp populations; brown and white shrimp are more abundant in the Western GOM, and pink shrimp are more abundant in the Eastern GOM (NOAA 2017a). The Western GOM contains the most nesting sites for the endangered Kemp's ridley sea turtle, whereas the nesting sites for loggerhead (threatened) sea turtles occur predominantly in the Eastern GOM (NOAA 2016). There are two species of large whale that occur in the GOM: Bryde's whale, and a resident population of sperm whale in the north-central GOM. The Eastern GOM includes most of the habitat for the threatened manatee, whose U.S. range is primarily centered in the bays, sounds, and estuaries of Florida, but can extend into Texas (USFWS 2013, Cornish 2015).

The GOM is part of three major migratory bird paths, known as flyways (Atlantic, Mississippi, and Central). The GOM provides wetland, nearshore, and offshore habitats for songbirds, seabirds, shorebirds, waterfowl, sea ducks, and wading birds. The Mississippi River Delta, along with its coastal wetlands and barrier islands, is one of the most productive and vulnerable regions of the Gulf coast. This vast natural asset supports thriving shipping, energy, seafood, and recreation industries while providing extensive coastal habitats for more than 400 bird species (USFWS 2013). There are several Fishery Management Plans and amendments for the GOM that include: aquaculture, coastal migratory pelagic fish (mackerels and cobia), coral reefs, red drum, reef fish (snappers, groupers, tilefishes, jacks, triggerfishes, and wrasses), shrimp (brown, white, pink, and red), spiny lobster, and stone crab (GOMFMC 2017). Each of the plans except the plan for aquaculture includes an amendment identifying the locations of Essential Fish Habitat for 26 representative species (those that result in most of the landings from the GOM).

The Western GOM hosts the northernmost tropical coral reef system in the United States at the Flower Garden Banks NMS, an isolated system of predominantly encrusting corals atop salt dome formations. This system attracts reef fishes and large open-water species, such as whale sharks, and predatory fishes such as hammerhead sharks, jacks, cobias, and rays (NOAA 2017c). Deepwater corals also are in the GOM. Some of the most common deepwater coral genera include *Lophelia pertusa*, *Madrepora oculata*, *Leiopathes sp.*, and *Callogorgia spp.* (NOAA 2013, Brooke and Schroeder 2007). *Lophelia* communities are scattered along the shelf break and upper continental slope in water depths ranging from 980 feet [299 m] to more than 1,600 feet [488 m]. *Oculina* has been documented on oil rigs off the Mississippi Delta (Sammarco 2014). Similar to other areas, deepwater coral communities provide important habitat for many species of invertebrates and fish.

Threatened and Endangered Species. Marine species in and near the GOM OCS that are listed under the ESA as threatened [t], endangered [e], or proposed [p] and could be impacted by potential oil- and gas-related activities include:

- *Birds (8)*: Cape Sable seaside sparrow [e], least tern [e], Piping plover [t], Whooping crane [e], Mississippi sandhill crane [e], Rufa red knot [t], roseate tern [t], Wood stork [t]
- *Marine mammals (2)*: sperm whale [e], West Indian manatee [t], Bryde's whale [p]
- *Other mammals (6)*: Alabama beach mouse [e], Choctawhatchee beach mouse [e], Perdido Key beach mouse [e], St. Andrew beach mouse [e], Florida bonneted bat [e], Florida salt march vole [e]
- *Sea turtles (5)*: leatherback turtle [e], green turtle [e/t], hawksbill turtle [e], Kemp's ridley turtle [e], loggerhead turtle [t]
- *Other reptiles (1)*: American crocodile [t]
- *Fish (3)*: Gulf sturgeon [t], Nassau grouper [t], smalltooth sawfish [e]
- *Corals (6)*: elkhorn [t], rough cactus [t], staghorn [t], lobed star [t], mountainous star [t], boulder star [t].

Critical Habitat. Of the above-mentioned species, critical habitat is designated in the GOM for loggerhead turtles, Gulf sturgeon, all beach mice, West Indian manatee, Cape Sable seaside sparrow, piping plover, whooping crane, Mississippi sandhill crane, and elkhorn and staghorn corals. Figures 7-13 and 7-14 show locations of GOM critical habitat.

Figure 7-13: Gulf of Mexico Critical Habitat for Mississippi Sandhill Crane, Piping Plover, Whooping Crane, Florida Manatee, and Elkhorn and Staghorn Coral

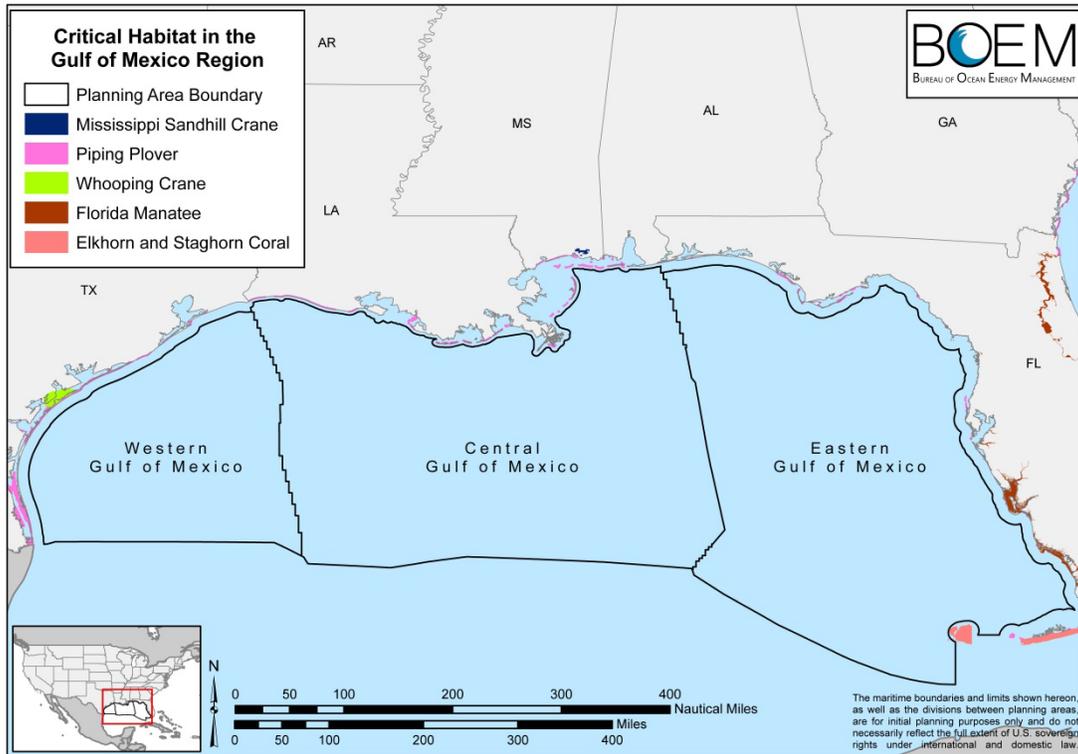
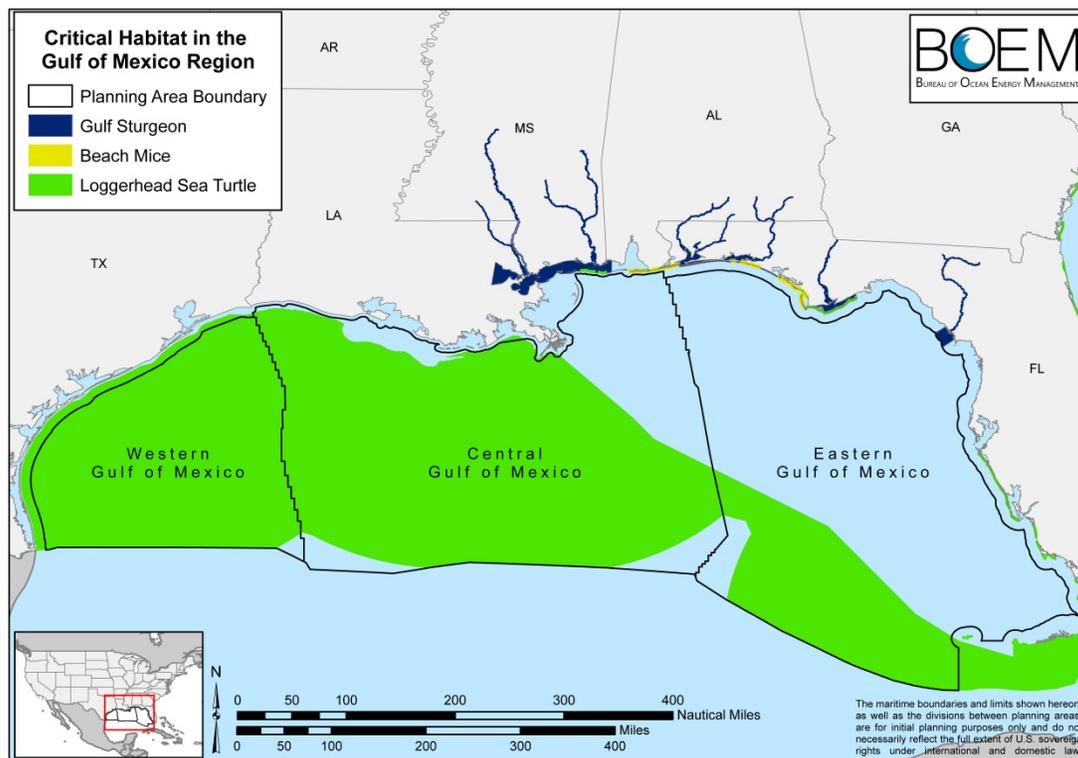


Figure 7-14: Gulf of Mexico Critical Habitat for Gulf Sturgeon, Beach Mice, and Loggerhead Sea Turtle



Human Use. The GOM Region is home to more than 61 million people (USCB 2016b), including nine federally recognized tribes and four federally recognized tribes with historical ties to the area, now relocated to Oklahoma. There are numerous coastal communities in this region, some of which are historically marginalized communities (low-income and communities of color). This region has diverse natural and developed landscapes and seascapes, beaches, barrier islands, estuarine bays and sounds, river deltas, tidal marshes, publicly owned and administered areas (i.e., NSs, NPs, beaches, and wildlife lands), designated preservation areas (i.e., historic and natural sites and landmarks, wilderness areas, wildlife sanctuaries, and scenic rivers), and private recreational facilities and establishments that attract residents and visitors (i.e., resorts, marinas, amusement parks, and ornamental gardens). Ocean uses are major factors in the local economy of this region and include the following:

Fishing

Commercial fishing/harvesting
Subsistence fishing
Recreational fishing

Non-Consumptive

Tourism
Recreation

Industrial

Oil and gas production
Military use
Shipping

Onshore and offshore human use can contribute to changes in habitat, water quality, and air quality. Sea level rise, nutrient pollution, chemical contaminants, and urbanization are listed as top issues impacting the GOM (Watson et al. 2017, NOAA 2011). See Section 6.5 for additional information on other uses of the OCS.

Comments Received. Numerous comments were received in response to the RFI related to potential environmental impacts in the GOM associated with the National OCS Program. A summary of substantive comments is provided in Appendix A. In addition to comments addressing the potential impacts, BOEM received several nominations for exclusion of areas on the basis of their environmental or human use significance, including the following:

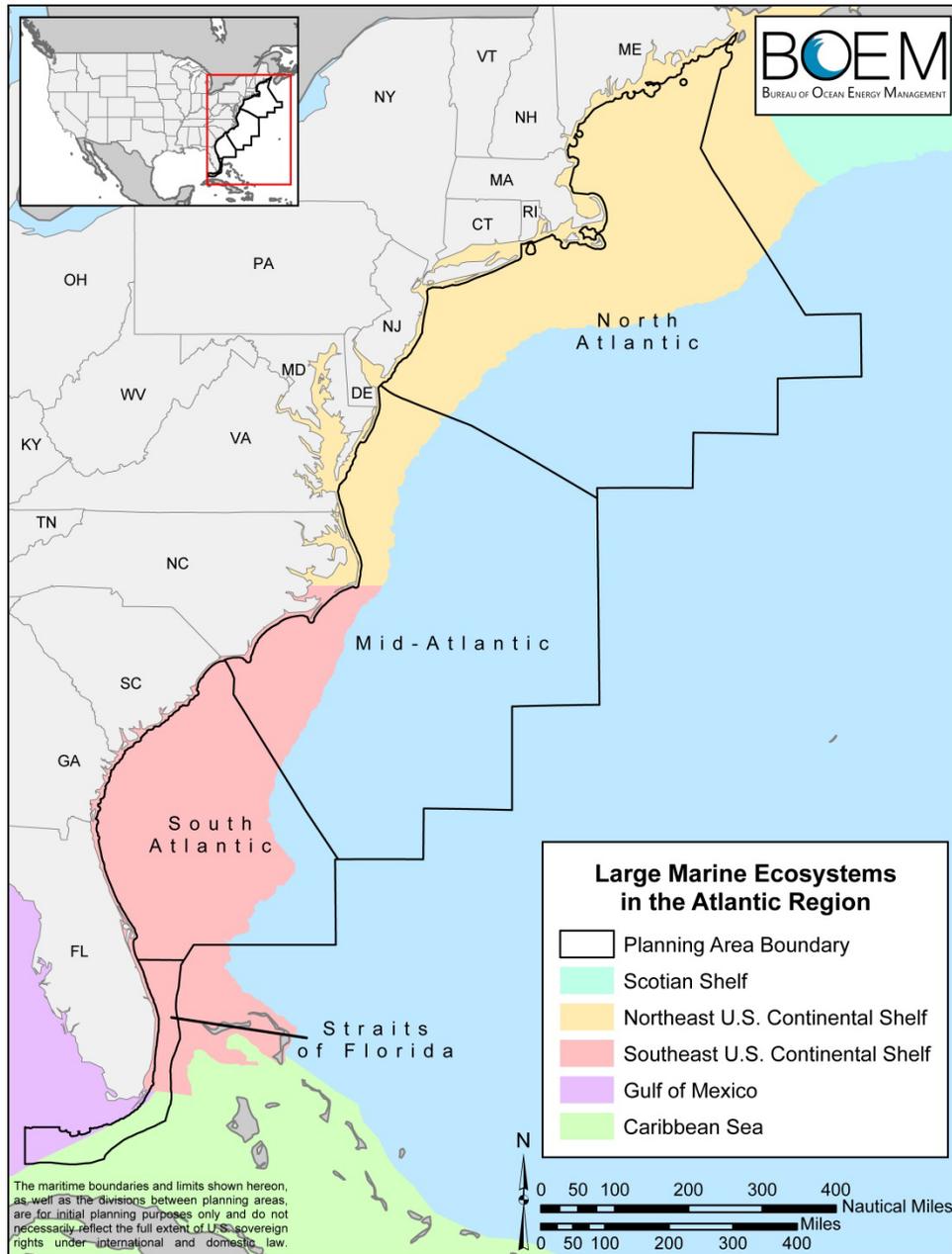
- Areas in the GOM lying south of 26 degrees North latitude, including Florida’s Marco Island and the Ten Thousand Islands
- Exclusion areas designated Habitat Areas of Particular Concern under the Magnusson-Stevens Fishery Conservation and Management Act
- Exclusion of areas designated as critical habitat under the ESA
- All NMSs; in the GOM Region, these include the Flower Garden Banks and Florida Keys NMSs.

7.1.4 Atlantic Region

Geographic Area. Atlantic OCS waters stretch from the U.S.-Canada border in the north to southern Florida. The Atlantic Region includes the North Atlantic, Mid-Atlantic, South Atlantic, and Straits of Florida planning areas (see Figure 1-3). Two distinct LMEs exist along the U.S. Atlantic OCS: the Northeast Continental Shelf LME (Northeast LME) and the Southeast Continental Shelf LME (Southeast LME) (Figure 7-15; Aquarone and Adams 2017b, Aquarone 2017). The Northeast LME extends from the U.S.-Canada border to Cape Hatteras, North Carolina, and includes the North Atlantic Planning Area and approximately one-third of the Mid-Atlantic Planning Area. The Southeast LME extends from Cape Hatteras to southern Florida and includes the southern two-thirds of the Mid-Atlantic, South Atlantic, and

Straits of Florida planning areas. These LMEs can be divided into the following subregions: the northeastern U.S., which extends north of Cape Cod, Massachusetts; the Mid-Atlantic Bight (MAB), which extends from Cape Cod to Cape Hatteras, North Carolina; and the South Atlantic Bight (SAB), which extends from Cape Hatteras to Cape Canaveral, Florida.

Figure 7-15: NOAA Large Marine Ecosystems and BOEM Atlantic Planning Areas



The continental shelf of the U.S. Atlantic seaboard ranges significantly in width. In the North Atlantic Planning Area, the shelf extends out approximately 250 miles (402 km) into the Gulf of Maine and narrows to less than 80 miles (129 km) off Cape May, New Jersey. From there, the shelf narrows to its minimum extent of approximately 20 miles (32 km) wide off Cape Hatteras, North Carolina, before broadening again in the South Atlantic Planning Area. The U.S. Atlantic continental shelf reaches its maximum extent of approximately 280 miles (450 km) wide offshore southern Georgia. These physical characteristics contribute to associated variability in substrate type and distribution of marine mammals, sea turtles, birds, fish, invertebrates, and habitats from north to south along the U.S. Atlantic coast.

Physical Oceanography. The division between the Northeast LME and Southeast LME is based on 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 Gulf Stream is a warm-water current that flows northward along the east coast of Florida; it is the dominant feature of the Southeast LME. The Gulf Stream then continues parallel to the southeastern coast of the United States. It comes nearest to the U.S. Atlantic coast just offshore Cape Hatteras, North Carolina. From there, it turns northeast and flows into the central North Atlantic. The Gulf Stream is a dynamic area of higher productivity, and it has a strong influence on the distribution of species off the Mid-Atlantic coast. In the northwestern Atlantic, the colder Labrador Current flows southward from the Labrador Sea along the Canadian coast and influences the physical oceanography of the Northeast LME (Wilkinson et al. 2009).

Ecological Features. Marine mammals are common throughout the Atlantic OCS waters in all planning areas. There are 39 species of marine mammals that could occur within the northwestern Atlantic Ocean: 7 species of baleen whale, 27 species of toothed whales and dolphins, 4 species of seals, and the Florida subspecies of the West Indian manatee (Florida manatee) (BOEM 2016). All species of marine mammals are protected under the MMPA, and some are afforded additional protection under the ESA. A large number of individuals of certain species, such as the North Atlantic right whale and humpback whale, undergo well-defined seasonal migrations from northern to southern latitudes along the U.S. Atlantic coast, although not all individuals undertake these migrations. Likewise, many marine species change habitats during different seasons, on both a small and large scale, so species composition of a given area could vary by season. Beaked whales are almost always encountered in very deep waters along the shelf break, whereas species like the fin and minke whales could be encountered on the shelf as well as along the shelf break. In addition to cetaceans like whales and dolphins, marine mammals in the Atlantic OCS waters include rare occurrences of wide-ranging ice seal species (e.g., harp and ringed seals). Harbor seals and gray seals are regular inhabitants of the U.S. Atlantic coast and make seasonal movements along the U.S. North and Mid-Atlantic coasts. Although the majority of the marine mammal species that could occur in the Atlantic OCS can be found in most or all of the planning areas, some species occur mainly in the northern portions of the OCS (e.g., white-sided dolphins and seals) or mainly in the southern portions of the OCS (e.g., Florida manatee and Fraser's dolphin).

Five species of sea turtles can occur within the Atlantic Region, including representatives of two taxonomic families: Cheloniidae (loggerhead, green, hawksbill, and Kemp's ridley turtles) and Dermochelyidae (leatherback turtle) (NMFS 2017a). The loggerhead turtle is the most common sea turtle species within the Atlantic OCS. Loggerhead sea turtles occur year round in ocean waters off North Carolina, South Carolina, Georgia, and Florida. As coastal water temperatures warm in the spring, loggerhead turtles move up the U.S. Atlantic coast as far north as the Gulf of Maine (Shoop and

Kenney 1992; Epperly et al. 1995a, 1995b, 1995c; Braun-McNeill and Epperly 2004). The trend is reversed in the fall as water temperatures cool.

In the western North Atlantic, green turtles can be found feeding or swimming in nearshore or offshore waters from Florida to Massachusetts. They make seasonal movements similar to the loggerhead turtles, moving north with warmer waters in the summer and back south as waters cool into the winter.

Hawksbill turtles can be found from Florida to Massachusetts, but they are rarely reported north of Florida. Kemp's ridley turtles are occasionally sighted along the Atlantic coast from Florida to New England (NMFS et al. 2010). The MAB is an important foraging area for juvenile Kemp's ridley turtles during spring through fall. Leatherback turtles are found primarily in deep waters over the shelf break, but also occur on the shelf and in coastal areas. They are found throughout the Atlantic OCS waters, depending on the season.

Numerous marine and coastal bird species are present throughout Atlantic OCS waters, including resident and migratory species (Robinson Willmott et al. 2013). These include nearshore species, pelagic species, and gulls/gannets (Kinlan et al. 2016). Pelagic species tend to search for and feed on prey in the open water. Many of the pelagic species occur within and along the edges of the Gulf Stream. Nearshore species might include waterfowl or shorebirds. Some of these species, such as the tufted and long-tailed ducks, typically form large flocks and rest in large groups on the sea surface. Other nearshore species, including sandpipers, plovers, and stilts, utilize coastal environments for nesting, feeding, and resting. Many bird species, including the northern gannet, red knot, and scoters, make long-range seasonal movements. Birds that tend to use predominantly terrestrial habitats (e.g., passerines, falcons) might also occur occasionally offshore.

Fish and invertebrate species are distributed throughout the Atlantic OCS. The Atlantic OCS supports approximately 700 fish species and more than 2,000 species of benthic organisms. The general diversity of species increases as latitude decreases; however, fish biomass decreases from north to south along the Atlantic OCS (Northeast Ocean Data 2016, 2017). There are commercially valuable fisheries for bottom and open-water fishes and invertebrates throughout Atlantic waters, including lobster; scallop; schooling fishes such as menhaden and herring, tunas, snapper, and grouper; flounder; rockfish; dolphin (mahi-mahi); billfish; and sharks. The Southeast LME supports commercial fisheries, including shrimp, herring, sardines, anchovies, blue crabs, and oysters (NMFS 2009, NOAA 2014). The Northeast LME is a highly productive, temperate area. It supports a number of commercial fisheries, including groundfish, flounder, mackerel, herring, haddock, lobster, and scallop. Saltwater recreational fishing targets a variety of fish species throughout the Atlantic Region, but is particularly important in the South Atlantic (NMFS 2017b).

In the Northeast LME, soft bottom habitat is distributed throughout the continental shelf; the seafloor consists predominantly of soft sediments, mostly sands, but grading to silt and clay in deeper areas. Hard bottom habitats are distributed sparsely over the northeastern shelf and into the Mid-Atlantic and are composed of bare rock, gravel, shell hash, and artificial reefs. Hard bottom includes "live" bottom habitat, which includes a variety of invertebrates that are fastened to rock or other bare areas of the seafloor. Extensive areas of live bottom are on the southeastern U.S. continental shelf. On the shelf break, hard bottom habitats are associated with canyon walls that incise the shelf. Deepwater corals occur in many areas of the Atlantic OCS, particularly the South Atlantic and Straits of Florida planning areas. The coastal habitats of the Atlantic coast include rocky shores, sandy beaches, and tidal marshes. The

South Atlantic and Straits of Florida planning areas also include areas of coral reef habitat, including threatened and endangered coral species. These occur primarily in coastal, shallow waters and are more widespread in the Straits of Florida Planning Area and adjacent areas of coastal Florida.

Threatened and Endangered Species. Marine species in and near the Atlantic OCS that are listed under the ESA as threatened [t], endangered [e], candidate [c], or proposed [p] and could be impacted by potential oil- and gas-related activities include:

- *Birds (5)*: piping plover [t], roseate tern [t/e], Bermuda petrel [e], red knot [t], wood stork [t]
- *Marine mammals (7)*: North Atlantic right whale [e], blue whale [e], fin whale [e], sei whale [e], sperm whale [e], Florida manatee [t]
- *Sea turtles (5)*: leatherback [e], loggerhead [t], Kemp’s ridley [e], hawksbill [e], green [e]
- *Fish (1)*: cusk [c], giant manta ray [p], oceanic whitetip [p]
- *Corals (7)*: elkhorn [t], staghorn [t], Mycetophyllia ferox [t], Dendrogyra cylindrus [t], three species of Orbicella star corals [t]
- *Plants (1)*: Johnson’s seagrass [t].

Critical Habitat. Designated critical habitat exists in the Atlantic OCS for the North Atlantic right whale and loggerhead sea turtle, in waters adjacent to the OCS for elkhorn and staghorn coral and Johnson’s seagrass, in inland waters of Florida for the Florida manatee, and on land for loggerhead turtles (nesting) and for piping plovers. Figures 7-16 and 7-17 show critical habitat for the Atlantic Region.

Human Use. Coastal states of the Atlantic are home to 104.8 million people as of 2016 (USCB 2016c), including 22 federally recognized tribes, and 33 federally recognized tribes with historical ties to the area, now relocated to the interior of the United States. There are numerous coastal communities, some of which have been historically marginalized (low-income and communities of color) in this region. This region has a diverse set of marine and coastal industry sectors, including the following:

Construction	Energy & Minerals	Ship & Boat Building
Marine-related construction	Renewable energy Sand and gravel mining	Boat building and repair Ship building and repair
Living Resources	Tourism & Recreation	Transportation
Fish hatcheries/mariculture/ aquaculture	Amusement & recreation services Boat dealers Dining Hotels and lodging Marinas RV parks & campgrounds Scenic water tours Zoos/aquaria	Deep sea freight Marine passenger transportation Marine transportation services Search & navigation equipment Warehousing
Fishing		
Seafood markets		
Seafood processing		

Figure 7-16: Atlantic Region Critical Habitat for Coral, Seagrass, North Atlantic Right Whale, and Piping Plover

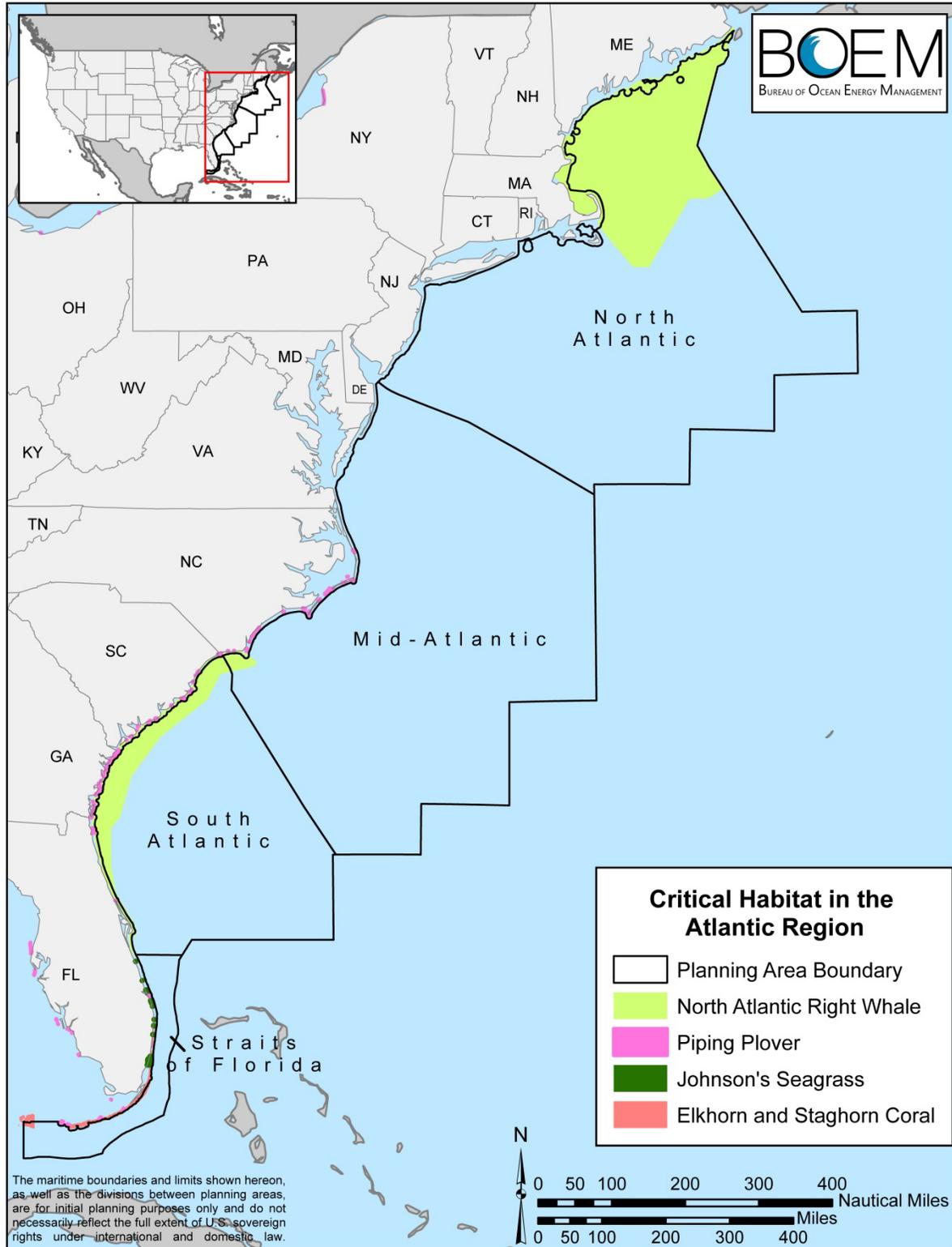
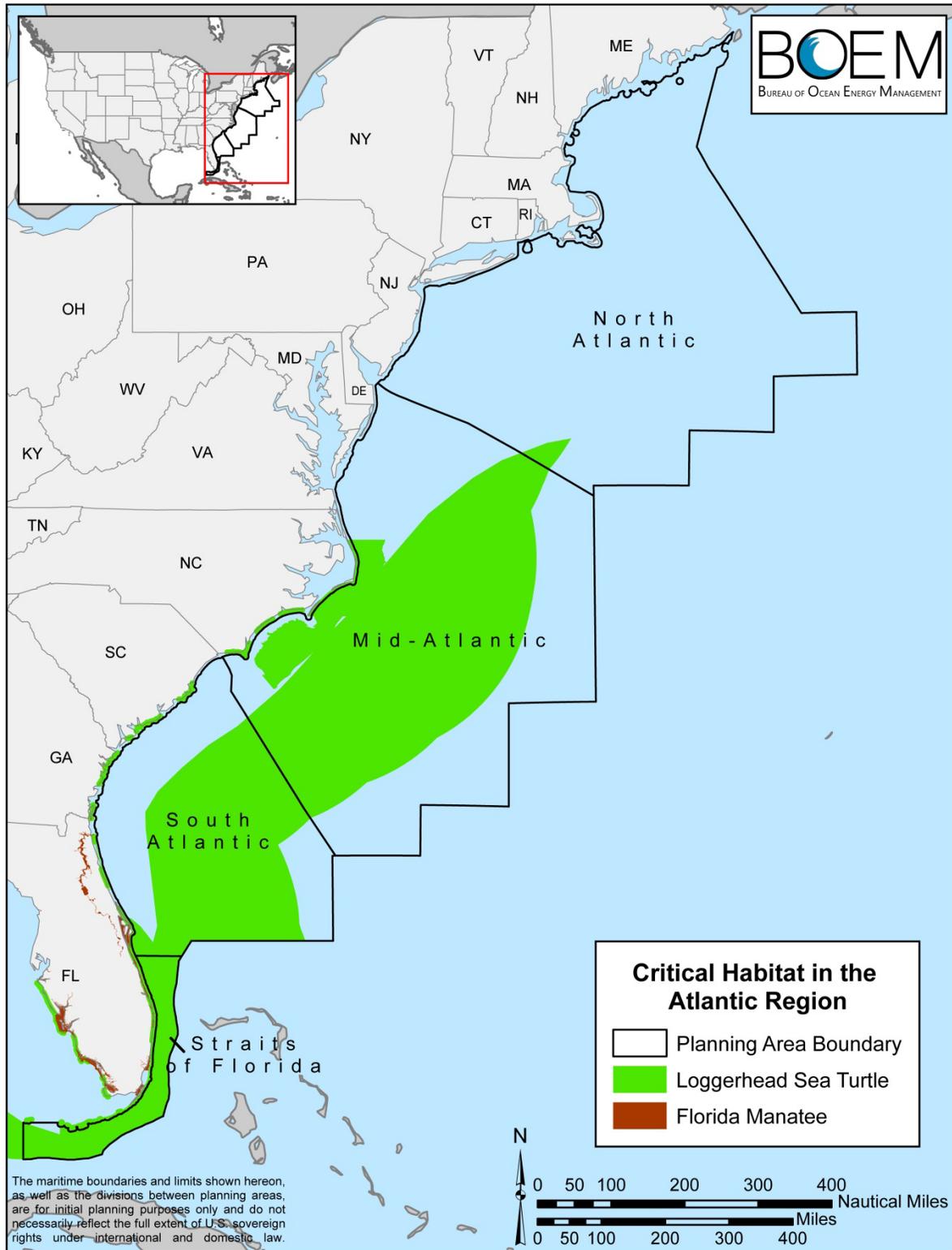


Figure 7-17: Atlantic Region Critical Habitat for Manatee and Loggerhead Turtles



Comments Received. Numerous comments were received in response to the RFI related to potential environmental impacts in the Atlantic associated with the National OCS Program. A summary of substantive comments is provided in Appendix A. In addition to comments addressing the potential impacts, BOEM received several comments addressing the significance of the marine canyons in the Atlantic Ocean. This included a comment from the New England Fishery Management Council supporting withdrawal of the canyons from leasing consideration. BOEM also received nominations to exclude all NMSs and Marine National Monuments; in the Atlantic Region, these include the Stellwagen Bank, Monitor, and Gray’s Reef NMSs and the Northeast Canyons and Seamounts Marine National Monument.

7.2 POTENTIAL IMPACTS ON ENVIRONMENTAL RESOURCES

A brief discussion of the general IPFs (stressors) and possible impacts that could result from OCS oil and gas activities is provided in this section. These stressors have the potential to affect the environmental resources (receptors) discussed in Section 7.1. These impacts could be significant, but their severity depends upon numerous factors, including the stressor, receptor, region, time of year, mobility and/or resiliency of the resource, and presence of stressors in a given region unassociated with OCS oil and gas activities (e.g., commercial shipping, fishing). Table 7-2 provides a synopsis of the overlap between stressors and receptors in space and time. The relationship between stressors and the potential for impact on the receptors is the same for each of the four OCS regions. However, the scale and severity of these potential impacts might vary from region to region. The recently completed 2017–2022 Programmatic EIS also provides detailed information on these relationships and the severity of potential impact (BOEM 2016).

Inclusion of an area under consideration for potential oil and gas activity in the 2019–2024 Program does not mean that activities would occur in that region or that impacts would result. However, this analysis is meant to identify and disclose the potential for impacts should a region be included and should activities occur in that area after the subsequent lease sale is held and site-specific analyses are conducted. In addition to oil and gas activities, environmental impacts could occur from other activities on the OCS, including the placement of renewable energy structures or the transport of internationally sourced oil and gas via tanker to U.S. ports. The decision to lease under the 2019–2024 Program also does not alter existing oil and gas activities on the OCS or the possible environmental impacts from those activities.

Table 7-2: Potential for Program Activity Stressors to Impact Environmental Resource Receptors

Program Oil & Gas Activity Stressors →	Noise	Vessel or Vehicle Traffic	Drilling Debris & Discharge	Habitat Disturbance	Air Emissions	Explosives	Infrastructure & Lighting	Space-use Conflict	Accidental Spills
Environmental Resource Receptors ↓									
Air Quality		■			■				■
Water Quality		■	■	■		■			■
Human Uses/ Archaeological Resources	■	■	■	■	■	■	■	■	■
Fish & Fisheries	■	■	■	■		■	■	■	■
Coastal and Estuarine Habitats		■	■	■					■
Marine Benthic Habitats			■	■		■			■
Marine Pelagic Habitats			■	■		■	■		■
Invertebrates	■		■	■		■	■		■
Marine Mammals	■	■	■	■		■			■
Birds	■	■	■	■	■		■		■
Sea Turtles	■	■	■	■		■	■		■
Terrestrial Wildlife (Alaska)	■	■		■			■		■

Key: ■ = potential for impact based on potential levels of activity, population, and receptor sensitivity.

The potential for impacts varies depending on the region, planning area, or locations within planning areas. Impacts could be realized in several ways. There could be a direct physical result, such as drilling a hole in the seafloor or a vessel striking a sea turtle. There could be indirect physical results, such as changes over time in the composition of habitats on the seafloor due to pipeline emplacement, changes in animal behavior, or changes in the availability of food sources. Some of the potential impacts are not easily detected; these can include changes in animal behavior, such as avoidance of an area because of noise or other disturbance, or decreased reproductive capacity within a population. Some impacts occur immediately (e.g., injury) while others could manifest long after a receptor is exposed to a stressor (e.g., decreased reproductive capacity). Impacts also could vary depending on the existing environment. For example, the GOM has high levels of existing oil and gas activity from leases issued under previous National OCS Programs. Living organisms and habitats in this area are exposed to multiple stressors, including oil and gas development, and have been for many years. The ability of these communities to cope with a continued stressor could be reduced or increased by the presence of existing or multiple (cumulative) stressors.

The consideration of stressors and associated potential impacts must also include consideration of the potential severity of impact. The Programmatic EIS that will be prepared in association with the development of the 2019–2024 Program will evaluate and disclose impacts in more detail and will identify impacts that could be significant. The subsequent NEPA analyses prepared for the lease sales will identify and assess impacts on a more site-specific basis.

Impacts could be more evident where there is a higher coastal population density. Air emissions are more likely to be of concern where greater numbers of people could be affected by reduced air quality, as well as where the higher population density contributes to diminished air quality due to the presence of emission sources not related to oil and gas activities. The level of impacts depends also on the level of activities proposed for any given planning area under the National OCS Program. In areas such as the GOM Region, the significant magnitude of ongoing OCS oil and gas activities means that the impacts from the 2019–2024 Program could contribute less to the overall level of impacts from oil and gas activities than in areas such as the Atlantic planning areas, where oil and gas drilling has not occurred since 1982. Additionally, the U.S. west coast has relatively low levels of oil and gas activities with no new leasing since 1984. However, the Atlantic and Pacific areas have very high levels of human use in other areas that could result in impacts, including maritime traffic, commercial fisheries, and recreational activities. In the Arctic offshore Alaska, little OCS oil and gas activity is ongoing and very little recreational fishing or beach visitation occurs. Local communities partake in subsistence fishing and hunting in the area, so oil and gas activities could impact these pursuits.

In addition to the level of activity, the impacts of oil and gas activities from the 2019–2024 Program depend largely on the type of stressor and the presence and sensitivity of receptors. For example, an accidental oil spill has the potential to impact all present receptors, regardless of geographic location. Vessel traffic could impact water quality through wastewater discharge, marine mammals and sea turtles through noise disturbance or vessel strike, and human use through space-use conflict. Some impacts, such as noise, might only impact those receptors that are sensitive to noise in a certain frequency range. The physical impact of drilling activities might affect only the receptors that are present on the seafloor, such as in benthic habitats. Some stressors might affect only one receptor, whereas others could have more widespread impacts. Furthermore, the immediate impact on a receptor from a stressor could have

subsequent, or cascading, impacts on other portions of the environment. For example, an impact that affects the abundance of schooling fishes could also affect the industries and animals that depend upon those schooling fishes.

Numerous comments were received in response to the RFI related to potential environmental impacts associated with the National OCS Program, including the risk of oil spills, impacts on biological resources, and impacts on human uses of the coast and OCS waters. Summaries of substantive comments received are provided in Appendix A. The Programmatic EIS for the National OCS Program will include a description of the physical, biological, and sociocultural resources that might be affected by activities from the National OCS Program, as well as a discussion of the potential impacts that might occur.

7.2.1 Accidental Oil Spills

Oil spills are accidental and unauthorized events. Industry practices and government regulations minimize the frequency of these spills, and industry and government entities are prepared to respond or prevent spills from reaching the coast should a spill occur. Despite these efforts, there is no way to guarantee that oil spills will not occur. Impact analyses of accidental oil spills consider events that are statistically expected to occur (expected accidental small (≥ 1 to $< 1,000$ bbl) and large ($\geq 1,000$ bbl) spills), as well as those that are statistically unexpected to occur but would still be possible (catastrophic discharge events [CDEs]). Expected (i.e., occurring with regular frequency) accidental events include spills estimated to occur during routine operations (e.g., refined, crude, or condensate spills of varying size from a platform, pipeline, service vessel, barge, or tanker).

7.2.1.1 Accidental Small (≥ 1 to $< 1,000$ bbl) and Large ($\geq 1,000$ bbl) Spills

Accidental, small, and large spills could result from OCS exploration, development, or production operations involving drilling rigs, production facilities, barges, tankers, pipelines, and/or support vessels. BOEM estimates the source and number of accidental spills (small and large) based on the estimated volume of oil production for each planning area along with the assumed mode of transportation (Anderson et al. 2012, ABS 2016). Spills from platforms are assumed to occur within or adjacent to the planning areas. Spills from pipelines are assumed to occur along their respective routes from production platform to destination.

Historical OCS spill data provide the most relevant basis for use in analyzing the likelihood of future oil spills on a programmatic level. BOEM's analyses, which currently rely on an aggregated characterization of historical data (where available), provide a conservative outcome when compared to other methods such as quantitative risk assessment.

7.2.1.2 Catastrophic Discharge Events

Statistically unexpected, a CDE is an event that results in a very large discharge of oil (typically greater than one million barrels) into the environment and could cause long-term and widespread effects on marine and coastal environments. The National Oil and Hazardous Substances Pollution Contingency Plan defines such a CDE as a "spill of national significance," or one that "due to its severity, size, location, actual or potential impact on the public health and welfare or the environment, or the necessary response effort, is so complex that it requires extraordinary coordination of Federal, state, local, and responsible party resources to contain and clean up the discharge" (40 CFR 300). A catastrophic spill is

not expected, and would be considered well outside the normal range of probability, despite the inherent risks of oil exploration, development, or production-related activities expected from the 2019–2024 Program.

Incidents with the greatest potential for catastrophic consequences are likely to be losses of well control where primary and secondary barriers fail, wells do not bridge (when the wellbore collapses and seals the flow path), and discharge is of long duration and/or occurs in an environmentally sensitive area and/or at a sensitive time. However, very few loss of well control events actually lead to a CDE. A majority of the loss of well control events do not involve oil release and, if any oil is released, it is usually < 10 bbl. In addition, recently implemented safeguards, including increased requirements for the design, manufacture, repair, testing, and maintenance of blowout preventers, required downhole mechanical barriers, increased well design and testing requirements, and additional regulatory oversight make such an event even less likely than in the past.

Although a CDE is not expected to result from activities associated with the 2019–2024 Program, the consequences of a low-probability incident, if it were to occur, could be catastrophic. Past oil spills that are considered relevant include the Exxon Valdez oil spill (262,000 bbl) in the Prince William Sound in south-central Alaska; the Ixtoc oil spill (3,500,000 bbl) in the GOM offshore Bahia de Campeche, Mexico; and the *Deepwater Horizon* event that occurred on the OCS in 2010 in the northern GOM (4,900,000 bbl; 800,000 bbl captured) (McNutt et al. 2011). The Exxon Valdez and Ixtoc oil spills were not expressly related to OCS activities.

BSEE defines a loss of well control as: (1) uncontrolled flow of formation or other fluids to an exposed formation (an underground blowout) or at the surface (a surface blowout); (2) flow through a diverter; or (3) uncontrolled flow resulting from a failure of surface equipment or procedures. Table 7-3 provides a quantitative, aggregated characterization of the frequency of loss of well control resulting in oil spills in broad OCS regions between 1964 and 2015.

Table 7-3: Number of Wells Compared to Loss of Well Control Events per OCS Region (1964–2015)

Region	Exploration	Development	Loss of Well Control	Loss of Well Control with Oil Released
	Number of Wells/Boreholes		Number of Events	
Alaska	84	6	0	0
Pacific	324	1,372	5	2
GOM	16,889	29,733	311	68
Atlantic	51	0	0	0
Total	17,348	31,111	316	70

Note: BSEE requires that all loss of well control incidents be reported immediately per 30 CFR § 250.188(a)(3).

A quantitative approach has been developed to demonstrate the relative unlikelihood of these low to very low probability spill incidents, wherein spill size is one of many factors that could determine the severity of effects (BOEM 2012). First, BOEM defined a reasonable range of potentially catastrophic OCS spill sizes by applying extreme value statistics to historical OCS spill data (Ji et al. 2014). Then, extreme value statistical methods and complementary risk assessment methods (Bercha Group 2014) were used to characterize the potential frequency of different size spills.

Table 7-4 presents BOEM’s estimates of the following elements for CDEs:

4. Spill size return levels (i.e., the spill size that occurs with a certain frequency, or alternatively, the spill size that is expected to be exceeded by the annual maximum in a particular year with a given probability)
5. Spill size return periods (i.e., the OCS-wide spill recurrence interval corresponding to certain sizes)
6. A per-well probability that an OCS spill would exceed given sizes.

The estimated per-well frequency for a given spill size assumes a spill occurs following loss of well control. The per-well spill size frequency estimates consider OCS-wide loss of well control data from 1964 through 2015 and corresponding OCS-wide well exposure data (only original well boreholes and sidetracks are summed to determine well exposure; bypasses are excluded) (Table 7-4).

Table 7-4: Annual Maximum OCS Spill Sizes for all Ongoing OCS Activities and OCS Planning Areas Combined

Spill Size (bbl) (rounded to nearest thousand)	Percent Spills Expected to be Less than or Equal to Given Spill Size	Return Period (years)	Frequency (per well)
150,000	97.4	39	0.0000564
500,000	98.8	86	0.0000422
1,000,000	99.3	139	0.0000357
2,000,000	99.6	229	0.0000302
5,000,000	99.8	451	0.0000242
10,000,000	99.87	770	0.0000205

Note: Only original well boreholes and sidetracks are summed to determine well exposure; bypasses are excluded.

Extreme value results show that 90 percent of any “annual maximum” oil spills are expected to be less than approximately 16,000 bbl; 95 percent of any “annual maximum” oil spills are expected to be less than approximately 50,000 bbl (BOEM 2016). Spill sizes corresponding to a range of larger sizes and statistically useful benchmarks were also considered. These results are useful for Programmatic EIS oil spill analyses on exploration, development, and production, as well as oil spill response planning.

The magnitude and severity of impacts from a CDE spill on any resource would depend on the spill type (oil and gas composition), location, size, depth, and duration as well as the spill source (e.g., loss of well control, pipeline, or vessel), meteorological conditions such as wind speed and direction, seasonal and environmental conditions, physiography of the spill area, biota in the area, previous exposure of the area to oil, and the effectiveness of response activities. The meteorological and environmental conditions can have a substantial effect on weathering processes such as evaporation, emulsification, dispersion, dissolution, microbial degradation and oxidation, and transport of the spilled products. The uncontrolled oil and/or gas release of a certain size at a particular location and at a particular time of year could have greater economic or environmental effects than a release of considerably more barrels under different circumstances of location and season (BOEM 2014a). For more information on the possible impacts of catastrophic spills in each OCS planning area see the supporting Economic Inventory Report (BOEM 2014a). For an analysis of impacts specific to the GOM see the GOM Catastrophic Spill Event Analysis (BOEM 2017).

Although there is always the potential for accidents resulting in an oil spill and/or gas release, industry, USCG, BSEE, and BOEM require numerous safeguards for OCS drilling, development, and production operations, which have increased in the post-*Deepwater Horizon* era. These industry practices and government rules, resulting from several recommendations from multiple investigations, have improved protocols to increase safety measures.

Furthermore, requirements place a greater emphasis on operational training and preparation. The Safety and Environmental Management System is a performance-based program designed to help drive the safety and environmental performance of OCS oil and gas operators and contractors beyond attaining full compliance with BSEE regulations. Risk management is the foundation upon which BOEM and BSEE regulate and enforce standards. The risk management strategies employed by BOEM, BSEE, USCG, USDOT Pipeline and Hazardous Materials Safety Administration, and industry serve as an integral component of a safety culture designed to integrate technological and human elements. This integration is necessary to ensure safe and environmentally sound OCS operations. Both risk management and BOEM and BSEE regulatory oversight greatly reduce the potential for accidental spills.

7.3 RELATIVE ENVIRONMENTAL SENSITIVITY AND MARINE PRODUCTIVITY

7.3.1 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 National OCS 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 National OCS Program. 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., ecosystem change).

For this DPP analysis, all 26 OCS planning areas are included in the sensitivity analysis. However, for the purposes of this analysis, planning areas could be grouped together within a BOEM ecoregion. The methodology applied to analyze the relative environmental sensitivity for the 2019–2024 Program is identical to that used in the 2017–2022 Program. Some updates and improvements have been made based on input from public comments, updated scientific information, and changes in regulations. For example, the de-listing of the Eastern DPS of Steller sea lion and changes in commercial fishery landings caused some adjustments to the species selections in some of the BOEM ecoregions. Details can be found later in this chapter. During the development of the 2019–2024 Program, BOEM will continue to adjust and refine this sensitivity analysis.

Primary productivity estimates for the planning areas were generated using satellite-based measurements of chlorophyll-*a*, available light, and photosynthetic efficiency (Balcom et al. 2011). These parameters were input into the Vertically Generalized Production Model (VGPM) to provide estimates of net primary productivity (NPP). These methods are identical to the methods used in the 2017–2022 Program and reflect the updated approach used for the 2012–2017 Program.

7.3.2 Relative Environmental Sensitivity

7.3.2.1 Background

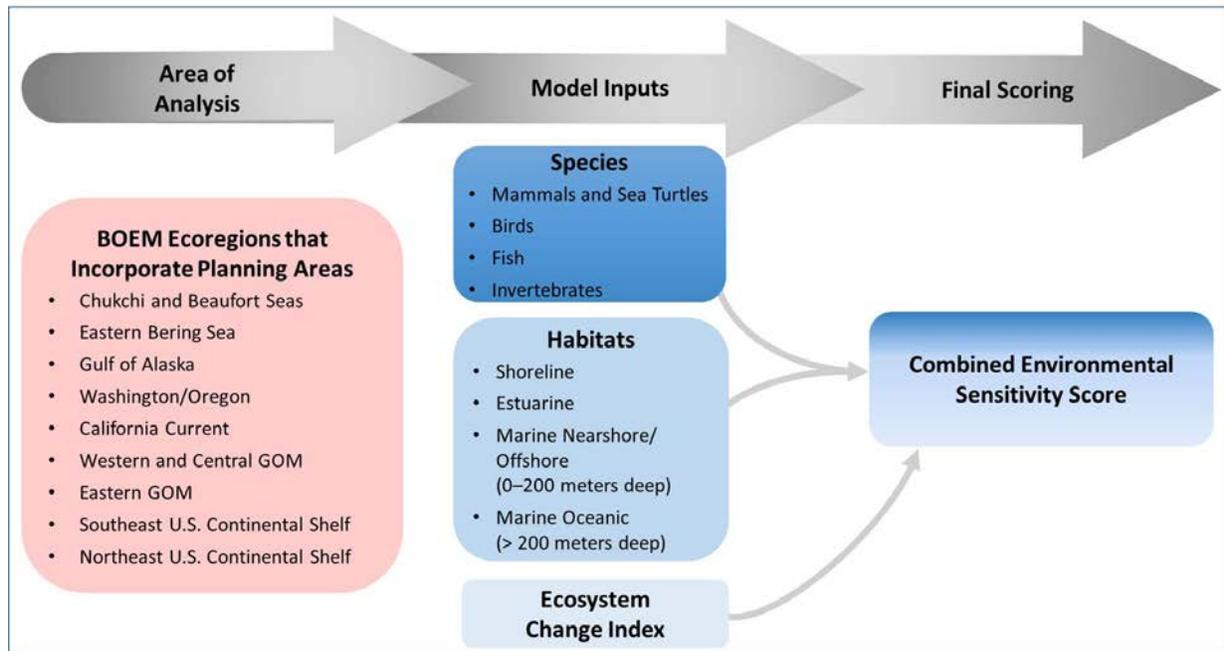
Relative environmental sensitivity is not a commonly applied concept in ecology. BOEM previously examined environmental sensitivity using two different approaches in the development of the 2007–2012 Program. The first analysis employed the NOAA environmental sensitivity index (ESI) (CSA 1991a, CSA 1991b, 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 incorporated not only the sensitivity of the OCS, but also accounted 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 in the 2017–2022 DPP.

7.3.2.2 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. Figure 7-18 outlines the complete process for determining the sensitivity scores. The following sections provide some details of the environmental sensitivity method and a full description 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 2015).

Figure 7-18: Environmental Sensitivity Score Methodology



7.3.2.3 Geographic Scope

For the analysis of environmental sensitivity, an ecosystem-based approach was used. BOEM’s planning areas are administratively constructed designations that do not necessarily correspond to ecosystem boundaries. For this DPP analysis of the planning areas, the OCS was divided into nine regions, referred to here as BOEM ecoregions (see Figures 7-19 and 7-20).

The boundary designations for these BOEM ecoregions were informed by the original ecoregion concept (Spalding et al. 2007), and were based primarily on LME boundaries (Sherman and Duda 1999). Marine ecoregions are areas that are differentiated by species composition and oceanographic features (Spalding et al. 2007, Wilkinson et al. 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 planning areas in Figures 7-19 and 7-20, the intensity of the shading corresponds to the magnitude of these scores. 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 planning areas' seaward boundaries (see Figure 1-1). The use of BOEM ecoregions allowed for the analysis of geographic regions that are ecologically similar and contain similar habitat types and faunal assemblages. The initial method description (BOEM 2014b) 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 (Wilkinson et al. 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.

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. The majority of the BOEM ecoregions encompass more than one planning area (see Figures 7-19 and 7-20). It is assumed that planning areas within the same BOEM ecoregion share the same environmental vulnerability and resilience to potential impacts from oil and gas exploration and development. Thus, the same sensitivity score was assigned to all planning areas within each BOEM ecoregion. The one exception was the Mid-Atlantic Planning Area, which was divided across two BOEM ecoregions (the Southeast U.S. Continental Shelf and Northeast U.S. Continental Shelf). The Mid-Atlantic Planning Area score was calculated as the area-weighted average of these two BOEM ecoregions (see below for details). Table 7-5 provides a crosswalk of the 26 planning areas and the nine corresponding BOEM ecoregions in which they are located.

The sensitivity scores from this DPP 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 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. Section 7.1 provides additional information about each BOEM ecoregion, including geographical area, physical oceanography, ecological features, and human use. Some additional distinguishing characteristics and explanations for the creation of these BOEM ecoregions are outlined in the following paragraphs.

The Alaska Region contains three BOEM ecoregions: the Chukchi and Beaufort Seas, the East Bering Sea, and the Gulf of Alaska.

The Chukchi and Beaufort Seas BOEM ecoregion is characterized by an 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). Although these two LMEs have different oceanographic characteristics, they share similar habitat and species assemblages (Wilkinson et al. 2009). 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 Sea and Beaufort Sea planning areas have identical scores.

Table 7-5: Crosswalk of BOEM Ecoregions and Planning Areas

BOEM Ecoregion	Planning Area
Beaufort and Chukchi Seas	Beaufort Sea
	Chukchi Sea
Eastern Bering Sea	Norton Basin
	St. Matthew-Hall
	Navarin Basin
	Bowers Basin
	St. George Basin
	Aleutian Basin
	Bowers Basin
	North Aleutian Arc
Gulf of Alaska	Aleutian Arc
	Shumagin
	Cook Inlet
	Kodiak
	Gulf of Alaska
Washington and Oregon	Washington/Oregon
California Current	Northern California
	Central California
	Southern California
Western and Central Gulf of Mexico	Western Gulf of Mexico
	Central Gulf of Mexico
Eastern Gulf of Mexico	Eastern Gulf of Mexico
Northeast U.S. Continental Shelf	North Atlantic
	Mid-Atlantic*
Southeast U.S. Continental Shelf	Mid-Atlantic*
	South Atlantic

* The Mid-Atlantic Planning Area is split between two BOEM ecoregions: the Southeast and Northeast U.S. Continental Shelf BOEM ecoregions.

The East Bering Sea BOEM ecoregion comprises the portion of the East Bering Sea LME that lies within the United States. This BOEM ecoregion has a broad shelf and seasonal ice cover. This region is nourished by nutrient-rich deep bottom water that originates in the Antarctic Ocean and flows along the seafloor the length of the Pacific Ocean to the continental shelf seaward of the Aleutian Island chain. From there, it flows up onto the Bering Sea continental shelf via a series of submarine canyons, making it a very productive benthic marine ecosystem.

The Gulf of Alaska BOEM ecoregion lies entirely within the U.S. waters of the Gulf of Alaska LME. The Alaska Peninsula bisects the East Bering Sea LME and the Gulf of Alaska BOEM ecoregion. The Alaska Current flows from east to west along this portion of the OCS. This subarctic LME typically has little to no ice cover because the Alaskan Peninsula separates the Gulf of Alaska from the influence of the cold Arctic currents.

The U.S. west coast is divided into two BOEM ecoregions: the California Current and the Washington/Oregon. These two BOEM ecoregions constitute the California Current LME, a temperate LME characterized by coastal upwelling. This LME is named after the current of the same name that moves southward along the western coast of North America from British Columbia, Canada, to Baja, California.

The Washington/Oregon BOEM ecoregion was considered separately from the rest of the California Current BOEM ecoregion due to biological and physical differences. The Washington/Oregon BOEM ecoregion lies on the Juan de Fuca tectonic plate. This area north of the Mendocino Escarpment is shallower than the seafloor of the Pacific plate to the south. The seafloor has multiple seamounts that support a large number of unique species and habitats, such as hydrothermal vents. Submarine canyons in this ecoregion establish upwelling conditions that drive high levels of biologic productivity. The Washington/Oregon BOEM ecoregion is part of the Columbian Pacific ecoregion, which houses the greatest oyster and clam production in North America, as well as resident populations of the endangered killer whale (Wilkinson et al. 2009).

The GOM comprises a single LME, encompassing more than 1.5 million km² (NOAA 2017a). However, for this DPP analysis, the GOM was divided into two BOEM ecoregions—the Eastern GOM and the Western and Central GOM—along the Eastern/Central GOM Planning Area boundary. This boundary is not only administrative; there are several physical and biological justifications for this division. The line between these two ecoregions follows the De Soto Canyon off the coast of Alabama and traces the eastern edge of the Loop Current, which effectively divides the GOM. The northern edge of the boundary marks the westward edge of the West Florida Escarpment (part of the wide continental shelf along the eastern boundary of the GOM). Although both GOM ecoregions share similar habitat and species assemblages, there are some key differences, which are discussed in Section 7.1.3.

The Atlantic planning areas are divided into 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 toward deeper water until Newfoundland, Canada. The colder Labrador Current flows southward from the Labrador Sea along the Canadian coast and terminates off the coast of North Carolina (Wilkinson et al. 2009). Both LMEs are productive and support multiple commercial fisheries. The Mid-Atlantic Planning Area straddles the two BOEM ecoregions; the sensitivity score for this area was calculated by averaging the scores of the Northeast and Southeast U.S. Continental Shelf BOEM ecoregions, and weighted by the percentage of the Mid-Atlantic Planning Area in each BOEM ecoregion. Using geographic information system (GIS) software, this percentage was calculated as 68.7 percent within the Southeast U.S. Continental Shelf BOEM ecoregion and 31.3 percent within the Northeast U.S. Continental Shelf BOEM ecoregion.

7.3.2.4 *Selection of Impacts, Species, and Habitats*

The vulnerability and resilience of selected species and habitats to IPFs were determined for each BOEM ecoregion. A comprehensive list of impacts and IPFs from BOEM-regulated activities was generated from recent EISs, notices to lessees and operators, and regulatory documents. Each specific IPF was assessed for its comparative relevancy and overall potential impact on species and habitats on the OCS. Only IPFs considered to have the greatest potential impacts were included in the analysis (see BOEM 2014b). These potential impacts were then grouped into the following categories of IPFs: oil spills, artificial light, collisions with above-surface structures, habitat disturbance, sound/noise, accidental spills, 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 this DPP, it was therefore assumed that all impacts and all species could 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 impacts from 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 fisheries importance (for fish and invertebrates only). The primary measure to determine conservation importance is Federal listing status under the ESA (NMFS 2017c). The ecological role for fish and invertebrates was based on abundance and importance as a prey or keystone species.³⁸ 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 number of species in each of the categories was determined to achieve a balance between providing adequate representation while maintaining a practical level of effort 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 are comprised of the 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 2017 (NOAA 2017d). Only oil spills were assumed to potentially impact coastal habitats. Although the bulk of BOEM-regulated activities occur in Federal waters miles from shore, shoreline habitats are at risk during spills due to the likelihood of being directly oiled when floating slicks impact the shoreline. Shoreline habitat scores were derived with methods set forth in BOEM (2014) using current NOAA ESI data (NOAA 2017e). 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).

BOEM has reevaluated the initial species and habitat selection in the original model since its adoption and application in the development of the 2017–2022 Program. All species and habitats were examined for this DPP to ensure that their selections were still valid based on the criteria prescribed in the methodology. BOEM relied upon public comments, updates to Federal regulations (such as ESA listings), and best available science to inform this review, and determined that some changes in selected species were warranted. Some of these “new” species were included in the 2017–2022 Proposed Program, but some are included in this DPP for the first time. A list of all changes in species and their

³⁸ Keystone species are defined as a species on which other species in an ecosystem largely depend, such that if it were removed, the ecosystem would change drastically.

selection rationale is shown in Table 7-6. All other species and all habitat selections remain the same as provided 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, because all impacts were assumed to occur everywhere on the OCS.

7.3.2.5 *Impact-independent Modifiers*

The model was designed to accommodate the consideration of impact-independent modifiers (e.g., climate change, productivity, and unregulated impacts). An ecosystem change vulnerability score was included as a scaling factor, which was added to the base sensitivity scores for each BOEM ecoregion. Using the same approach as used in the 2017–2022 Program 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, increased storm activity, 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 to 2, depending on intensity of effects; see Table 7-7). These sub-scores were summed for a total ecosystem change score. This score was then converted to an ecosystem 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.

Relative environmental sensitivity scores were calculated for each habitat and species selected for each of the nine BOEM ecoregions (see Table 7-8). These scores (which also include the shoreline ESI) form the foundation of the total environmental sensitivity score. The species and habitat scores were normalized before combining them. The ecosystem 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. For the purposes of the OCS Lands Act, however, such a maximum is not necessary, because that Act requires an analysis to determine “relative” environmental sensitivity (i.e., a comparison of all the regions). BOEM's methodology achieves that comparison.

Table 7-6: Species Selected that Differ from the Original Environmental Sensitivity Analysis (BOEM 2014)

Species Selected	Replaces	Selection Criteria	Selection Rationale	Reference
Chukchi/Beaufort Sea BOEM Ecoregion				
chum salmon	dolly varden	fisheries importance	The annual (weight) catch of chum salmon is higher than dolly varden. Dolly varden is not an important commercial fishery in the Arctic.	Menard et al. 2017
red king crab	blue king crab	fisheries importance	No commercial fishing occurs in the Arctic except for several small state-managed fish species. King crabs (<i>Paralithodes</i> spp.) are fished for subsistence purposes in the southeastern Chukchi Sea, but the species is not identified. The red king crab was chosen to replace the blue king crab as a representative species because red king crabs are becoming increasingly common in Arctic waters, including the Beaufort Sea, and is a more important fishery in Alaskan waters than blue king crab.	ADF&G 2017c; NMFS 2017b, NMFS 2017d
Eastern Bering Sea BOEM Ecoregion				
black-legged kittiwake	pigeon guillemot	ecological role	The black-legged kittiwake is more abundant than the pigeon guillemot in the Eastern Bering Sea.	Denlinger 2006, eBird 2017
Gulf of Alaska BOEM Ecoregion				
beluga whale	sperm whale	conservation importance	The Cook Inlet beluga whale stock is endangered and has designated critical habitat in the BOEM ecoregion. Additionally, public input on the previous National OCS Program suggested including the beluga whale. The sperm whale is endangered but does not have critical habitat designated.	Muto et al. 2017
harbor seal	northern fur seal	ecological role	The harbor seal is highly abundant, and its range is more focused within the Gulf of Alaska than the northern fur seal. The harbor seal is an important predator species in the planning area. Northern fur seals are rarely found within the Cook Inlet, the part of the ecoregion where BOEM-regulated activities are most likely to occur.	ADF&G 2017d, ADF&G 2017e, Muto et al. 2017
hooligan/eulachon	Pacific herring	conservation importance	The Pacific herring is no longer under consideration for ESA listing. Although only the southern DPS of eulachon is listed, the Alaskan population is also in steady decline.	ADF&G 2017f, ADF&G 2017g, MMS 2003, NMFS 2017e
Pacific cod	pink salmon	fisheries importance	The Pacific cod is a more appropriate choice for fisheries importance than the pink salmon due to its higher landings by weight.	NMFS 2017b

Species Selected	Replaces	Selection Criteria	Selection Rationale	Reference
black-legged kittiwake	glaucous-winged gull	ecological role	The black-legged kittiwake is more abundant than the glaucous-winged gull in the Gulf of Alaska BOEM ecoregion.	Denlinger 2006, eBird 2017
Washington/Oregon BOEM Ecoregion				
harbor porpoise	Dall's porpoise	ecological role	The harbor porpoise is the most abundant marine mammal in the BOEM ecoregion (minimum population estimate of about 48,000 animals). The Dall's porpoise's current minimum population estimate is just under 18,000 animals.	Carretta et al. 2017
California Current BOEM Ecoregion				
sperm whale	Steller sea lion	conservation importance	The Steller sea lion was de-listed in 2013. The sperm whale is federally endangered with a very low potential biological removal* (2.7 animals).	Carretta et al. 2017, NMFS 2017c
Western/Central Gulf of Mexico BOEM Ecoregion				
laughing gull	double-crested cormorant	ecological role	The laughing gull is highly abundant along the Gulf Coast. The double-crested cormorant is very abundant but has a wide inland distribution, making it a less appropriate choice for OCS sensitivity.	eBird 2017; O'Connell et al. 2011
brown pelican	magnificent frigatebird	ecological role	The brown pelican is highly abundant along the Gulf Coast. The magnificent frigatebird is less abundant in the BOEM ecoregion.	eBird 2017
Eastern Gulf of Mexico BOEM Ecoregion				
laughing gull	double-crested cormorant	ecological role	The laughing gull is highly abundant along the Gulf Coast. The double-crested cormorant is very abundant but has a wide inland distribution, making it a less appropriate choice for OCS sensitivity.	eBird 2017
brown pelican	magnificent frigatebird	ecological role	The brown pelican is highly abundant along the Gulf Coast; the magnificent frigatebird is less abundant.	eBird 2017
Southeast U.S. Continental Shelf BOEM Ecoregion				
striped mullet	vermilion Snapper	fisheries importance	The striped mullet is the second highest landed fishery by weight in the BOEM ecoregion.	NMFS 2017b
sanderling	Wilson's storm-petrel	ecological role	The sanderling is abundant in the BOEM ecoregion, migrates along the coast, and is a species of concern. The Wilson's storm-petrel is less abundant in the BOEM ecoregion.	eBird 2017; O'Connell et al. 2011
laughing gull	double-crested cormorant	ecological role	The laughing gull is highly abundant along the southeastern Atlantic coast. The double-crested cormorant is very abundant but has a wide inland distribution, making it a less appropriate choice for OCS sensitivity.	eBird 2017; O'Connell et al. 2011

Species Selected	Replaces	Selection Criteria	Selection Rationale	Reference
Northeast U.S. Continental Shelf BOEM Ecoregion				
northern gannet	double-crested cormorant	ecological role	The northern gannet has a very high density in the BOEM ecoregion. The double-crested cormorant is very abundant but has a wide inland distribution, making it a less appropriate choice for OCS sensitivity.	eBird 2017

* = Potential biological removal is the maximum number of animals, not including in natural mortalities that could be removed annually from a marine mammal stock while allowing that stock to reach or maintain its optimal sustainable population level.

Table 7-7: Scoring of Anticipated Ecosystem Change Impacts for BOEM Ecoregions

BOEM Ecoregion	Anticipated Ecosystem Change Impacts								Ecosystem Change Index
	Temperature Change	Sea Ice Melt & Freshwater Influx	Permafrost Thaw	Ocean Acidification/Upwelling Effects	Sea Level Rise & Saltwater Intrusion	Increased Storm Activity	Changes in Species Composition	Total	
Chukchi/Beaufort Sea	2	2	2	2	0.5	1	1	8.5	2.4
East Bering Sea	2	2	1.5	2	0.5	1	1	8	2.3
Gulf of Alaska	2	1	1	1	0	1	1	5	1.4
Washington-Oregon	1	0	0	1.5	1	0	1	3.5	1.0
California Current	1	0	0	0.5	0	0	1	1.5	0.4
Western Gulf of Mexico	0.5	0	0	0.5	2	1	1	4.5	1.3
Eastern Gulf of Mexico	0.5	0	0	0.5	1	1	1	3.5	1.0
Southeast U.S. Continental Shelf	1	0	0	0.5	1.5	1	1	4	1.1
Northeast U.S. Continental Shelf	1.5	0	0	1.5	2	1	1	5.5	1.6

Notes: Total score reflects the climate change score prior to the conversion to an ecosystem change index with a 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 assigned to BOEM ecoregions in which a low to intermediate effect was expected; and a score of 2 assigned for intermediate to high anticipated effects. Before summing the climate change index with the habitat and species sensitivity scores, the total ecosystem 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 2013, IPCC 2014, Melillo et al. 2014, Ekstrom et al. 2015, NOAA 2017f, USGCRP 2017, USDA 2017.

Table 7-8: Environmental Sensitivity Score by BOEM Ecoregion

BOEM Ecoregion	Environmental Sensitivity Score
Western and Central GOM	19.6
Chukchi and Beaufort Sea	19.2
Southeast U.S. Continental Shelf	19.2
Eastern GOM	19.1
East Bering Sea	17.9
Washington/Oregon	17.9
Northeast U.S. Continental Shelf	17.8
Gulf of Alaska	17.3
California Current	15.7

7.3.2.6 Results and Discussion

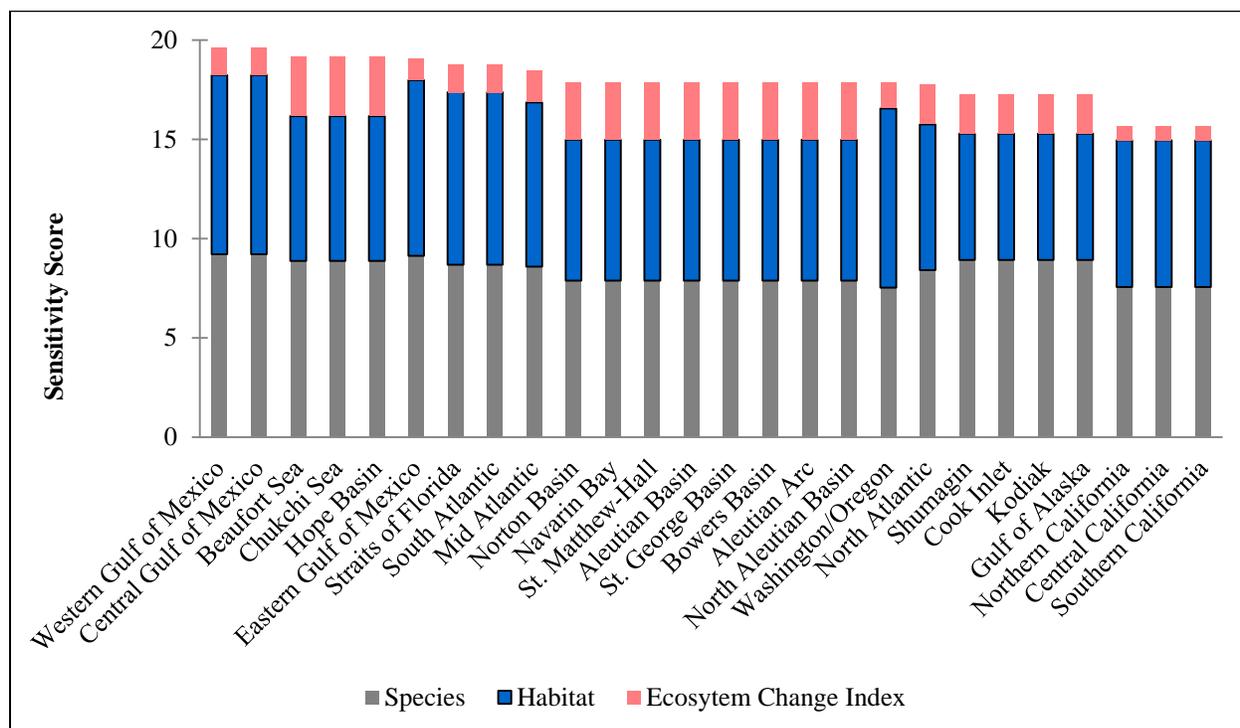
The environmental sensitivity scores for the planning areas range from 15.7 to 19.6 with an average score of 18.2 ± 1.2 (see Table 7-8 and Figure 7-21). These scores are unitless and serve as an index of environmental sensitivity. The small range in sensitivity scoring demonstrates that all planning 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, as well as anticipated impacts of ecosystem change to these ecoregions.

The BOEM ecoregion with the highest sensitivity score was the Western GOM (19.6). This high score results from the ecoregion having the highest species and habitat component scores. Interestingly, the high total species score is not due to any single species with a high sensitivity score but rather a collection of species with relatively high scores, especially for some of the birds (laughing gull and brown pelican), fish (red snapper and endangered Gulf sturgeon), and invertebrates (American oyster). The high habitat score for the Western GOM is primarily driven by the ESI and benthic marine habitat scores. The Southeast U.S. Continental Shelf and Eastern GOM had the highest ESI scores, and the Western GOM had a fairly high shoreline index. These high ESI scores are due a predominance of saltwater marshes, swamps, and other vegetated wetlands along the shores of those ecoregions (NOAA 2017g). The Western GOM also had the highest marine benthic habitat score, which is comprised of fine, unconsolidated substrate, seeps, and deepwater coral.

The Chukchi/Beaufort Sea and the Southeast U.S. Continental Shelf BOEM ecoregions had the second highest sensitivity score (19.2). For the Arctic region, this higher score is largely due to the ecoregion receiving the highest ecosystem change index (3 out of 4) and a relatively high species score. The high species score was driven by the high bird sensitivity scores, especially for the endangered spectacled eider.

In the Southeast U.S. Continental Shelf BOEM ecoregion, the score was driven by a moderately high species score, which included the highest marine mammals and sea turtles sub-score of all BOEM ecoregions. This high species score is a result of some high-scoring species with low reproductive potential and high ages of maturity, such as the Florida manatee and Atlantic sturgeon.

Figure 7-21: Aggregated Sensitivity Scores for Habitats, Species, and Ecosystem Change by Planning Area



For similar reasons, the beluga whale and Atlantic sturgeon led to relatively high species scores for the Gulf of Alaska, and Northeast U.S. Continental Shelf BOEM ecoregions, respectively.

Prior to the addition of the impact-independent modifier of ecosystem change, the California Current and East Bering Sea were tied for the lowest sensitivity score (15.0). The relatively higher ecosystem change score in the East Bering Sea (2.9 out of 4) resulted in the California Current being the lowest scoring BOEM ecoregion. The low scores for these two ecoregions are the result of low habitat and species scores. Both BOEM ecoregions had relatively low ESI scores and no high-scoring species.

The relatively small differences among the environmental sensitivity scores suggest that differentiation among the BOEM ecoregions 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 geographic scale of analysis, and BOEM strives to incorporate empirical data, where available. Similar approaches can be taken to evaluate proposed activities on particular areas of the OCS on a case-by-case basis. OCS regions should be individually considered with a full understanding of the species present, their distributions, and habitat needs, and therefore, the individual sensitivity to potential oil and gas activities.

7.3.3 Marine Productivity

7.3.3.1 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 planning area and fix carbon, as long as sufficient light and nutrients are available. Farther from shore, nutrient availability could 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 (i.e., position in the food chain) (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. Although some models of secondary and tertiary productivity exist for OCS regions, estimates are not available for all planning areas (Balcom et al. 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 (Balcom et al. 2011), secondary and tertiary production estimates are not robust and will not be presented for decision support.

7.3.3.2 *Methods*

In 1991, BOEM (then MMS) completed a primary productivity review (CSA 1991a, CSA 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 DPP analysis is identical to the methods and results presented in the 2017–2022 Program. This current method 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-*a*, available light, and photosynthetic efficiency. The satellite-based measurements, which feed the VGPM, are available at a resolution of 1 km, allowing BOEM to analyze the primary productivity of the OCS at the planning area spatial scale. The years of analysis, 1998–2009, were constrained by the earliest availability of the satellite data and the conclusion of the BOEM-funded study (Balcome et al. 2011). 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 Balcom et al. (2011).

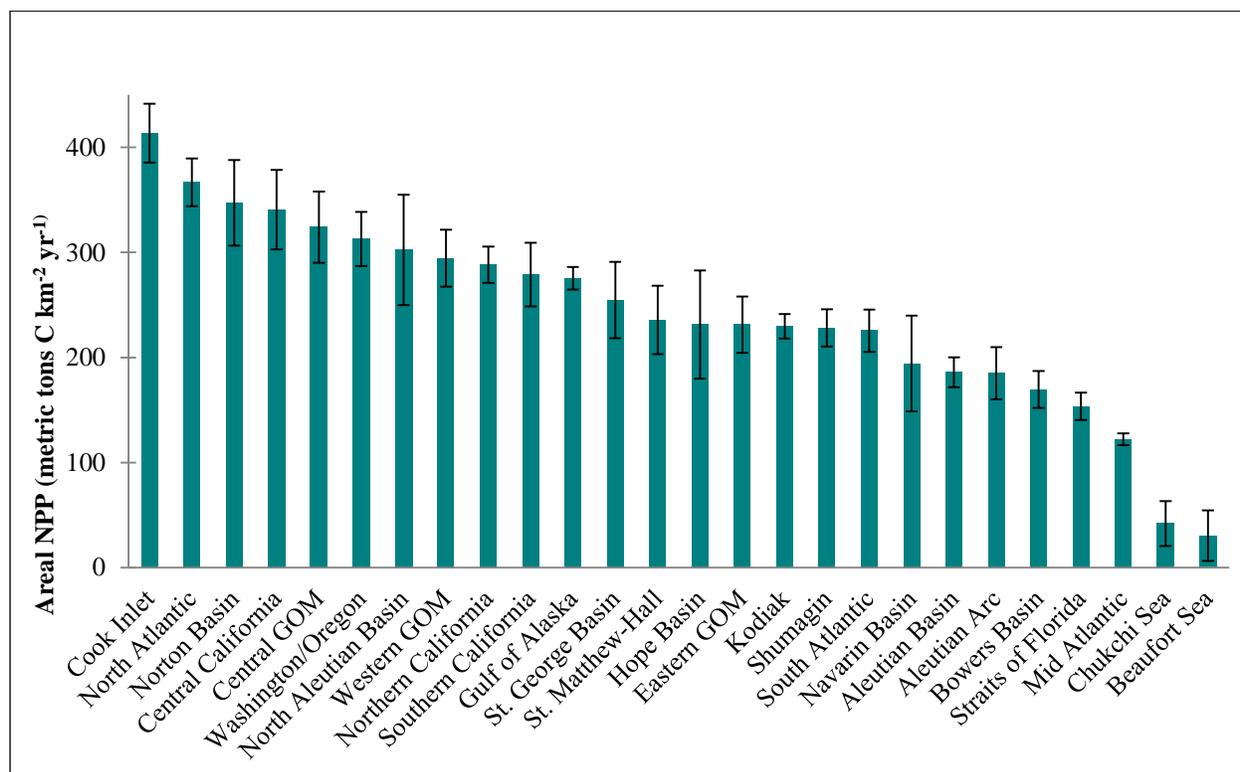
7.3.3.3 Results and Discussion

In this DPP analysis, each of the 26 planning areas is 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). Productivity ranged from 30.5 (Beaufort Sea) to 413.5 metric tons of carbon per square kilometer per year ($\text{t C km}^{-2} \text{ yr}^{-1}$) (Cook Inlet) (see Figure 7-22 and Table 7-9). Regional trends are detailed as follows:

- **Alaska Region:** High NPP variability existed in the Alaska Region, which housed both the highest and the lowest rates of NPP on the OCS. It should be noted that the accuracy of primary productivity estimates for the Alaska Region could be substantially lower than other regions for several reasons. For example, the presence of turbid coastal waters could adversely affect remote sensing measurements (i.e., chlorophyll-*a* concentrations can be significantly overestimated [> 100 percent] from satellite measurements due to algorithm artifacts in the atmospheric correction and bio-optical inversion). Variations in seasonal solar insolation effects also could result in reduced primary productivity (e.g., most of the areas in the Alaska Region have limited sunlight).
- **Pacific Region:** In general, the Pacific Region exhibited the highest annual primary productivity per square kilometer: $> 300 \text{ t C km}^{-2} \text{ yr}^{-1}$ for all four planning areas. Within the region, the highest annual NPP was evident in the Central California Planning Area; the lowest NPP was found in the Southern California Planning Area.
- **GOM Region:** The GOM Region exhibited high annual primary productivity per square kilometer: $283 \text{ t C km}^{-2} \text{ yr}^{-1}$ for all three planning areas. The highest annual NPP was evident in the Central GOM; lowest NPP was found in the Eastern GOM Planning Area.
- **Atlantic Region:** The NPP within the Atlantic Region was highly variable, with an average NPP of $217 \text{ t C km}^{-2} \text{ yr}^{-1}$. The North Atlantic Planning Area housed the highest annual NPP, while the Mid-Atlantic, South Atlantic, and Straits of Florida planning areas' NPPs were much lower.

Although 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 26 OCS planning 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. Ten of the 15 Alaska planning areas exhibited interannual variability greater than 10 percent, all of which are located in high latitudes (i.e., variability due to light limitation). In contrast, most of the remaining planning areas from the other three regions show low interannual variability (< 10 percent). Low-latitude areas are less sensitive to cloudiness, provided the cloud cover is not persistent.

Figure 7-22: Marine Annual Net Primary Productivity

Note: Values represent the mean and the standard deviation of 12 annual values for the 1998–2009 period, standardized per unit area.

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 could help elucidate the potential effects that altering the base of the food chain could 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 natural 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 resulting in decreased light penetration, and thus decreased 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 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; 22 of the 26 OCS planning areas exhibited similar productivity estimates, based on minimal-maximal ranges. 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.

Table 7-9: Net Primary Productivity Rates

Planning Area	Areal NPP (t C km ⁻² yr ⁻¹)
Cook Inlet	413.5 ± 28.1
North Atlantic	366.7 ± 22.8
Norton Basin	347.2 ± 40.8
Central California	340.7 ± 37.9
Central GOM	324.2 ± 34.0
Washington/Oregon	312.8 ± 25.9
North Aleutian Basin	302.5 ± 52.5
Western GOM	294.4 ± 27.1
Northern California	288.3 ± 17.3
Southern California	279.0 ± 30.4
Gulf of Alaska	275.5 ± 10.6
St. George Basin	254.7 ± 36.3
St. Matthew-Hall	235.9 ± 32.6
Hope Basin	231.5 ± 51.5
Eastern GOM	231.3 ± 26.7
Kodiak	229.7 ± 11.6
Shumagin	228.2 ± 17.6
South Atlantic	225.5 ± 20.2
Navarin Basin	194.3 ± 45.5
Aleutian Basin	186.1 ± 14.3
Aleutian Arc	185.1 ± 24.9
Bowers Basin	169.5 ± 17.5
Straits of Florida	153.5 ± 13.1
Mid-Atlantic	122.2 ± 5.7
Chukchi Sea	42.0 ± 21.4
Beaufort Sea	30.5 ± 24.1

Key: t C km⁻² yr⁻¹ =metric tons of carbon per square kilometer per year, NPP=net primary productivity.

Within the 1998–2009 primary productivity dataset, significant variability in primary productivity determinations was evident, particularly in the Alaska Region. Although some of this variability could be attributed to planning area-specific oceanographic features and/or local processes, some variability could be reflective of the data acquisition method. The accuracy of satellite-derived productivity estimates could 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 where sunlight is limited during the winter months), and

uniform application of the NPP model could be slightly problematic for marginal seas and areas of upwelling.

Productivity ranged from 30.5 (Beaufort Sea) to 413.5 (Cook Inlet) t C km⁻²yr⁻¹ (see Figure 7-22 and Table 7-9). The Alaska Region exhibited high NPP variability. It should be noted that the accuracy of primary productivity estimates for the Alaska Region could be substantially lower than in other regions for several reasons, as mentioned above.

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 (i.e., satellite-based measurements) is the best method available to measure NPP for the purposes of BOEM decisionmaking. 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 Region exhibited high annual primary productivity: 314.4 t C km⁻²yr⁻¹ for the entire basin. On a regional basis, the Central and Eastern GOM Region had a higher rate of NPP than the Western GOM.

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 planning areas) and the highest rates (found in the Cook Inlet Planning Area). These rates of NPP allow a ranking of the planning areas; areas with high rates of primary production would have the greatest 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 planning 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

Section 18(a)(2)(B) of the OCS Lands Act requires that the Secretary base the size, timing, and location of the OCS exploration, development, and production 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 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 to society occur onshore or along the coast, BOEM uses PADDs (see Section 6.2) to help assess the sharing of benefits and risks among onshore “regions” (see Section 8.3).

In the past, the regions possessing substantial oil and gas resources (and the adjacent areas) included in previous National OCS Programs received most of the benefits from developing OCS resources. These regions have also been subject to the associated environmental risks of developing those resources. While developing the 2019–2024 Program, BOEM considers how this relationship will evolve in the consideration of areas for future oil and gas development. At the DPP stage, this analysis is driven by general considerations that provide a simple basis for judging the implications of programmatic decisions on equitable sharing of developmental benefits and environmental risks. This analysis discusses the potential developmental benefits and environmental risks that could accrue to areas proximate to an OCS producing region, as well as those widely distributed benefits and risks that could accrue to the entire United States. The Secretary is required to consider equitable sharing, but neither Section 18 of the OCS Lands Act nor the courts have indicated a specific distribution of sharing that a new National OCS Program should achieve.

Regional sharing of benefits and risks is heavily influenced by the distribution of oil and gas and environmental resources. A key consideration is whether areas are given an equitable opportunity to develop and benefit from nearby resource endowments. That does not mean that every region must be included in lease sales under the National OCS Program; to the contrary, it must be considered that some regions possessing substantial oil and gas resources might also be prone to serious environmental risks, and 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 (see Section 1.2 for a description on energy needs).

As noted in Chapter 5, in the absence of leasing under a new National OCS Program, energy substitutes would be required to replace the forgone OCS oil and gas. Energy market substitutes change the relative developmental benefits and environmental risks experienced by the U.S. These impacts from no leasing under a new National OCS Program are discussed briefly in Section 8.4.

The developmental benefits in the equitable sharing analysis at all three stages of National OCS Program development are calculated using an economic impact approach. This differs from the benefit-cost approach used to estimate the NSV 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 National OCS Program decision analyses. 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 proposed National OCS Program lease sale schedule. 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 NSV analysis in Section 5.3 starts with the calculation of NEV of OCS leasing. In this calculation, costs of exploration, development, and transportation are netted from the gross value of the resources in each planning area to estimate the value of the extracted resources in each planning area. Alternatively, in an economic impact analysis these same costs generate income, employment, and revenues that state and local governments and residents generally consider to be benefits. Thus, the economic impact analysis focuses on these broad macroeconomic measures, such as income, employment, wages, and revenue transfers, as they could relate to specific industries and geographic locations.

An additional distinction between the benefit-cost analysis and the economic impact analysis is the geographic scope of analysis. Because the Secretary must make programmatic decisions for the benefit of the United States as a whole, the benefit-cost approach presents relative benefits and costs from a national perspective (described in Section 5.3). The NSV analysis does not outline costs and benefits specific to a particular area, but instead focuses on costs and benefits that accrue to the United States as a whole. However, for the equitable sharing analysis, it is the benefits enjoyed and distributed risks borne among the specific geographic regions that are most important. Therefore, the economic impact analysis evaluates developmental benefits and risks at a regional level.

In the Proposed Program and PFP, the equitable sharing analysis will focus specifically on the program areas under consideration for future oil and gas activity and the Program Options presented. The discussion at that stage will outline the developmental benefits and environmental risks that could be directly felt nearby, as well as those benefits and risks that could occur in other regions. The Proposed Program and PFP equitable sharing analysis will also describe in more detail the widely distributed benefits and risks that could occur as a result of OCS oil and gas activities.

8.1.1 Consideration of Elements Beyond the Secretary's Control

The OCS Lands Act gives the Secretary wide latitude to assess the importance of a variety of factors in deciding the size, timing, and location of lease 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 National OCS Program, but which are not under the direct control of the Secretary. For example, regardless of any Secretarial decision, the geographic distribution of oil and gas resources can limit the developmental benefits an area could receive. Environmental factors, such as weather or ice cover, could also affect the actual incidence of environmental risk in an area.

Other factors beyond the Secretary’s control include laws that can 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 sharing of oil and gas revenues as well as impact assistance, can be important in determining the distribution of benefits to regions, these policies are generally resolved through legislation and are therefore often outside the scope of the Secretary’s ability to affect by his decisions. These types of factors could ultimately change the actual developmental benefits and environmental risks experienced as a result of OCS oil and gas activity.

8.2 REGIONAL BENEFITS AND RISKS

8.2.1 *Regional Benefits*

There are benefits from the development and production of oil and gas resources that accrue primarily to producing regions and nearby onshore populations. These benefits include the impact on local economies from expenditures associated with production (i.e., labor, land, materials, and equipment). Exploration, development, and production—and many of the industries that support such activities—generally result in additional jobs and employment at higher-than-average pay and spending on these activities reverberates throughout the economy. Although some groups might not welcome these development impacts, most communities consider them a benefit. Additional benefits to communities proximate to OCS oil and gas activities come from revenue sharing programs, increased tax collections, and benefits from producing energy near where it is consumed.

8.2.1.1 *Additional Jobs and Increased Wages*

Jobs and their associated labor income are among the most important benefits to many local communities. Employees are needed by industry to conduct oil and gas operations and in many other industries that support oil and gas exploration, development, production, and transportation. Through the creation of additional income and employment, the spending of these employees generates multiplier effects throughout the local economy. These indirect and inducted effects generate spending in local economies much greater than those of the initial industry expenditure.

The employment impact generated from OCS leasing during the 2019–2024 Program will differ depending on the planning areas included in the National OCS Program and whether or not current activity exists in the area. For example, in the GOM where OCS oil and gas activities have been occurring for decades, most of the employment benefits of the new National OCS Program are the continuation of current jobs. Maintenance of, and perhaps an increase in, benefits for states adjacent to the region would occur through the continuation of GOM area wide sales, and/or in the event that more of the Eastern GOM Planning Area is made available for leasing with the expiration of the Congressional moratorium in this area occurring on June 30, 2022.

Alternatively, in areas without a developed oil and gas industry, an emerging oil and gas industry could result in low, immediate local economic effects for nearby communities that might be perceived as beneficial. 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. A unique characteristic of offshore oil and gas development

is extended work schedules (e.g., one week on, followed by one week off duty). These types of schedules allow workers to commute long distances. For example, in the Alaskan Arctic, employees would likely live in southern Alaska, other communities within the United States, or other countries, and would commute to work where they would be housed in separate worker enclaves while on duty. In new areas of OCS development (e.g., the Atlantic), the long schedules would likely result in many of the skilled workers commuting from the GOM area initially, with local workers gradually increasing in proportion if exploration and development activities increase and continue. Actual economic effects would vary depending on the maturity and composition of the OCS region.

For the USDOJ Economic Contribution Report, BOEM calculates an annual estimate of the jobs supported by OCS oil and gas development (USDOJ 2017). In the report, BOEM considers the employment generated from industry spending, industry profits, and government revenue. For FY 2016, BOEM estimates that approximately 315,000 jobs were sustained from OCS oil and gas activities. Of the aggregate employment, BOEM estimates that approximately 70 percent of jobs remain in the states adjacent to the GOM (i.e., Texas, Louisiana, Alabama, Mississippi, and Florida) (see Table 8-1). BOEM's economic impact calculations use regional economic impact models, collectively called MAG-Plan,³⁹ to estimate the economic effects of OCS oil and gas activities. A more detailed analysis of effects anticipated from each decision option will be conducted for the areas included in the Proposed Program and PFP analyses. The states experiencing significant employment will very likely expand if new areas are available for leasing and exploration and development occurs.

Table 8-1: FY 2016 Employment Associated with OCS Oil and Gas Development

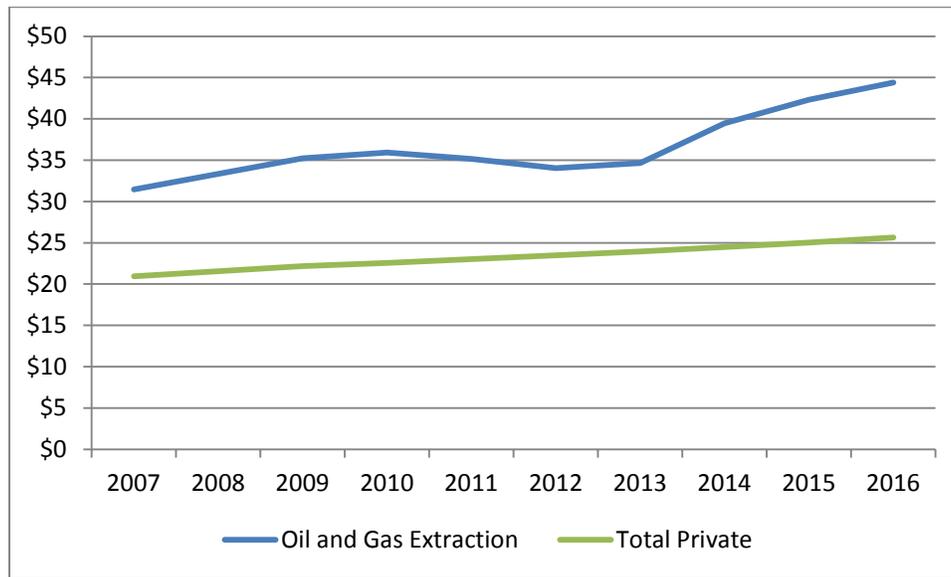
State	Estimated Jobs
Alabama	20,000
Florida	8,000
Louisiana	52,000
Mississippi	15,000
Texas	124,000
Rest of U.S.	95,000
Total	315,000

Note: Totals may not sum due to rounding.

Source: USDOJ 2017

Although it is impossible to precisely locate all jobs in an industry with work patterns like those of the OCS oil and gas industry, OCS leasing and subsequent activities would particularly contribute to local economies near the planning areas selected. In addition, many of the jobs in the oil and gas industry earn a significant wage premium. Figure 8-1 shows the average hourly earnings of employees in the oil and gas extraction industry as compared to the average hourly earnings of employees in all private industries. Oil and gas extraction jobs earn more than 150 percent of the average hourly wage of other employees. In turn, these employees have more purchasing power and can consume more goods and services, benefitting them by increasing their standard of living and contributing relatively more to the economy.

³⁹ BOEM has three separate MAG-Plan models to calculate economic impacts, one model each for Alaska (Northern Economics, Inc. et al. 2011), the GOM (Kaplan et al. 2016), and the Atlantic (Kaplan et al. 2017).

Figure 8-1: Nominal Average Hourly Earnings of U.S. Workers

Source: BLS 2017a and BLS 2017b

In addition to OCS development, onshore infrastructure is needed to support oil and gas development. Significant existing infrastructure for oil and gas development exists near the GOM. In the Beaufort Sea, Cook Inlet, and Southern California planning areas, the existing infrastructure network is smaller and more focused around state-level projects. For the other planning areas, new infrastructure construction is likely to be associated with successful exploration. 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 some areas such as the less-developed, less-populated areas of the Alaska North Slope and Bering Sea coasts, it is likely that some construction work would be performed with non-local labor. Onshore infrastructure also brings environmental risks, which are discussed in general in Section 8.3.2.

8.2.1.2 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 OCS oil and gas activities would generate property tax revenues that accrue to the jurisdiction in which the infrastructure is located.

The importance of tax revenue varies by region. 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 boroughs and local communities. The GOM has extensive onshore infrastructure that contributes to local and state economies and funds government services. Should frontier areas become areas of similar long-term development and production, this tax revenue would contribute to state and local economies in these areas, as well.

The extent to which communities near oil and gas activities would benefit from infrastructure development would depend on a number of factors, including the current capacity of infrastructure to support oil and gas activities. For example, the GOM already has a well-developed web of infrastructure and would not require extensive development of new facilities to serve new activity (e.g., from expanded Eastern GOM leasing). The Atlantic coast has areas with significant general infrastructure (e.g., roads, housing, medical facilities) to meet some of the needs required for potential new exploration and development, but new infrastructure will be needed to support production activities. There are numerous construction companies and labor sources in both the Atlantic and Pacific, and these regions could benefit from local infrastructure construction associated with new leasing opportunities in these areas. However, in the less-developed, less-populated areas of the Alaska North Slope and Bering Sea coasts, it is likely that some construction work would be performed with non-local labor.

In addition to construction of new infrastructure, production from this National OCS Program would extend the economic life of regional onshore infrastructure that depends on oil and gas. This is especially true for the GOM and Alaska, where local economies—and even state and local treasuries—depend on revenues from continued use of existing infrastructure. An important example is the TAPS, which transports oil from the Prudhoe Bay area of the Alaskan Arctic and depends on future development of OCS or additional onshore oil to remain active. Communities along the GOM and in southern California similarly benefit from continued operation of facilities constructed to service OCS operations, although these areas are not as singularly dependent on the industry as is the Alaskan Arctic.

8.2.1.3 Revenue Sharing

Revenue sharing, a method of providing economic benefit to those regions that bear the environmental risks of proximate OCS oil and gas activities, affects equitable sharing among regions. Only Congress has the authority to expand, extend, or otherwise revise revenue sharing provisions during the period covering future National OCS Programs. Currently, two statutes have created programs that provide OCS oil and gas revenues to the coastal producing states and political subdivisions: Section 8(g) of the OCS Lands Act and GOMESA.

Section 8(g) 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 nautical miles seaward. This 3-mile-wide area adjacent to the state's submerged lands boundary is known as the "8(g) zone." BOEM shares 27 percent of these bonus, rent, and royalty revenues with the adjacent states. The 8(g) revenues are intended to compensate the states for any drainage of resources in state waters by Federal lessees. Table 8-2 shows the 8(g) revenue dispersed to the six states sharing 8(g) leasing revenues from OCS production.

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, and 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 program was designed to compensate for potential negative impacts of, and the additional demand for services and infrastructure due to, OCS activities. GOMESA funds are reserved for uses specified in the Act, including coastal restoration and protection.

Phase 1 of GOMESA provided for the uncapped sharing of a 37.5 percent share of OCS revenues from selected areas stipulated in the law, which are included in the Central and Eastern GOM planning areas.⁴⁰ The second phase of GOMESA began 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 2019–2024 Program will be subject to these GOMESA revenue sharing provisions. Table 8.2 shows the 8(g) and GOMESA revenue distributions for FY 2016.

Table 8-2: FY 2016 8(g) and GOMESA State Disbursement Summary

State	8(g)	GOMESA
Alabama	\$1,537,555	\$90,774
Alaska	\$1,064,323	N/A
California	\$1,648,042	N/A
Louisiana	\$6,313,683	\$102,714
Mississippi	\$51,779	\$83,987
Texas	\$134,617	\$36,731
Total	\$10,750,000	\$314,205

Key: N/A=Not Applicable. Alaska and California do not receive GOMESA revenues.

Source: ONRR 2017a

While the Secretary cannot expand, extend, or otherwise revise revenue sharing provisions to further the equitable sharing of the developmental benefits and environmental risks during the period covering the next National OCS Program, Congress has the authority to do so. If Congress decides that the current distribution of benefits and costs is inequitable, it can modify the existing arrangement or extend similar revenue sharing agreements to additional states if oil and gas exploration and development expands to new areas of the OCS.

8.2.1.4 Proximity of Energy

Another developmental benefit of OCS production is the production of oil and natural gas near oil and gas consumers. 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 can improve economic efficiency, reduce environmental impacts from transportation, and decrease potential impacts on fuel distribution due to disruptions from events such as natural disasters.

The GOM planning areas are near ample refinery capacity whereas the Pacific and Atlantic planning areas are near major consumption points. However, for OCS production to be able to support nearby communities, refineries would have to have enough excess capacity to refine or process the resources.

Although the Alaskan Arctic planning areas are not in close proximity to most consumers, production of OCS oil would increase throughput of the TAPS, potentially helping to extend the life of the pipeline and providing Alaska with valuable revenue. Other areas of Alaska do have a local market for the resources,

⁴⁰ More information on GOMESA revenue sharing is available on BOEM's website at <http://www.boem.gov/Revenue-Sharing/>.

such as the Cook Inlet which provides natural gas to Anchorage. More discussion of the national and regional energy markets is included in Chapter 6.

8.2.2 Regional Risks

Chapter 7 discusses some of the potential impacts associated with oil and gas development on the OCS. Further information on the environmental risks (potential impacts) will be addressed in the Draft and Final Programmatic EISs to be published concurrently with the Proposed Program and PFP decision documents, respectively. The Programmatic EIS describes the biological, physical and sociocultural resources 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 could cause an impact. The risks associated with non-routine or accidental events such as oil spills could be higher in areas with the greatest activity or in areas where the oceanography or characteristics of the environment could lead to more oil reaching the shoreline.

The discussion of risk associated with oil and gas activities on the OCS varies slightly in scale from the discussion of benefits. Benefits that could accrue to the regions proximate to ongoing oil and gas activities include an increase in jobs and wages and the subsequent multiplier effects that could be felt more widely. This benefit could be smaller at the outset (i.e., in frontier areas where exploration is the primary activity) and grow as development and production allow the industry to become established. In the case of environmental risk, the impacts are often within the waters of the OCS and in the immediate coastal zone. These impacts, particularly ones that have economic consequences, could be apparent throughout the local and state economies. However, the burden of environmental risk is borne primarily by the marine and coastal areas adjacent to and within which oil and gas activities occur.

Risks to marine and coastal resources generally are characterized as the chance that the human, coastal, or marine environment could be harmed as a result of oil and gas leasing activities associated with the 2019–2024 Program. A decision not to lease could carry risks from activities required to obtain and transport energy substitutes. Generally speaking, with leasing, environmental risk is greater in areas where there is more oil and gas activity.

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 bring employment, more and/or better roads, and other benefits, it also poses environmental, socioeconomic or sociocultural, and/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 upfront expenditures or under-used facilities.

In addition, especially in non-industrialized areas, there could be the need for additional development of general infrastructure, such as higher-capacity roads and more housing, which can impose costs to both the natural and human environments, along with the benefits that could result.

Onshore construction could result in a variety of adverse impacts including the destruction or alteration of existing habitat such as wetlands or nesting areas for turtles and birds, permanent or temporary displacement of species that rely on those habitats, and behavioral disruption that could have acute or

long-term impacts on individuals and populations. In the GOM, an extensive onshore infrastructure support network is already in place and will not require significant new development or modification, potentially lowering the environmental risks associated with coastal development. In the Atlantic and Pacific, there are areas of important sea turtle and bird habitat. However, the level of human use and infrastructure development in these regions are high, and those ecological issues are already a part of the local and regional planning process. Even though some onshore infrastructure systems needed to support new offshore OCS development would be novel to these areas, balancing important environmental issues with human use is not. In Alaska, the area around the Cook Inlet Planning Area and certain parts of the coast adjacent to the Beaufort Sea Planning Area have existing infrastructure in place (including those supporting state oil and gas production). Other areas, such as the majority of the Arctic coast, have very little and would require significant development of onshore facilities. Additional risks from onshore construction in Alaska are associated with the potential disruption of subsistence resources, such as access to hunting areas or disturbance of animals such as caribou.

Oil spills are another possible risk borne by OCS regions and the coastal areas adjacent to OCS activities. Different OCS regions have different risk factors that affect the probability of oil spills. For example, the principal risk that applies to deep water drilling in the GOM occurs as a result of drilling and containment/response risks associated with the use of drilling technologies at these depths. In the Arctic, the primary risks stem from ice and the ability to drill relief wells. Similarly, different regions would be impacted differently by oil spills. In the GOM, a deep water, large-volume spill could have more environmental consequences than a smaller spill occurring in shallow water. However, depending on the site conditions and location, deep water spills could impose less risk on highly valued coastal areas due to their distance offshore, which allows for more natural weathering and dispersion. In the Arctic, an ongoing concern is the environmental effects from a large oil spill on sensitive marine and coastal habitats within the land-sea-ice biome that supports a traditional subsistence lifestyle for Alaska Native peoples and provides important habitats for migratory and local animal populations. The ability to respond to and contain a very large discharge event under the extreme climatic conditions and seasonal presence of ice could present an especially great risk.

8.3 WIDELY DISTRIBUTED BENEFITS AND RISKS

8.3.1 *Widely Distributed Benefits*

As discussed, many of the developmental benefits of the National OCS Program occur in onshore areas adjacent to the planning areas included in the lease sale schedule. 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 happening off their coasts, 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. Although 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. In FY 2016, OCS oil and gas leasing provided approximately \$2.8 billion in leasing revenues, which accrue to the general treasury (ONRR 2017b). In addition to the leasing revenues collected from OCS activity, oil and gas activities on the OCS generate a significant amount of tax revenue to the U.S. Treasury. As general treasury revenues, the money is spent throughout the country for programs such as national defense or benefits programs. Future OCS leasing and development will also contribute to the national benefits received from additional oil and natural gas production.

A 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 nonprofit organizations to preserve historic places. The LWCF provides assistance to states and local efforts to acquire land for parks and recreation 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 on 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).

As described in Section 8.3.1.1, the various equipment and supplies required for an OCS oil and gas project, as well as the industry's work schedules, allow for vendors, suppliers, and employees to be located throughout the United States. Vendors can be located and employees can live and spend their wages far from the areas adjacent to the OCS, thereby contributing money from OCS jobs to local economies perhaps hundreds of miles from the OCS. Whereas approximately 70 percent of the total employment and GDP contribution of GOM OCS activities are concentrated in the GOM states, the remainder is shared throughout the United States (as shown in Table 8-1).

Along with leasing and tax revenues and 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.

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. 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 also receives benefits from the reduced need to rely on substitute sources of energy. As will be discussed in more detail in the Proposed Program and PFP decision documents, the production of OCS resources reduces the U.S. need for additional onshore oil and natural gas production, increased oil imports, and fuel switching to coal or other sources of electricity. In some cases, the areas that have OCS production will also be the same areas where reduced substitutes are needed (e.g., OCS production from the GOM reduces the need for 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 in the same region as the benefits of not relying on the energy substitutes (e.g., Alaska OCS production could result in costs in Alaska, but could also reduce the need for additional foreign imports, resulting in a reduced need for, for example, tankers traveling to the

Pacific coast). This analysis of the impacts in the absence of leasing under a National OCS Program will be expanded for the Proposed Program and PFP analyses, which will consider specific Program Options.

8.3.2 Widely Distributed Risks

Environmental risks that could 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 are affected by numerous, interrelated and unrelated activities, including the exploration, development, production, and use of oil and gas resources on the OCS. The primary direct impact pathway from oil and gas exploration, development, production, and use activities to human health is degradation of air quality through emissions. Air pollutant emissions directly impact the health and quality of life of humans (e.g., increased prevalence of asthma or other respiratory illnesses) and GHG emissions contribute broadly to the effects of global climate change. BOEM also recognizes that the marine and coastal ecosystems that could be impacted by oil and gas activities provide a variety of other ecosystem services including food, carbon sequestration, recreation, protection from natural disaster, and aesthetics.

While the risks associated with air quality are largely regional, the risks from GHG emissions are national and international in scale. Climate change is a global phenomenon, and climate change impacts are a function of worldwide GHG emissions, including the contribution of emissions from the National OCS Program. In addition, because GHGs, like carbon dioxide, could influence climate over decades to millennia, the potential impacts of any source could extend well beyond the active lifetime of the source or production associated with the National OCS Program. Refer to the report, *OCS Oil and Natural Gas: Potential Lifecycle Greenhouse Gas Emissions and Social Cost of Carbon* (Wolvovsky and Anderson 2016), for estimates of GHGs that could be emitted as a result of the activities associated with the 2017–2022 Program and the estimated energy substitutes if no new leasing occurs under an approved National OCS Program.

The environmental risk of a low-probability CDE, 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, all BP shareholders were affected by compensation liabilities associated with the spill. In that case, there was a massive transfer of funds to the GOM coast for cleanup and compensation from an international company with widely dispersed operations and stockholders. A less dramatic example is the 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 National OCS 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 CDE

occurs in the vicinity and the physical and environmental conditions (e.g., wind direction, current flow) are conducive to the spread of oil outside U.S. waters. However, just as activities from the OCS could affect these countries, these countries also conduct 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 have distributions or ranges 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.

8.4 IMPACTS ON BENEFITS AND RISKS IN THE ABSENCE OF LEASES IN A NATIONAL OCS PROGRAM

In the absence of new OCS lease sales, energy substitutes would be required to replace OCS oil and gas to fulfill U.S. demand for energy. In development of the National OCS Program, BOEM considers the energy market substitutes that would replace OCS oil and gas in the event that no lease sales were scheduled in a National OCS Program. Choosing not to develop OCS resources eliminates many of the developmental benefits and environmental risks from OCS production from accruing.

Selecting not to have OCS oil and gas leasing in a particular planning area has different impacts depending on the current level of oil and gas activity. In the GOM, where production has occurred for several decades, the decision not to have further leasing would result in a decline in U.S. production, which in the near term would have to be replaced by other, substitute, sources of energy, most likely leading to negative impacts on communities that provide goods, services, and labor to support OCS-related activities or rely on associated revenue for public finance. In other planning areas that have little or no current OCS production, the decision to continue to not hold lease sales means substitute energy sources are and will continue to be used to fulfill domestic demand. In either case, the substitute energy sources have their own developmental benefits and environmental risks. In instances where imported oil would replace OCS production, many of the developmental benefits will accrue outside the United States, but many of the environmental risks remain because products are still shipped to the U.S.

BOEM's OECM uses EIA transportation data to estimate where substitute energy sources would be produced if OCS leasing were forgone in a particular area. In addition, the OECM also estimates which substitute energy sources would replace the forgone OCS production in a particular planning area (Industrial Economics, Inc. and SC&A, Inc. 2015). This analysis will be conducted for the Proposed Program and PFP analyses to provide information on the specific trade-offs of the Secretary's decision to hold or not hold a sale.

8.5 SUMMARY

The National OCS Program has a certain innate equity in that the geographic areas bearing the greatest risks also receive a higher share of the benefits, while certain financial aspects of both benefits and risks are shared somewhat widely. In making a DPP decision, the Secretary uses the equitable sharing discussion framework to consider whether the accrual of benefits could be worth the environmental risk. After the Secretary makes the DPP decision and specifies size, timing, and location of lease sales, a more specific equitable sharing analysis will be conducted for later stages of the National OCS Program development process. The first specific analysis will be included in the Proposed Program. In addition,

the determination of environmental risk will be informed by the development of the impact analysis in the associated Programmatic EIS.

The regional benefits associated with oil and gas activities include increases in employment and wages. This could lead to a higher standard of living, increased contribution to local economies through spending and investment, and a stable contribution to state and local tax revenues. In frontier areas, these effects could be slightly delayed. Construction of onshore infrastructure or use of existing infrastructure could increase job creation (such as in Alaska and the Atlantic) or maintain it (as would occur in the GOM). Revenue sharing will continue to contribute economic benefits to certain states along the GOM, and with Congressional action, could provide similar benefits to other locations near existing or future activity (i.e., Alaska, Pacific, and/or Atlantic regions).

Regional risks include possible environmental impacts that could negatively affect marine and coastal resources. These risks include impacts on commercial fishery stocks, other uses of the OCS, 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.

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 impacts from onshore infrastructure, human health impacts, and impacts on coastal and marine ecosystems. However, additional domestic oil and gas production reduces the need to obtain oil and gas from other domestic and foreign markets, which could reduce certain 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.

The distribution of benefits associated with factors of production is linked significantly to the location of OCS oil and gas support industries, which currently exist primarily along the GOM, Southern California, and Alaska coasts. Similarly, the benefits of reducing levels of energy substitutes would depend on production locations and transportation patterns. Absent broad restrictions imposed on OCS leasing, the Secretary's decision on an OCS leasing schedule for 2019–2024 could expand areas available for leasing, perhaps eventually leading to the development of new OCS-related industries and employment in the adjacent communities and possibly creating a more equitable sharing of benefits and risks than achieved under previous National OCS Programs.

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

9.1 INDUSTRY INTEREST

OCS Lands Act Section 18(a)(2)(E) (see Section 2.2) requires BOEM to consider the interest of potential oil and gas producers. In response to the RFI, BOEM received 10 comment letters from exploration and development companies and oil and gas industry associations. Of those responses, most supported including all 26 OCS planning areas for further analysis. Table 9-1 summarizes the comments on specific planning areas that were received by industry. Summaries of comments from industry are included in Appendix A.

Table 9-1: Summary of Energy Exploration and Production Industry Comments on the RFI

OCS Planning Area Preference				
Organization	Gulf of Mexico	Atlantic	Pacific	Alaska
Chevron U.S.A., Inc.	1. Central 2. Western 3. Eastern	4. Mid- 5. North 6. South	7. Southern California	
OCS Planning Area Mentioned in Comment Letter				
Anadarko Petroleum Corporation	X	Mid- and South		
API, NOIA, IPAA, USOGA, AEPC, IAGC, PESA, AOGA*	X	X	X	X
Arctic Slope Regional Corporation Exploration, LLC				Beaufort and Chukchi seas
BP Exploration & Production Inc.	X	X		
Cobalt International Energy	X	X	X	X
Diamond Offshore	X	X		Beaufort and Chukchi seas
Enven Energy Ventures	X			
Shell Oil Company	**	**	**	**
Statoil USA E&P, Inc.	X	X	X	X

Notes:

* = American Petroleum institute, National Ocean Industries Association, Independent Petroleum Association of America, U.S. Oil and Gas Association, American Exploration and Production Council, International Association of Drilling Contractors, International Association of Geophysical Contractors, Petroleum Equipment Suppliers Association, Alaska Oil and Gas Association

** = Shell recommended access to new OCS areas in its public comment submission without specific reference to planning areas or regions. As mentioned in the letter Shell publicly submitted, a second, proprietary letter was submitted that contained more specific information..

Key: X = a region that was mentioned in the comment letter without specific reference to individual planning areas, or all planning areas in the specified region were mentioned.

9.2 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 policies of affected states that are specifically identified by their governors. BOEM received 30 comment letters in response to the RFI from governors, or a state agency 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 9-2 and shown in Figure 9-1. More detailed comment summaries are presented in Appendix A. Comments are discussed in the following sections by OCS region and planning area. The views expressed in these following summaries are those of the commenters, not of BOEM.

Table 9-2: RFI Comment Summaries from Governor and State Agencies

Commenter(s)	Comment Summary
OCS Governors Coalition (Maine, Alabama, Mississippi, Texas, Alaska)	All planning areas should be included with the understanding that circumstances could change during National OCS Program development and implementation.
Alaska Governor	Supports leasing and activity in the OCS. Particularly interested in Beaufort and Chukchi seas sales in addition to Cook Inlet.
Alaska Department of Natural Resources	Supports OCS leasing off Alaska. Requests 3 sales in each of 3 areas—Beaufort Sea, Chukchi Sea, and Cook Inlet.
Washington Departments of Ecology, Natural Resources, and Fish and Wildlife	Opposes inclusion of areas adjacent Washington.
Oregon Governor Kate Brown’s Office	Asserts state’s long opposition to oil and gas activity off its coast.
California Governor Jerry Brown, Oregon Governor Kate Brown, Washington Governor Jay Inslee	As part of the West Coast Governors Agreement, the governors strongly oppose any new leasing off their coasts.
California Attorney General	Strongly opposes inclusion of any California planning areas.
California Coastal Commission	Opposes new leasing anywhere, but particularly undeveloped areas off California.
California Fish and Game Commission	Passed resolution supporting prohibition of leasing off California.
California State Lands Commission	Opposes new oil and gas leasing in the Pacific OCS.
Hawaii Governor	Opposes leasing off the coast of Hawaii.
Texas Railroad Commission, Chair	Supports inclusion of all 26 planning areas.
Texas Railroad Commissioners (2)	Support inclusion of all 26 planning areas.
Louisiana Department of Natural Resources	Supports exploration and development throughout the OCS, but the new National OCS Program should provide habitat mitigation commensurate with the impacts.
Alabama Governor Kay Ivey	Supports balanced and reasonable leasing program in compliance with state laws, goals, and policies. Requests no leasing within 15 miles of Baldwin County. Did not state position with regard to inclusion of areas offshore Alabama in National OCS Program.
Florida Department of Environmental Protection	Coordinated review by state agencies that stated protection of coastal and marine resources should be paramount.
Florida Department of State	Concerned about potential adverse impacts to significant archaeological resources. Did not state position with regard to inclusion of areas offshore Florida in National OCS Program.
Florida Fish and Wildlife Conservation Commission	Concerned about environmental sensitivity, marine productivity, and other uses of the OCS. Did not state position with regard to inclusion of areas offshore Florida in National OCS Program.

Commenter(s)	Comment Summary
Georgia Department of Natural Resources	Supports environmentally sound efforts to increase domestic oil and gas reserves. Have certain issues that must be considered if Georgia offshore waters are included.
North Carolina Governor Roy Cooper	Requests the current National OCS Program be maintained without leasing off the North Carolina coast.
North Carolina Lt. Governor	Supports inclusion of Federal lands off North Carolina. Encourages legislative efforts on revenue sharing.
Virginia Governor Terence McAuliffe	Opposes inclusion of Virginia as revenue sharing is required for support.
Virginia Lt. Governor	Opposes inclusion of Virginia.
Maryland Department of Natural Resources	Opposes opening up the Mid-Atlantic for oil and gas activities.
Delaware Governor John Carney	Opposed to future leasing, exploration, development, or production of oil and gas in the Atlantic.
Delaware Department of Natural Resources and Environmental Control	Has opposed offshore oil and gas exploration in the Mid-Atlantic region for more than a decade and sees no economic justification to do so.
New Jersey Department of Environmental Protection	Strongly opposes consideration of waters off its coast (North and Mid-Atlantic).
New York Attorney General, Environmental Protection Bureau	Believes BOEM has a legal obligation to address potential climate change implications of a new National OCS Program.
New York Departments of State and Environmental Conservation and Energy Research and Development Authority	Believes any renewed consideration of oil and gas development off New York would disrupt existing plans for clean offshore wind generation.
Connecticut Department of Energy and Environmental Protection	Continues to oppose inclusion of the North Atlantic. If either the North or Mid-Atlantic is included, certain state laws, goals, and policies must be addressed.
Massachusetts Governor Charles Baker	Does not support inclusion of areas adjacent to Massachusetts.
Massachusetts Attorney General	Strongly opposes opening up any of the Atlantic or any other new areas to oil and gas leasing.

participating coastal states. Further, they urge that the existing revenue sharing cap for the Gulf states be lifted.

9.2.2 Alaska Region

The Alaska governor supports responsible leasing and activity in the OCS that is grounded in community input and robust environmental protection; this is a state priority and is fundamentally consistent with its laws, goals, and policies. The governor attached his letter of October 6, 2016, in which he “unambiguously express[ed] the State’s interest in including sales in the Beaufort and Chukchi OCS areas” because they were not included in the 2017–2022 Program along with the Cook Inlet lease sale, which was the third area that the governor nominated for inclusion in his earlier letter.

The Alaska Department of Natural Resources believes at least three lease sales should be conducted in each of the three primary Alaskan OCS areas—the Chukchi Sea, the Beaufort Sea, and Cook Inlet—during the 2019–2024 period to allow interest to be gauged over the course of the National OCS Program and allow multiple opportunities for the state and Federal Government to benefit from potential leasing activity. Comments state that Arctic OCS leasing, and potential subsequent development activity, has a number of ecological and community considerations that must be taken into account, but ultimately have important economic, social, and environmental benefits from the state’s perspective, that offshore development in Cook Inlet has supplied a substantial amount of Alaska’s community energy needs, and that inherent in the statutory direction of sharing benefits across regions is that there is some activity in prospective regions that support development when environmental risks can be appropriately mitigated. They assert that instead of achieving this balance, the most recently developed BOEM OCS oil and gas leasing program for 2017–2022 saw no lease sales in the Arctic and only one within the Cook Inlet area for the entire five-year period; and that rather than no leasing, which completely deprives the Nation and the state from sharing in the statutorily recognized benefits of development, an equitable balance must be established that sees lease sales offered in the Arctic. They note that in Alaska, there is currently little offshore commerce or transit, and correspondingly limited support infrastructure; any developments need to consider and support the continued ecological use of the OCS by local communities, but there is significant state and national interest in establishing a more robust infrastructure network in the Arctic; that measured and regulated OCS development is fundamentally consistent with Alaska’s laws and essential to support the state’s long-term goals of providing a robust economic and civic base for its residents; that TAPS serves as the state’s economic backbone and is a globally impactful piece of the national infrastructure; and that identifying new resource potential through leasing and exploration to support its continued efficient operation is one of the foremost goals of the state. Finally, they state that the presence of the existing extensive oil and gas infrastructure on the North Slope further supports the state goal of OCS activity that increases Alaska’s employment opportunities and supports the Nation’s export of energy to partners and allies around the world.

The Bering Sea Elders Group and Association of Village Council Presidents requests BOEM exclude the Norton Sound, St. Matthew-Hall, Navarin Basin, Aleutian Basin, and St. George Basin planning areas from consideration, while the Olgoonik Corporation supports the inclusion of the Chukchi and Beaufort seas in the National OCS Program. The Bristol Bay Native Association requests the North Aleutian Basin be excluded, while Arctic Iñupiat Offshore, LLC supports inclusion of the Arctic offshore area, and the Arctic Slope Regional Corporation supports inclusion of the Cook Inlet Planning Area. The Native

Village of Shishmaref and Savoonga recommend exclusion of the Hope, Norton, St. Matthew-Hall, and Navarin Basin planning areas. Comments were generally supportive of some activity, recognizing the economic benefits, but supported exclusion of some areas from leasing consideration to protect their subsistence culture, while others opposed lease sales in the Arctic Ocean. See Appendix A of this document for comment summaries from tribes and tribal organizations' comment letters.

9.2.3 Pacific Region States

The Governors of California, Oregon, and Washington express their strong opposition to the inclusion of any new proposed oil and gas lease sale off their shared coast. The states' residents comment that there is a looming catastrophe of climate change that requires the Nation to move away from fossil fuel consumption to a more prosperous, sustainable and clean energy economy. The states played a leadership role in the establishment of the U.S. Climate Alliance—a coalition of states committed to achieving the U.S. Government's prior goal of reducing CO₂ emissions by 2025.

Washington State Departments of Ecology, Natural Resources, and Fish and Wildlife oppose the inclusion of areas adjacent to Washington in the Washington/Oregon Planning Area because they have significant concerns about the added risks and impacts on ocean and community resources that would result from oil and gas leasing and development in their offshore waters; that oil and gas leasing, exploration, and production on the OCS is inconsistent with Washington State's laws, policies, and goals; that Washington State law prohibits oil and gas exploration, production, and drilling in the state's marine waters; and that the Revised Code of Washington (RCW) 43.143.010 and RCW 90.58.160 establishes state policies guiding ocean management, which are currently included as part of Washington's federally approved CZM Plan, including prioritizing ocean uses that do not adversely impact renewable resources over those that have adverse impacts on renewable resources, conserving fossil fuels, and protecting existing ocean uses and ocean resources from likely long-term significant adverse effects, and creates a framework for developing marine plans for Washington's waters, including addressing potential for marine renewable energy (RCW 43.372).

Oregon Governor Brown's Energy Policy Advisor submitted comments on her behalf, stating that the state had supported the Congressional moratorium on the west coast since 1990 and had a long history of opposing efforts to lease for oil and gas in Oregon OCS waters; that State laws and policies prioritize long-term use and protection of renewable resources; that Oregon's various ocean-related plans, including its CZM Plan, are guided by these state laws and policies; that in 2010, the state passed a law prohibiting oil and gas leasing in the Oregon Territorial Sea; and that Oregon is opposed to the inclusion of any Oregon OCS lands in the 2019–2024 Program.

The California Attorney General expresses strong opposition to inclusion of any California planning areas in the new National OCS Program and states that USDOJ last conducted a sale for Federal tracts offshore California in 1984, and USDOJ last included California planning areas in the 1987–1992 Program, the lack of leasing of areas offshore California has not posed an obstacle to the development of plentiful supplies of domestic oil and gas, and that the Attorney General is not aware of any evidence that the oil and gas industry has significant interest in again attempting to explore and develop offshore California. The letter further states that the industry has shown this lack of interest in several ways and that the major oil companies that leased tracts offshore California in the 1980s have largely given up their leases and operations. The letter states further that any company seeking to develop offshore of California would

also face a challenging regulatory environment, the California Coastal Commission implements California's federally approved coastal management program and is thus the California state agency with regulatory authority over offshore leasing, exploration, and development and production, and that USDOJ will have to determine that it is conducting lease sales for areas offshore California in a manner that is fully consistent with the state's CZM program, and lessees also will have to certify that their activities are consistent with the program. The Coastal Commission has articulated in the past that it is difficult for it to understand how it could find that construction and operation of new hazardous infrastructure both offshore California and along California's coast is consistent with the CZM program. The Attorney General notes that many local coastal governments have expressed their opposition to onshore support facilities.

The California Coastal Commission steadfastly opposes any new leasing in "frontier" areas of the OCS, stating that activities in undeveloped areas off California would require new platforms, offshore and onshore pipelines, and other infrastructure that would likely cause significant adverse effects on coastal resources. The letter states that producing oil and gas in these areas could have significant, long-term, and far-reaching effects on marine and coastal wildlife, commercial fishing, wetlands, ocean and beach users, and coastal tourism, additional offshore oil production increases the risk of an oil spill occurring and potentially causing devastating state-wide environmental and economic impacts, the expanded use of fracking and other well-stimulation treatments could result in chemical discharges that harm marine resources, producing oil and gas also results in significant emissions of carbon pollution (GHGs), thereby contributing to climate change and rising sea levels, all of which threatens many of the resources integral to the California coast, and that new onshore infrastructure and facilities to support offshore oil and gas development could have adverse impacts on water quality, agricultural lands and uses, recreation, environmentally sensitive habitat areas, scenic vistas, and archaeological resources.

The California Fish and Game Commission passed a resolution on June 22, 2017, supporting the prohibition of oil and gas leasing in Federal waters off California.

The California State Lands Commission opposes any new oil and gas leasing in the Pacific OCS because the Commission believes that such development poses a threat to California's ocean and marine environment and economy. The Commission manages oil and gas resources in state waters. They state that a new lease has not been issued since 1968.

Hawaii Governor David Ige recommends the exclusion of the waters off Hawaii in the National OCS Program. He states that there are no indigenous oil and gas resources and the state lacks an OCS.⁴¹ The governor notes that the state looks to its natural resources—wind, solar, geothermal, and the possibility of renewable energy resources from offshore wind and ocean wave resources—to assist in achieving its goal of generating 100 percent of Hawaii's energy in the electricity sector from renewable energy resources by the year 2045.

Blue Lake Rancheria, Habematolel Pomo of Upper Lake Tribe, San Luis Rey Band of Mission Indians, Santa Ynez Band of Chumash Indians, Scotts Valley Band of Pomo Indians and the Northern California

⁴¹ As noted in Chapter 4, administratively, the Pacific Region includes the State of Hawaii. However, for the National OCS Program, and, in particular, DPP analysis purposes, the Pacific Region only includes the four planning areas off the U.S. west coast.

Tribal Chairmen’s Association strongly support the exclusion of all Pacific Region areas excluded in the current Program in perpetuity, and strongly oppose leasing any areas offshore Northern California and areas along the central coast. The Coquille Indian Tribe identified the importance of tourism and fishing along the southern Oregon coast, while expressing concern for leasing areas offshore of Coos and Curry counties, and the need for formal government-to-government consultation.

The Makah Tribal Council also recommends exclusion of the Pacific Region, stating that it is a traditional use area that would need a comprehensive risk assessment and response plan. The Kashia Band of Pomo Indians of the Stewart’s Point Rancheria strongly opposes leasing the area expanse from Duncan’s Landing to the mouth of the Gualala River, and provided a list of specified areas BOEM should consider during potential impacts analysis including environmental resources, subsistence activities, and mitigation of potential oil spill risk. The Confederated Tribes of Coos, Lower Umpqua & Siuslaw Indians especially emphasize exclusion of the Oregon coast. The Federated Indians of Graton Rancheria expressed concern for potential marine environment damage. Comments were generally opposed to all leasing activity, recognizing the environmental and cultural impacts. See Appendix A of this document for comment summaries of tribes and tribal organizations’ comment letters.

9.2.4 Gulf of Mexico Region States

The Chair of the Texas Railroad Commission, the agency with oversight of the Texas energy industry, conveys strong support for a National OCS Program that includes all 26 planning areas. His letter states that excluding areas at the outset and in the absence of critical environmental analysis would be premature and potentially harmful to efforts to enhance American energy security. Two Commissioners of the Commission also support a robust leasing program that includes all 26 planning areas.

The Louisiana Department of Natural Resources, Office of Coastal Management, supports exploration and development throughout OCS waters. In their opinion, domestic expansion will present positive opportunities for American workers and business owners, while benefitting the entire United States. However, they state that the coastal area of Louisiana continues to suffer adverse cumulative and secondary impacts from these activities, and that Louisiana has endured wetland losses at an alarming rate throughout the 50-year history of BOEM lease sales in the GOM and continues to do so today. The Office does not believe Louisiana has received adequate habitat mitigation commensurate with these impacts. They believe that the upcoming OCS leasing program presents a fresh opportunity to rectify the situation and develop a protocol for addressing these impacts, and that at this early stage in lease sale planning, they believe that it is appropriate for BOEM to embrace its role as steward of these Federal resources and address the secondary and cumulative impacts resulting from these OCS activities.

Governor Ivey stated that the State of Alabama has a keen awareness of the importance of oil and gas production to the state’s economy and national security and has long supported a balanced and reasonable leasing program, contingent on all OCS activities adjacent to Alabama being carried out in compliance with state laws, rules, and regulations and consistent with its CZM program. Alabama states that it has long requested protection for live bottom habitats, pinnacle reefs, chemosynthetic communities, and other sensitive environments, and has long opposed leasing within 15 miles off Baldwin County to minimize visual and other impacts. The governor urges that all unleased areas of the OCS be included in the DPP. The governor emphasizes that revenues should be shared with adjacent states. She supports the existing revenue sharing program but believes it should be expanded and enhanced.

9.2.5 Atlantic Region States

The Florida Department of Environmental Protection coordinated a review by several state agencies. The Department stated that Florida's coastal and offshore areas have high environmental and economic value not only for Florida, but also for the Nation, that several areas offshore Florida are considered an essential component for developing and sustaining military readiness, that the state remains concerned about the effects of OCS oil and gas activities on marine and coastal environments and the sensitive biological resources and critical habitats associated with them, as well as the military activities critical to the Nation's security. The state argues that as BOEM proceeds with the development of a proposed plan for oil and gas activities, the long-term protection of Florida's sensitive coastal and marine resources should be of paramount concern. Enclosed were more detailed comments from the Florida Department of State, Florida Fish and Wildlife Conservation Commission, Florida Geological Survey, and Treasure Coast Regional Planning Council.

The Georgia Department of Natural Resources, on behalf of Governor Dial, supports environmentally sound efforts to increase the domestic oil and gas reserves of the United States and is of the position that there are several issues that must be considered in any leasing plan involving Georgia offshore waters: 1) the physical environment; 2) the biological environment; and 3) the socioeconomic environment of the state. The commenter included a more detailed discussion of these categories of impact in the Technical Addendum to the letter. In summary, the state supports the preparation of a National OCS Program provided that all relevant environmental and societal issues are fully addressed, and states that given the current need for greater energy security in the United States, the state supports an effective state and Federal partnership that explores options for new energy resources.

The Governor of North Carolina states that drilling threatens the state's coastal economy and environment and therefore requests that the current leasing plan be maintained with the prohibition of oil and gas leasing off the North Carolina coast. The governor included a comment letter from the Secretary of Environmental Quality that reiterated the state's opposition and presented a summary of the unique geographic and marine environments and the socioeconomic, legal, and policy frameworks that must be considered in the evaluation of including the waters off the state's coast. In the attached letter from the Department of Environmental Quality, it was noted that the State has had a CZM program since 1974 and that energy policies first adopted in 1979 were codified as law in 2010 and approved as enforceable policies by NOAA in 2016, and include lists of the types of nearshore and offshore sensitive areas to be avoided, required mitigation where impacts cannot be avoided and restoration of sites when facilities are abandoned.

The North Carolina Lieutenant Governor (and Chair of the North Carolina Energy Policy Council) writes in support of including the Federal lands off the coast of North Carolina for oil and natural gas exploration. The Energy Policy Council, which is the central energy policy planning body of the state, recommended in its last comprehensive report that "harnessing offshore energy reserves in an environmentally safe and responsible manner will lead to greater economic prosperity for North Carolina." The commenter encourages legislative efforts to promote revenue sharing with coastal energy states and states that to bring offshore energy development to North Carolina, the state will need to develop onshore infrastructure, ports and inlets, and regulatory programs as well as obtain local support. He states that without revenue sharing, many coastal residents feel that they are being asked to bear all the

costs and risks without reaping any of the rewards. He acknowledges that offshore production could bring economic benefits and thousands of jobs to North Carolina's, as well as our Nation's economy and that this would strengthen the U.S. economic security and energy independence.

The Governor of Virginia states his understanding that BOEM is considering for inclusion in the new National OCS Program all unleased areas off the OCS, including unleased areas off the coast of Virginia. As the state commented during the process to develop the 2017–2022 Program, a primary concern that must be satisfied for Virginia to be included in the leasing area is a revenue sharing agreement between participating Atlantic coastal states and the Federal Government. The Governor adds that because the parties are no closer to resolving this issue, Virginia requests that the Commonwealth not be included in the new National OCS Program.

The Virginia Lt. Governor's Chief of Staff stated that the Lt. Governor's position had not changed from a February 26, 2016, letter submitted to BOEM in which the Lt. Governor asked that Virginia be excluded from the 2017–2022 Program. The Lt. Governor cited effects on climate change, military and NASA assets, tourism, a growing seafood industry, and the uncertainty over royalty disbursements.

The Maryland Department of Natural Resources opposes opening up the Mid-Atlantic OCS lease area for oil and gas exploration and development activities as part of the 2019–2024 National OCS Oil and Gas Leasing Program. From both an economic and environmental perspective, Governor Hogan's administration is opposed to offshore oil and gas drilling off Maryland's coast and has serious concerns about seismic surveys and testing in the Atlantic Ocean. The letter states that over the past several years, Maryland has worked together with Mid-Atlantic local, state, Federal, and tribal partners, as well as citizens, to begin charting a future for the ocean that ensures a healthy ocean ecosystem and supports sustainable ocean uses. Maryland states that it is concerned about the threat of oil spills and their direct and indirect effects on coastal and bay ecosystems and economies, and that these risks raise significant questions about the cost and benefit of pursuing oil and gas leasing in sensitive coastal environments. The Department urges the exclusion of the Atlantic OCS lease areas from the 2019–2024 planning program.

The Governor of Delaware is opposed to any future leasing, exploration, development or production of oil and gas in the Atlantic Ocean. The letter states that reinitiating plan development at this time is an inefficient use of government resources and merely politicizes what should be a data-driven and public process. They state that marine habitats and the species that rely on them are nationally shared resources that do not adhere to federally designated offshore boundaries. Of particular importance to the state are the canyons that extend from off Massachusetts to North Carolina.

The New Jersey Department of Environmental Protection, on behalf of Governor Chris Christie, strongly opposes any waters off its coastline (North and Mid-Atlantic) being considered for inclusion in this leasing program. They state that New Jersey has consistently opposed any industrialization of its coast, including the exploration and development of offshore oil and natural gas resources, and into any portion of the Atlantic Ocean that could negatively impact New Jersey's natural resources or coastal communities. The state comments that it considers that the risk of adverse impacts on its marine waters and the species that depend on them is unacceptable.

New York's Environmental Protection Bureau submitted comments on behalf of the state's Attorney General, focusing on their position that BOEM must address the potential climate change implications of development of a new National OCS Program. The commenter believes that in preparing a new National OCS Program, the requirements of Section 18 of the OCS Lands Act dictate full consideration of whether expanded oil and gas on the OCS would interfere with the U.S.'s ability to mitigate the substantial adverse societal impacts of climate change.

The New York Department of State, Department of Environmental Conservation, and Energy Research and Development Authority commented jointly, and cite the state's energy plan developed under the direction of Governor Andrew Cuomo that seeks to grow the state's clean energy industry, reduce emissions that contribute to the frequency of extreme weather events, and manage its coastal waters in a manner to mitigate potential harm to communities and environment. The commenters' position is that any renewed consideration of oil and gas development off the coast of New York would disrupt existing plans to develop clean offshore wind generation and harm the state's continued efforts to protect and preserve the quality of life for New Yorkers. They state that activities associated with any OCS oil and gas exploration and production offshore would have reasonably foreseeable effects on New York's coastal uses and natural resources that go beyond discrete siting concerns and threaten New York's coastal economy. They state that these effects pertain to enforceable coastal policies of New York's federally approved CZM program and would be subject to Federal consistency review, and that the review would include State Coastal Policy 29, which specifically addresses the diversity of OCS uses and resources important to New York State's coastal and statewide economy. Of particular concern to them are potential effects that oil and gas activities could have on the current and future conditions of the state's energy economy and ocean environment, including the potential for oil spills and contamination.

The Connecticut Department of Energy and Environmental Protection commented that the state has consistently opposed the inclusion of the North Atlantic in a National OCS Program. They state that if the North and Mid Atlantic were to be included, the state's laws, goals, and policies as contained in its CZM Act must be addressed, which include a list of resources and uses typifying the coastal environment and a description of the adverse impacts on such resources and uses that could result from development activities. The state supports the development of alternative energy sources and actions aimed at conserving fossil fuels.

The Massachusetts governor states that the Commonwealth does not support inclusion of areas of the North Atlantic adjacent to or affecting Massachusetts, and that neither exploration nor leasing has been justified in the North Atlantic for more than three decades and that model still holds true. The governor supports wind energy in the OCS off Massachusetts and BOEM's coordination of such efforts.

Because of state concerns with the potential risks it poses to the Massachusetts economy and its coastal ecosystem, the Commonwealth's Attorney General strongly opposes opening up any portion of the Atlantic—or any other new ocean areas—to oil and gas leasing, stating “Our country does not require expanded offshore fossil fuel extraction to meet our future energy needs, nor can we afford the increased greenhouse gas emissions that would result from such development. Sea level rise from climate change already threatens our coastal communities.” The comments urge BOEM to withdraw its notice, discontinue preparation of a new five-year plan, and maintain the recently finalized plan, which forecloses leasing in any new areas of the Gulf and Arctic Ocean, and in the entire Atlantic and Pacific OCS.

The Gullah/Geechee Nation stated opposition to leasing all areas off of North Carolina, South Carolina, Georgia, and Florida.

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)).

While the OCS Lands Act mandates that BOEM ensures 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* (USDOJ 1983) as related to the adequacy of the level of the high bid offered for a lease with given fiscal terms, not to the design or setting of the fiscal terms themselves. In contrast, the term “fair return” fully considers 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 ensure the provision of adequate returns to the general public for the OCS lease rights issued. The assurance of FMV is a multi-phase process including National OCS Program-level analysis, lease sale-level analysis, and, finally, analysis conducted prior to the issuance of an individual lease following a lease sale.

In carrying out its FMV responsibilities at the National OCS Program development stage, BOEM has adopted screening criteria that recognize the importance of considering the value of waiting to lease. BOEM considers the importance of timing using a hurdle price analysis. This analysis, described in detail in this chapter, identifies whether each planning area would provide greater value in including it in the 2019–2024 Program or delaying leasing until a future National OCS Program. Some other factors that could affect the value of waiting to lease are discussed qualitatively in Section 10.1.1.

Another component of assuring FMV, pertinent for both the National OCS 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 National OCS Program. Further discussion is provided in Section 10.3.2, Fiscal and Lease Terms.

Following the size, timing, and location decisions formulated at the National OCS 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 the lease sale and prior to lease issuance. The rules and procedures for this process were revised in 2016 and are available at <http://www.boem.gov/Fair-Market-Value/>. These FMV assessments of the cash bonus bids are also referred to as determinations of bid adequacy, and they follow a two-stage procedure. The first phase involves BOEM's assessment of the block's geologic and economic viability. 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 volumes 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 could restrict lessee flexibility.

10.1 TIMING OF OCS LEASE SALES AND RELATED ACTIVITIES

In determining whether an area should be included at this National OCS 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, and 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 primary terms (described in Section 10.3.2) as required by the OCS Lands Act, lessees planning to explore and initiate development on an economic prospect must do so within that primary term. However, in certain cases, it could theoretically be better for the lessee to wait longer to explore and develop, but this cannot be accomplished if it requires waiting beyond the primary term. This situation could arise, for example, if the price of oil or gas were trending downward, but showing signs of recovery after the primary term. In this situation, the lessee cannot wait for prices to rise before exploration and development because the primary term would be nearing expiration. However, waiting could be in society's (as well as the lessee's) interest because the resources would be worth more. In this case and in others, it is conceivable that greater value could be realized by waiting longer to lease in the first place, given the fixed length of the primary lease term.

To account for the possibility of situations where the variation in future resource prices implies that exploration and development within the primary term of some leases could be privately profitable but not socially optimal, a hurdle price screen is employed. A lease could be privately profitable at a certain price, but by waiting to lease, bring a greater value to society. Here the social value is similar to that calculated in Section 5.3. Social value is the gross revenue of the resources less the private and social costs of extracting the resources. This is explained more fully in Section 10.1.2.

The hurdle price screen is conducted at the National OCS Program stage to determine whether it is likely that there are any geologic fields within a planning area for which a lease sale in this National OCS Program would provide a greater social value compared to delaying and offering those fields for sale in a future National OCS Program. In this context, a hurdle price is defined as the planning area-specific, weighted BOE price above which immediate exploration of at least one undiscovered prospect as identified by BOEM's resource assessment is the timing option with the greatest social value. Further, the hurdle price for the planning area is compared to actual prices prior to each lease sale held under the National OCS Program. The hurdle price is one consideration, subject to uncertainty about future price projections, used to evaluate an area before a lease sale and should be considered in conjunction with other factors.

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, Information and Uncertainty.

10.1.1 Information and Uncertainty

At the time of lease issuance, uncertainty exists regarding not only future prices, but also 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 could 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 could 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 section explains how decisions regarding the timing of leasing, made at the appropriate points during preparation and conduct of the National OCS Program, could 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 National OCS Program, BOEM provides the Secretary with information relevant to decisions on the size, timing, and location of lease sales. Public comments received on prior National OCS Programs have suggested that USDOJ 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 of option of waiting to make that decision (Arrow and Fisher 1974). In connection with socially optimal OCS 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, OCS 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 of the oil and gas resource (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 of the oil and gas, 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, and then only partially, 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 exclusion 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):

It 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 OCS oil and gas development and how these uncertainties can be resolved.

10.1.1.2 *Considering Uncertainties for the National OCS 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, Net Social Value.

The discussion of uncertainties and option value must always consider the pyramidal structure of the National OCS Program development and lease sale processes. The National OCS Program development process begins by considering all leasing areas, and the potential areas are winnowed down into what is ultimately the final lease sale schedule. Program areas can be removed at any stage of the National OCS Program development process, but cannot be added back in once they are removed without starting over the National OCS Program development process or by an act of Congress. Further, the Secretary has the flexibility to cancel a lease sale even after the National OCS Program is approved. Given these procedures, to maintain the maximum option value, USDOJ may consider retaining Program Options in the National OCS Program to potentially hold lease sales in these areas during the five years covered by the National OCS Program, should some of the independent information become available. Theoretically, omitting any area from the National OCS Program could cause a loss of option value to the government. USDOJ retains the greatest flexibility, and therefore option value, by including areas in the National OCS Program, but it is also true that there can be instances where the Secretary may be justified in excluding an entire area from the National OCS 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 span of the National OCS Program. Another reason to exclude an area could be if the estimated developmental value of an area is marginal and the probability of generating sufficient information to improve its value is negligible, thereby limiting the value of including it in the National OCS Program. Excluding very marginal areas also reduces administrative and study costs.

The Secretary may choose to cancel lease sales if any important informational uncertainties have not been satisfactorily resolved at the lease sale stage. Further, the Secretary can consider when important information is expected to become available when scheduling the individual lease sales within the National OCS Program.

While it is possible to re-evaluate and cancel sales during the lease sale planning process, it is important to be aware of the industry need for predictable and orderly leasing. An intended benefit of the National OCS Program lease sale schedule is that a schedule of possible lease sales within the five-year 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 lease sale will actually be held as scheduled imposes costs on industry and decreases the value of OCS acreage.

At the National OCS Program stage, no irreversible commitment of resources occurs because, as discussed, the Secretary can always choose to cancel a lease sale. For this reason, 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 National OCS Program stage is where BOEM holistically considers all planning 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)). An additional 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 National OCS Program development process and lease sale design process, the Secretary can evaluate decisions in conjunction with the OCS Lands Act purposes.

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 of obtaining 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)).⁴² 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 quantify such considerations.⁴³ BOEM is evaluating existing literature on quantifying the informational value of delay and could incorporate these methods in future National OCS 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, Hurdle Prices, which describes the hurdle price analysis.

10.1.1.3 Resource Uncertainty

The fundamental unknown for OCS oil and gas leasing is the uncertainty of the resource endowment (see Section 5.3.4). 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.

⁴² The court found that “[t]here 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 at 610 (D.C. Cir. 2015).

⁴³ 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.

At this initial stage of National OCS 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 and at relatively lower prices. 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 deepwater 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 the Navarin Basin Planning Area had an estimated 1.30 BBO of mean risked oil volumes, which were much greater than the estimated 0.54 BBO in the Chukchi Sea Planning Area (MMS 1985). However, no oil or natural gas pools were discovered from any of the eight exploration wells that were drilled in the Navarin Basin Planning Area after a 1983 lease sale resulted in 163 tracts being leased for \$633 million. The subsequent geologic analysis severely downgraded the Navarin Basin Planning Area resource estimate to 0.13 BBO in the 2016 assessment (BOEM 2016a). There has been little or no subsequent industry interest in this area.

Conversely, drilling results in the Chukchi Sea Planning Area 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 Lease Sale 193, with 487 tracts leased for \$2.66 billion in 2008. The current risked mean technically recoverable resource estimates for the Chukchi Sea Planning Area increased by a factor of 30 over the 1985 estimate to 15.4 BBO, and natural gas increased by more than a factor of 25 to 76.8 Tcf in this frontier area. However, after the 2015 drilling season, Shell found resources "not sufficient to warrant further exploration" in the explored prospect (Shell 2015). While the aggregate resource estimates remain unchanged, this announcement, in conjunction with other market factors, led to a decline in industry interest and leased acreage held in the region. However, future drilling on other prospects, higher oil and gas prices, or other new information could have a great impact on the level of interest 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 definitive 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.⁴⁴

⁴⁴ This is analyzed in the paper by Rothkopf et al. (2006), *Optimal Management of Oil Lease Inventory*.

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 of operating in those areas. 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, international oil company interest in resources off the coast of Mexico could impact OCS capital and operating costs over the next few years. This is because oil and gas 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 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 planning area. Because the capital and operating costs are inherent in calculating the NEV (a major component of a planning area's net benefits calculation), changes in costs could alter the estimate of NEV in each of the planning areas.

Over time, innovative technology could become available to more efficiently or safely extract oil and gas resources, and/or reduce risks associated with 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 National OCS Program formulation.

10.1.1.5 *Environmental and Social Cost Uncertainty*

Additional environmental information is always becoming available. As part of the National OCS Program decision on size, timing, and location, the Secretary considers the 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. A range of uncertainty around any of the point estimates provided can occur. 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 mitigation measures in place, 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 Kassari and Lasserre (2002), biodiversity relates to a "portfolio" of future uses for species.

Another study specifically considered the amenity value that would be lost with oil and gas development in 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 envision 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 developed by BOEM's ESP and other sources is incorporated in environmental analyses conducted by BOEM and builds the foundation for science-based decision making throughout the National OCS 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. Research in the Pacific region focuses on platform biology, an intertidal monitoring program, and renewable energy development. 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. 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 Research 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 (USGS 2011), and E.O. 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, tribal entities, 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, and prioritizing science in the Arctic. One specific example includes the close coordination between BOEM and the Interagency Arctic Research Policy Committee to help develop the Arctic Research Plan for FY 2017–2021. 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 National OCS Program and lease sale planning processes 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 National OCS Program, BOEM acknowledges the ever-expanding availability of scientific information. The development of the 2019–2024 Program includes, and will continue to include, new scientific information and stakeholder feedback to proactively identify and try to resolve potential conflicts. The Draft Programmatic EIS will be published in conjunction with

the Proposed Program decision document, which is the next stage in the National OCS Program development process. The Draft Programmatic EIS will provide a comprehensive analysis of the environmental information for the areas under consideration in the DPP decision.

While the majority of the research discussed above is driven by the possibility of oil and gas operations and conducted to inform decision makers, 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 five-year timeframe of a given National OCS Program, and the pyramidal structure of the National OCS Program development process allows for more refined research and analysis at the specific lease sale stage. Because the process from the National OCS Program development to the lease sale stage contains multiple steps, BOEM has several opportunities to incorporate new information and revise decisions. In particular, before a lease sale is held, a NEPA review is conducted and, if warranted, additional environmental and social costs are studied, in part based on new information. Furthermore, after the lease sale, additional environmental information is compiled and analyzed throughout the plan and permit approval processes.

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 will be provided in the Draft Programmatic EIS, which will be published concurrently with the Proposed Program.

Environmental and social costs are an important component in the net social value calculation. As such, the ranking of the planning areas could change with new information on the costs of OCS activity. However, an important aspect of OCS energy development is that in the absence of lease sales in any of the OCS planning 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. Although BOEM does not do a detailed accounting of these substitute energy sources at this DPP stage, such sources are still an important consideration in the leasing decision. More information on the environmental and social costs of these energy substitutes will be discussed in future stages of the National OCS Program development. Information compiled for the 2017–2022 Program is included in *Forecasting Environmental and Social Externalities Associated with Outer Continental Shelf (OCS) Oil and Gas Development – Volume 2* (Industrial Economics, Inc. and SC&A, Inc. 2015).

Although the hurdle price analysis calculated in Section 10.1.2, Hurdle Prices, does not incorporate in a quantitative manner the range of the uncertainty of environmental and social costs or the possibility of irreversible damage, it does incorporate estimates of anticipated environmental and social costs into the hurdle price calculation. As was done in the 2017–2022 Proposed Program and PFP analysis, the hurdle price calculation 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. This fact was recognized in E.O. 13783 (Promoting Energy Independence and Economic Growth) and Secretarial Order 3349, which prompted a review of existing regulations and policies that potentially burden the development of domestic energy production. The legal and regulatory environment for OCS exploration and development can greatly impact project profitability. As the National OCS Program evolves, new regulations may be promulgated and existing regulations revised. Occasionally, implementation of 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.

Future legal and regulatory changes separate from the National OCS Program have the potential to affect OCS leasing and development, such as climate-related policies. Policy changes can also affect markets in ways that affect companies' decisions about leasing, exploration, and production on the OCS. The pyramidal nature of the National OCS Program creates future decision points throughout the National OCS Program development and lease sale processes where, if necessary, changes could be made in response to new energy or climate policies.

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. In one paper, Pindyck (2001) concluded that “over the long run, price behavior seems consistent with a model of slow mean reversion.” 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 because 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, BOEM has adopted a hurdle price analysis. It is intended to show that every area included in

the National OCS Program is expected to offer rights to at least one geologic field where prompt exploration during the 2019–2024 Program is consistent with an optimal intertemporal allocation of resources. The hurdle prices are calculated assuming a mean-reverting price model. At the DPP stage, the hurdle prices are calculated for each planning area fully evaluated in Section 5.3. These hurdle prices will be reviewed at the later stages in the National OCS Program development process and revised if necessary. The hurdle price analysis is again reviewed and reconsidered during the lease sale planning process.

10.1.2 Hurdle Prices

At the National OCS Program stage, to formally assess whether planning areas should be included in the National OCS Program given price uncertainty, BOEM subjected the assessment of undiscovered fields in each planning area to an appropriate economic analysis to determine an area “hurdle” weighted average (i.e., BOE) price. BOEM’s hurdle price analysis only considers the uncertainty surrounding oil price. While many other uncertainties exist (described in Section 10.1.1), given data availability and a lack of a widespread documented methodology for quantitatively evaluating other types of uncertainty, only price uncertainty is evaluated quantitatively at this time. The hurdle price is defined as the market price below which the social value of delaying to a future program exploration of a large field in the sale area would exceed the value of immediate exploration of those fields within this program.⁴⁵ That is, when market prices are at or above the hurdle price, the value of allowing exploration for these large prospects exceeds the value of delay. Greater social value could be realized by leasing that prospect now than delaying for future leasing. Note that other timing, composition, and sale design decisions are relevant to, and considered at, the lease sale stage. Whether full value may be realized from leasing other prospects as well will be determined in future analyses. This approach has the advantage of identifying areas at the DPP stage which show current economic promise of at least one geologic field, while deferring other timing, composition and sale design decisions to later in the National OCS Program process or to the lease sale stage.

Once the National OCS Program is approved, the lease sale design stage re-visits the decision of whether to hold a sale that is included in the National OCS Program and evaluates which OCS blocks to offer and how to set the sale terms. Designing specific lease fiscal terms at the lease sale stage rather than the earlier National OCS 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 somewhat easier to forecast. Given the iterative process of National OCS Program development and lease sale design, there are benefits from including areas in the National OCS Program 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, Fiscal and Lease Terms, provides more discussion on BOEM’s lease sale fiscal terms procedures.

The hurdle price analysis is conducted considering the NSV of each planning area and determines whether the value from leasing in the current National OCS Program is expected to be greater than waiting to lease an area until a future National OCS Program. For this calculation, BOEM considers both

⁴⁵ All else being equal, the largest fields tend to have the highest net value per equivalent barrel of resources, so they are least likely to benefit from delaying leasing in anticipation of increasing resource prices. BOEM used the 95th percentile field size as the approximate largest field size available in each program area.

the private and social costs of exploration and development. For the DPP analysis, BOEM calculated the hurdle prices for each of the 15 planning areas with more than 100 million BOE. As discussed in Section 5.2.6, the other 11 planning areas were determined to have negligible resources and/or development potential, and therefore, are unlikely to have production at any price.

Within each planning area, BOEM selected for use in the hurdle price analysis an approximation of a large undiscovered field size, which was identified by our statistical resource estimation model. As described in Appendix B, for this DPP, BOEM used the 95th percentile field size from the 2016 National Assessment to define the large field size available in each planning area (BOEM 2016a). This field size was then used for conducting the hurdle price analysis in each planning 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 to generate the hurdle prices. The rationale for basing the hurdle price analysis on large fields relates to the likelihood that larger fields are more valuable to develop, even after including social costs, than smaller fields. It is possible, for certain price assumptions, that social benefits would be optimized by leasing large fields in the 2019–2024 Program while holding small fields for later leasing. Since the locations of undiscovered fields are unknown, however, a single timing decision must be made for areas in their entirety. If the area is included in the National OCS Program and leasing conducted due to the possibility of large fields, a social cost of prematurely leasing some small fields might be incurred.

Table 10-1 shows the NSV for each of the planning areas/locations that were 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,⁴⁶ means that on average, approximately 83 percent of a field is oil, and 17 percent is natural gas. BOEM uses the model When Exploration Begins, version 3 (WEB3) to estimate the BOE hurdle prices shown in Column E of Table 10-1. At all prices below the hurdle price, 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 2019 dollars. More details on the calculation of applicable oil and natural gas prices that derive from the BOE hurdle prices are included in Appendix B.

To compare the calculated BOE hurdle prices with expectations of future prices during the 2019–2024 Program, BOEM compared the BOE hurdle prices with forecasts from the EIA's AEO (EIA 2016). The EIA's 2017 AEO forecasts the oil price in 2019 (in 2019 dollars) will be \$74.85 per barrel and the gas price will be \$4.22 per million Btus (or \$4.38 per mcf). These prices are then converted to a BOE price in each of the planning areas, as shown in column F. The forecasted oil and gas prices are consistent across all planning 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 2019 value of the resources in that planning area given the average composition of oil and natural gas. The BOE prices from column F are to be compared with the BOE hurdle prices shown in column E.

⁴⁶ 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	F
Planning Area or Location	Large Undiscovered Field	Natural Gas-Oil Ratio	Portion of Field BOE		NSV Hurdle Price	AEO BOE 2019 Price
	(million BOE)		Oil	Natural Gas	Price per BOE	Price per BOE
Beaufort Sea	357	3.36	63%	37%	\$44.00	\$56.02
Chukchi Sea	706	4.99	53%	47%	\$40.00	\$51.19
North Aleutian Basin	230	11.49	33%	67%	\$37.00	\$41.07
Cook Inlet	175	1.19	83%	17%	\$22.00	\$66.07
Gulf of Alaska	169	6.41	47%	53%	\$32.00	\$48.04
Washington/Oregon	11	5.70	50%	50%	\$43.00	\$49.52
Northern California	45	1.72	77%	23%	\$57.00	\$63.05
Central California	44	1.04	84%	16%	\$69.00	\$67.01
Southern California	86	1.46	79%	21%	\$43.00	\$64.48
Western GOM	179	1.29	81%	19%	\$30.00	\$65.46
Central GOM	178	1.70	77%	23%	\$28.00	\$63.17
Eastern GOM	178	2.20	72%	28%	\$27.00	\$60.70
South Atlantic	46	4.34	56%	44%	\$47.00	\$52.93
Mid-Atlantic	362	10.22	35%	65%	\$27.00	\$42.39
North Atlantic	182	6.64	46%	54%	\$36.00	\$47.60

Note: The large undiscovered field size is defined as the 95th percentile field from the 2016 National Assessment field size distribution. The 95th percentile represents very large field sizes while avoiding outlier values. See Appendix B for further elaboration. The estimate of large field sizes in the GOM planning areas are based on the assumption that the largest field will be in deepwater and modeled accordingly.

With one exception, the weighted BOE forecast prices for 2019 exceed the hurdle price in all of the planning areas. For those areas, the analysis does not point to the need to delay leasing in any of these areas for option value considerations. However, as shown in Table 10-1, the hurdle price calculated for the Central California Planning Area indicates that waiting in the region could provide greater value to society than leasing in the 2019–2024 Program. This planning area has higher relative environmental and social costs given higher ecological and air quality costs compared to the other California planning areas, which lead to a higher hurdle price. BOEM notes that the calculation of hurdle prices is highly dependent on several assumptions, especially those 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 Economic Analysis Methodology paper (BOEM 2016b). Further, the hurdle price analysis only considers the uncertainty associated with resource prices. Accordingly, the hurdle price findings should be taken as a guide only for price-based option value.

The lease sale stage provides another opportunity to revisit the hurdle price analysis and consider whether to hold a lease sale. As discussed, option value is merely one component of BOEM’s FMV analyses and Program formulation. 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 planning 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. There is value in the stability of planned lease sales. The creation of a National OCS Program lease sale schedule allows companies the opportunity to plan expenditures and future prospects. Choosing to cancel sales based purely on the hurdle price is not costless and 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 planning area are other FMV considerations within the National OCS 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 planning 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 planning 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 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 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 National OCS Program. Among these are expeditious and orderly development and maintaining a diverse and competitive industry. By allowing a range of blocks to be included in a sale, area-wide leasing allows smaller companies to expeditiously acquire, explore, and produce low-resource, low-risk fields, while providing larger companies with 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 influence the number and value of leases sold in the sale.

In development or implementation of the National OCS Program, BOEM can design the size and scope of a program area or lease sale area, respectively, and adopt a more focused approach in particular areas.

These decisions are more often implemented at later National OCS Program development stages or during the lease sale stage. 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 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 remaining National OCS Program development steps 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 National OCS Program stage is the frequency of lease sales within the years covered by a particular National OCS Program. When deciding the frequency of lease 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 and the new information, an efficient GOM lease sale schedule tends to involve more frequent sales. In other areas where little or no current activity exists and there would be minimal to no new information between sales, it could be more appropriate to have a lease sale schedule with less frequent sales. Of course, other factors (such as changing prices) may warrant more or fewer sales in a particular area throughout the National OCS Program.

Additional information on the frequency of lease sales will be considered throughout the development of the National OCS Program.

10.3 OTHER COMPONENTS OF FMV

After an area is included in an approved National OCS Program, 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 lease sale offering. These terms are evaluated prior to each lease sale to ensure the terms provide the public with FMV for the rights conveyed. After the lease sale and before acceptance, each bid is evaluated for bid adequacy. The lease sale components for ensuring receipt of FMV consist of bidding system, lease terms, and bid adequacy review together.

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 § 560.202. 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 USDOJ 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. USDOJ 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 12.5 and 33 percent royalty rates. These systems were not found to enhance National OCS 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.

In preparation for specific lease sales, BOEM analyzes alternative fiscal terms to offer in conjunction with the current bidding systems as well as considers alternative bidding systems as appropriate. These are described in Section 10.3.2, Fiscal and Lease Terms.

10.3.2 Fiscal and Lease Terms

After deciding to hold a lease sale and the bidding system to be used, the next set of decisions deals with the sale terms to be offered, largely the fiscal terms and duration of the primary term. 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 (cash bonus, rental payments, and royalties) reflect the value of the lessor's (i.e., Federal Government's) 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 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 lease sales in response to emerging market and resource conditions, competition, and the prospective nature of available OCS acreage.

BOEM follows 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 National OCS Program performance. During these procedures, BOEM updates its in-house analytical models, conducts additional statistical analysis, reviews international fiscal system trends, and recommends either adopting fiscal terms that have been used in previous lease sales 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 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 and 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 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. Lease terms are set sale-by-sale and are annually evaluated to determine whether market conditions warrant a change. In general, any changes in fiscal terms are done incrementally allowing BOEM the opportunity to evaluate the results of a lease sale held with new sale terms and to further refine terms if necessary in future lease sales without incurring undue risk to the National OCS Program. Each of the lease sale terms contributes to the assurance of FMV for the public's resources. BOEM re-evaluates minimum bid levels and 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 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 lease 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 lease 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 10.1, Timing of OCS Lease Sales and Related Activities, 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 could be little affected or could even increase, since raising the minimum bid level can push bids to higher levels.

Although the minimum bid stipulates the lowest bid level, 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, Bid Adequacy). 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 lease 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 induces bidders to formulate lower bonus bids, and vice versa. Rentals and royalties are discussed in Sections 10.3.2.2, Rentals, and 10.3.2.3, Royalties.

10.3.2.2 *Rentals*

Before commencement of royalty-bearing production, the lessee pays annual rentals that are generally either fixed or escalating. Rentals compensate the public for the value of holding the lease during the primary term and encourage diligent development. BOEM has used escalating rentals for leases in the Chukchi and Beaufort Seas in Alaska and the GOM 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 drill the lease in a timely manner 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). In bidding systems that include a royalty component, the minimum royalty rate allowed by law is 12.5 percent. Alternative royalty arrangements are possible in which the rate varies above that level or no royalty is paid for certain periods.

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 lease sales held in 2007 and 2008 to capture a greater portion of revenue because oil and gas prices had risen substantially above levels that prevailed for virtually all previous years. BOEM recently issued leases in GOM Regionwide Lease Sale 249 in water depths less than 200 meters with a royalty rate of 12.5 percent.

The decision to offer shallow water leases with a 12.5 percent royalty rate came at the conclusion of the annual lease term reassessment process and was the result of analysis of market conditions; international considerations; available resources; leasing, drilling, and production trends; and other factors.

In designing specific lease sales, BOEM undertakes additional royalty rate analysis. BOEM is currently studying an alternative to the fixed royalty rate, a price-based royalty. Such a system would provide an incentive to lessees through lower royalty rates in times of lower oil prices, while also ensuring that the Federal Government receives a greater return for OCS resources when prices are high. BOEM is exploring the possibility of a price-based royalty and will continue to evaluate the concept.

10.3.2.4 *Primary Term*

In cases where a high bid meets the FMV requirements, the lease rights are issued to the lessee for a limited term called the primary term. The OCS Lands Act sets the primary term 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 primary term promotes expeditious exploration while still providing sufficient time to commence development. In evaluating the primary term 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 primary term and whether it remains appropriate given current exploration timeframes. For example, in 2010, BOEM reduced the primary term for leases in water depths of 800 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, 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 lease sale to determine each block’s ultimate “reservation price.” This price cannot be lower than the minimum bid set for the auction, but it could 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 lease issued.

Since 1984, bid adequacy reviews and FMV 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 lease 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

2017, BOEM rejected total high bids of \$638 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 187 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 where block values were estimated to be negative and the blocks were issued for near-minimum bid, 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 BOEM 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 could 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 are 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 have changed. The current procedures are available online at <http://www.boem.gov/Fair-Market-Value/>.

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 a new National OCS Program, there could be revisions to the bid adequacy procedures to incorporate new knowledge or 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 National OCS 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. At this DPP stage, the planning area hurdle price analysis, based on calculated BOE hurdle prices in comparison to current expectations of future prices for oil and gas, does not indicate that any of the planning areas, except for possibly one—the Central California Planning Area, should be excluded based solely on the price of oil and gas. Of course, this is only one consideration in the National OCS 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 lease sale terms, bidding system, or bid adequacy procedures, the changes are announced to the public and industry through the Proposed NOS or other notification in the *Federal Register*, typically prior to publication of the Final NOS.

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Chapter 11 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.

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 or 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 for Offshore Regulatory Programs; Oil Spill Response, and Training; and Environmental Compliance functions.

categorical exclusion — A category of actions which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in procedures adopted by a Federal agency in implementation of these regulations (§1507.3) and for which, therefore, neither an environmental assessment nor an environmental impact statement pursuant to NEPA is required (40 CFR 1508.4).

categorical exclusion review — The process by which an agency determines whether an action falls within a categorical exclusion.

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.

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 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, USDOl) — The Department of the Interior is a Cabinet-level agency that manages America’s vast natural and cultural resources.

Determination of NEPA Adequacy — A Determination of NEPA Adequacy (DNA) memo is not a NEPA document, but is used by BOEM in the decision file to document review of existing NEPA documentation for applicability and adequacy to address a new proposed action.

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.” The DPP is the first of three proposals to be issued before a new National OCS Program may be approved. Preparation and approval of a National OCS Program is based on a consideration of principles and factors specified by Section 18 to determine the size, timing, and location of lease sales.

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 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 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, the same general geologic structural feature and/or stratigraphic trapping condition. There could be two or more reservoirs in a field that are separated vertically by impervious strata, laterally by geologic barriers, or both.

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 surveys provide data that 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.

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 geographic 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 a primary term of between 5 and 10 years. After that, the term continues as long as there is production in paying quantities or if the lease is suspended.

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 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 waters that extend from the shoreline out to the limit of the territorial seas (12 nm).

net social value — The discounted gross revenues from the produced oil and 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 to BSEE by the lease or unit operator prior to using a facility covered by the plan that details provisions for fully defined specific actions to be taken following discovery and notification of an oil spill occurrence (30 CFR part 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 (designated operator) — The person or company engaged in the business of drilling for, producing, or processing oil, gas, or other minerals and the designated operator is recognized by BOEM as the official contact and responsible party 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 fluids migration methods are necessary for the creation of a suitable hydrocarbon reservoir.

planning area — An administrative subdivision of the OCS area used as the initial areas compared in the National OCS Program analyses.

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. The primary productivity of a marine community is its capacity to produce energy for its component species, which thus sets limits on the overall biological production in marine ecosystems.

Proposed Program — The second in a series of three proposed leasing schedules to be issued before a new National OCS Program may be approved.

Proposed Final Program (PFP) — The third in a series of three leasing proposals developed before the Secretary of the Interior may take final action to approve the new National OCS 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, prior to production 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 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 rocks that have typically produced oil and 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.

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APPENDIX A: SUMMARIES OF PUBLIC COMMENTS

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Abbreviations and Acronyms

AEWC	Alaska Eskimo Whaling Commissions
AOGA	Alaska Oil and Gas Association
API	American Petroleum Institute
AXPC	American Exploration and Production Council
BOEM	Bureau of Ocean Energy Management
CZM	coastal zone management
DNR	Department of Natural Resources
DOD	Department of Defense
EIS	environmental impact statement
FDEP	Florida Department of Environmental Protection
FR	<i>Federal Register</i>
GHG	greenhouse gas
GOM	Gulf of Mexico
IADC	International Association of Drilling Contractors
IAGC	International Association of Geophysical Contractors
ID	identification
IPAA	Independent Petroleum Association of America
Lt.	Lieutenant
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act of 1969
NOAA	National Oceanic and Atmospheric Administration
NOIA	National Ocean Industries Association
OCS	Outer Continental Shelf
PESA	Petroleum Equipment and Services Association
TAPS	Trans-Alaska Pipeline System
USDOI	U.S. Department of the Interior
USOGA	U.S. Oil and Gas Association

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Appendix A Summaries of Public Comments by Commenter Category

The Bureau of Ocean Energy Management (BOEM) requested information and comments on the 2019–2024 Outer Continental Shelf (OCS) Oil and Gas Leasing Program Request for Information (RFI) in the *Federal Register* (FR) on July 3, 2017 (82 FR 30886). The RFI was distributed to interested and affected parties, including governors and Federal agency leaders, for a 45-day comment period. BOEM received approximately 815,000 comments on the RFI (see www.regulations.gov docket identification [ID] BOEM-2017-0050). A summary of substantive comments received on the RFI is provided below.

Comments were received from several different types of stakeholders (see Table A-1). Of the 23 coastal states, BOEM received comment letters from 13 governors individually and/or as joint signatories (Alaska, Alabama, California, Delaware, Hawaii, Maine, Massachusetts, Mississippi, North Carolina, Oregon, Texas, Virginia, and Washington); 8 comments from state agencies where the governor did not comment separately (Connecticut, Florida, Georgia, Louisiana, Maryland, and New York), and 10 from state agencies in addition to the governor (Alaska, California, Delaware, Massachusetts, Texas, and Washington). In addition, BOEM received 32 comment letters from local governmental entities in 10 states (Alaska, California, Florida, Louisiana, New Jersey, New York, North Carolina, South Carolina, Virginia, and Washington).

Several form letter campaigns and petitions stated support for the development of a new National Program, while several were opposed. Each summary contains a Document ID. The Document ID refers to the comment submission's docket number in the Federal government's online comment website, www.regulations.gov, where the full comment submission can be accessed.

Table A-1 shows the number of comment letters received, number of signatories on the comment letters, and the number of organizations that co-signed comment letters. Table A-2 provides a list of organizations that submitted comment letters.

TableA-1: Comment Letters Received by Commenter Type

Commenter Type	Number of Letters Received	Number of Signatories on Letter	Number of Organizations that Co-signed Letter
Governors and State Agencies	32	39	-
Local Governments	32	-	-
Public Interest Groups	82	-	269
Federal Agencies	10	-	-
Energy Exploration & Production Industry and Associations	10	-	16
Non-energy Exploration & Production Industry and Associations	107	-	-
State-level Elected Officials	39	167	-
Members of Congress	12	376	-
Tribes and Tribal Organizations	22	-	-
General Public	464	-	-
Petitions	23	1,258,929	-
Form Letters	568,865	-	-

Note: To avoid double-counting, the numbers shown in bold font were summed to determine the total comments received, which was 1,828,891.

Table A-2: List of Commenters

Commenter Type	Organization
Governors and State Agencies	Alaska Governor
	Alaska Department of Natural Resources
	Alabama Governor
	California Attorney General
	California Coastal Commission
	California Fish and Game Commission
	California State Lands Commission
	Connecticut Department of Energy and Environmental Protection
	Delaware Governor
	Delaware Department of Natural Resources and Environmental Protection
	Florida Department of Environmental Protection, Department of State, Florida Fish and Wildlife Conservation Commission, Florida Geological Survey, and Treasure Coast Regional Planning Council
	Georgia Department of Natural Resources
	Hawaii Governor
	Louisiana Department of Natural Resources
	Maryland Attorney General
	Maryland Department of Natural Resources
	Massachusetts Governor
	Massachusetts Attorney General
	Massachusetts Energy and Environmental Affairs, Coastal Zone Management
	North Carolina Governor
	North Carolina Lt. Governor
	New Jersey Department of Environmental Protection
	New York Attorney General, Environmental Protection Bureau
	New York Departments of State and Environmental Conservation and Energy Research and Development Authority
	OCS Governors Coalition—Alabama, Alaska, Maine, Mississippi, Texas
	Oregon Governor
	Texas Railroad Commission Chair
	Texas Railroad Commissioner Christian
	Texas Railroad Commissioner Sitton
	Virginia Governor
	Virginia Lt. Governor
	Washington Departments of Ecology, Natural Resources, Fish and Wildlife
	West Coast Governors—California, Oregon, Washington
Local Governments	Alaska—North Slope Borough
	California—City of San Luis Obispo
	California—City of Santa Barbara
	California—Santa Barbara County
	California—Santa Barbara Air Pollution Board
	California—Ventura County
	Florida—Coconut Creek
	Florida—Martin County
	Florida—Miami-Dade County
	Florida—Monroe County
	Florida—Pinellas County
	Florida—St. Lucie County
	Louisiana—Great Lafourche Port Commission
	Louisiana—Madison Parish Port Commission
	New Jersey—Borough of Avalon

Commenter Type	Organization
Local Governments (continued)	New Jersey—Borough of Stone Harbor
	New Jersey—Cape May County
	New York—Brookhaven, Long Island
	North Carolina—Bald Head Island
	North Carolina—Caswell Beach
	North Carolina—Duck
	North Carolina—Kill Devil Hills
	North Carolina—Southport Mayor
	North Carolina—Southport Alderman
	North Carolina—Sunset Beach
	South Carolina—Georgetown County
	South Carolina—Hilton Head Island
	South Carolina—Horry County
	South Carolina—Seabrook Island
	South Carolina—Sullivan’s Island
	Virginia—Virginia Beach
	Washington—North Pacific Coast Marine Resources Committee
	Public Interest Groups
Alaska Marine Conservation Council, Kelly Harrell	
Albermarle Garden Club, Carter	
Americans For Prosperity, Jeremy Price	
Association to Preserve Cape Cod, Don Keeran	
Atlantic States Marine Fisheries Commission, Lisa Havel	
Audubon California, Michael Lynes	
Camden Creek HOA, Rick Hoffman	
Cars Are Basic, Scott Wenz	
Center for a Sustainable Coast, David Kyler	
Center for Biological Diversity, Earthjustice, Gulf Restoration Network, Sierra Club, Kristen Monsell	
Center for Regulatory Effectiveness, Scott Slaughter	
Cetacean Society International, William Rossiter	
Chesapeake Bay Foundation, Chris Moore	
Clean Ocean Action, Cindy Zipf	
Coastal Carolina Riverwatch, Larry Baldwin and James Corner	
Coastal Coordination Program of The Ocean Foundation, Richard Charter	
Committee of 100 for Economic Develop, Inc., Michael Olivier	
Consumer Energy Alliance, Dave Holt	
Consumer Energy Alliance—Florida, Kevin Doyle	
Earthjustice, Erik-Grafe	
Edisto Island Community Association, Fred Palm	
Energy Institute of Alabama, Blake Hardwich	
Environmental Defense Center, at al., Kristen Hislop	
Florida Wildlife Federation, Manley K. Fuller	
Friends of the Earth – US, Gary Hughes	
Georgia AgriBusiness Council, Bryan Tolar	
Georgia Conservancy, Charles McMillan	
Gulf Economic Survival Team, Lori LeBlanc	
Greenpeace USA, Timothy Donaghy	
Indivisible Northampton County, Joe Guest	
Jersey Shore Partnership, Margot Walsh	
League of Women Voters of Carteret County, Carol Geer	
League of Women Voters of North Carolina, Margaret Salinger	
League of Women Voters of the Lower Cape Fear, NC, Clarice Reber	

Commenter Type	Organization
Public Interest Groups (continued)	League of Women Voters of New Jersey, Nancy Hedinger
	Lynnhaven River NOW, Karen Forget
	Los Angeles Waterkeeper, Jeannette Baudelaire
	ManaSota-88, Inc., Glenn Compton
	Mid-Atlantic Fishery Management Council, Jessica Coakley
	Mississippi Energy Institute, Patrick Sullivan
	National Audubon Society, Sarah Greenberger
	National Parks Conservation Association
	Natural Resources Defense Council, Alexandra Adams
	New England Fishery Management Council, John Quinn
	New England Fishery Management Council, Thomas Nies
	New Jersey Conservation Foundation, Alison Mitchell
	New Jersey Council of Diving Club, John Fullmer
	North Carolina Coastal Federation, Ana Zivanovic-Nenadovic
	North Carolina Council of Churches, Jennifer Copeland
	Northwest Atlantic Marine Alliance, Amy MacKown
	Ocean Conservancy, Nat. Audubon Society, Pew Charitable Trusts, WWF, Oceana, Andrew Hartsig
	Oceana – Florida, Erin Handy
	Oceana – South Carolina, Samantha Siegel
	Oceana – Georgia, Samantha Siegel
	Oceana - Delaware, Samantha Siegel
	Oceana - Maryland, Caroline Wood
	Oceana - North Carolina, Randy Sturgill
	Oceana - Virginia, Caroline Wood
	Oceana, Jacqueline Savitz
	One Hundred Miles, Alice Keyes
	One More Generation, Olivia Ries
	Plastic Ocean Project, Inc., Bonnie Monteleone
	Santa Barbara Channelkeeper, Kira Redmond
	SC Environmental Law Project, Ameilia Thompson
	Securing America’s Future Energy (SAFE), Alexander Adams
	Sierra Club, Michael Brune
	Sierra Club - Croatan Group, Michael Murdoch
	South Atlantic Fishery Management Council, Michelle Duval
	South Carolina Wildlife Federation, Steve Gilbert
	Southern Alliance for Clean Energy, Chris Carnevale
	Southern Environmental Law Center on behalf of Cape Fear River Watch, et al., Sierra Weaver
	Surfrider Foundation, Katie Day
	Surfrider Foundation, Outer Banks Chapter, Matt Walker
	Texas Conservative Coalition Research, John Colyandro
	The CLEO Institute, Caroline Lewis
The Nature Conservancy, Stephanie Bailenson	
The Wilderness Society, Lois Epstein	
Turtle Island Restoration Network, Andrew Ogden	
Voces Verdes, Adrienna Quintero	
Wildlife Conservation Society (WCS), Angela Noakes	
World Wildlife Fund – U.S. Arctic Program, Margaret Williams	
Federal Agencies	Department of Commerce and National Oceanic and Atmospheric Administration
	Department of Defense
	Department of Homeland Security—United States Coast Guard
	Department of Justice

Committer Type	Organization	
Federal Agencies (continued)	Department of State	
	Department of Transportation	
	Marine Mammal Commission	
	National Aeronautics and Space Administration	
	National Marine Fisheries Service, Alaska Region	
	United States Environmental Protection Agency	
Energy Exploration & Production Industry and Associations* *One proprietary comment not listed or summarized.	American Petroleum Institute (API), National Ocean Industries Association (NOIA), Independent Petroleum Association of America (IPAA), United States Oil and Gas Association (USOGA), American Exploration & Production Council (AXPC), International Association of Drilling Contractors (IADC), International Association of Geophysical Contractors (IAGC), Alaska Oil and Gas Association (AOGA) Petroleum Equipment and Services Association (PESA)	
	Anadarko Petroleum Corporation	
	Arctic Slope Regional Corporation (ASRC) Exploration, LLC (AEX)	
	BP Exploration & Production Inc.	
	Chevron U.S.A., Inc.	
	Cobalt International Energy	
	Diamond Offshore	
	Enven Energy Ventures	
	Shell Offshore	
	Statoil USA E & P, Inc.	
	Airlines for America, John Hiemlich	
	Non-Energy Exploration & Production Industry and Associations	Alaska Chamber, Curtis Thayer
		Alaska Chamber of Commerce, et al., Christopher Guith
Alaska District Council of Laborers, A.J. Merrick		
Alaska Longline Fisherman’s Association, et al., Karen Gillis		
Alaska Maritime Agencies, Luke Hasenbank		
Alaska Trucking Association, Aves Thompson		
Alyeska Pipeline Service Co., Tom Barrett		
American Chemistry Council, Owen Kean		
American Forest & Paper Association, Jerry Schwartz		
American Highway Users Alliance, Gregory Cohen		
American Iron and Steel Institute (AISI), Thomas J. Gibson		
American Society of Landscape Architects, Nancy Somerville		
Associated General Contractors of Alaska, John MacKinnon		
Associated Industries of Florida, Brewster Bevis		
Bald Head Association, Judy Porter		
Bayou Industrial Group (BIG), Denny Borne		
C + L Creative, Laura Butcher		
Cape May County Chamber of Commerce, Vicki Clark		
Carteret County Chamber of Commerce, Tom Kies		
Caterpillar Inc., Wayne Zemke		
Chemical Industry Council of Illinois, Mark Biel		
Chickasaw Distributors, Inc., Brad Baker		
Clay County Chamber of Commerce, Doug Conkey		
Committee of 100 for Economic Development, Inc., Michael Olivier		
COOL Environmental Consulting, Patrick Cotter		
Covington County Chamber of Commerce, Marie Shoemake		
Dare County Tourism Board and Outer Banks Visitors Bureau, Susie Walters and Lee Nettles		
Elite Parking, Dane Grey		
Energy Industries of Ohio, Robert M. Purgert		
EnSCO, Brady		
Garden Club of Virginia, Wendy Vaughn		

Commenter Type	Organization
Non-Energy Exploration & Production Industry and Associations (continued)	Gate Petroleum Company, Buzz Hoover
	Georgia Chamber of Commerce, Clark
	Georgia Association of Manufacturers, G.L. Bowen
	Greater Iberia Chamber of Commerce, Janet Faulk Gonzales
	Greater New Orleans Inc., Michael Hecht
	Greater Port Arthur Chamber of Commerce, William McCoy
	Greater Tomball Area Chamber of Commerce, Bruce Hillegeist
	Hooper Family Seafood, Penny Hooper
	Houma-Terrebonne Chamber of Commerce, Suzanne Nolfo Carlos
	Illinois Chamber of Commerce, Katie Stonewater
	Industrial Energy Consumers of America, Paul Cicio
	Jacksonville Axemen Rugby League, Drew Slover
	JAX Chamber, Christopher Quinn
	Lime Instruments, Rob Stewart
	Louisiana Mid-Continent Oil Gas Association and the Louisiana Association of Business and Industry, Lori LeBlanc
	Louisiana Oil Marketers Convenience Store Association, Natalie Isaacks
	Lynden Inc., Jeanine St John
	Manufacture Alabama, George Clark
	Marine & Industrial, Steve Barker
	Mexico Beach Charters, BBT, LLC, Recreational Fishing Alliance-Forgotten Coast Chapter, Capt., Tom Adams
	Mississippi Farm Bureau Federation, A. Whittington
	Mississippi Manufacturers Association, Jay Moon
	Mobile Area Chamber of Commerce, William Sisson
	National Association of Charterboat Operators, Capt. Bob Zales, II
	National Association of Manufacturers, Ross Eisenberg
	NACS, Paige Anderson
	New Orleans Chamber of Commerce, G. Ben Johnson
	North Star Terminal & Stevedore Co LLC, Scott Vierra
	North Star Terminal & Stevedore Co LLC, Steven Post
	Ohio AgriBusiness Association, Christopher Henney
	Ohio Cast Metals Association, Kevin Schmidt
	One Acadiana, Andre Breaux
	Pacific Drilling Services Inc.
	Panama City Boatmen Association, Capt. Bob Zales, II
	Partnership for Affordable Clean Energy, Laura Schepis
	Peassal Operating Company, Peassal
	Petroleum Marketers Association of America, Rob Underwood
	Pink Petro, Katie Mehnert
	Ports Association of Louisiana, David Allain
	Public Lands Council, Dave Eliason
Resource Development Council, Carl Portman	
Rig-Chem, LLC, Lori Davis	
Rowan Companies, Michael Lawson	
Saltchuk, Harry McDonald	
Sealark Investments, Inc., John Schwarz, Jr.	
SolstenXP, Inc., Jesse Mohrbacker	
South Carolina Chamber of Commerce, Ted Pitts	
South Carolina Manufacturers Alliance, Lewis Gossett	
South Central Industrial Association, Jane Arnette	
Southern Chemical Corporation, Jan Spin	
South Louisiana Economic Council, Vic Lafont	

Committer Type	Organization	
Non-Energy Exploration & Production Industry and Associations (continued)	St. Mary Chamber of Commerce, Donna Meyer	
	St. Tammany West Chamber of Commerce, Lacey Toledano	
	Steel Tank Institute-Steel Plate Fabricators Association, Wayne Geyer	
	Steve Pratt Enterprises, Steve Pratt	
	Texas Association of Business, Stephen Minick	
	Texas Association of Manufacturers, Richard Bennett	
	Texas Trucking Association	
	Teyatech Inc., Ron Perry	
	The Plaza Group, Randy Velarde	
	The Town Dock, Katie Almeida	
	The State Chamber of Commerce Mississippi Economic Council, Scott Waller	
	Thibodaux Chamber of Commerce, Cody J Blanchard	
	Transocean, Bond	
	Transportation Institute, Andrew Strosahl	
	Udelhoven Oilfield System Services, Inc., Jim Udelhoven	
	Virginia Beach Hotel Association, Diana Burke	
	Virginia Beach Restaurant Association, Laura Habr William Gambrell	
	Virginia Chamber of Commerce, Barry DuVal	
	Virginia Manufacturers Association, Brett Vassey	
	Virginia Petroleum Council, Miles Morin	
	Vivlamore Companies, Frontier Supply Company, Sunrise Bagel & Espresso, MV Investments, The Showcase, Regency Fairbanks Hotel, Tubby's, Bill Vivlamore	
	W. D. Scott Group, Inc., William Scott	
	Wisconsin Industrial Energy Group	
	Wrightsville Beach Chamber of Commerce, Susan Bulluck	
	State-level Elected Officials	14 Members of the North Carolina House of Representatives
		Alabama State House of Representatives, Lynn Greer
		Alabama State House of Representatives, Victor Gaston
		Alabama State Senator, Steve Livingston
Alabama State House of Representatives, David R. Sessions		
Alaska State House of Representatives, Charisse Millet		
Alaska State House of Representatives, Chris Birch		
Alaska State Senate, Cathy Giessel		
Alaska State Senate, John Coghil		
Alaska State Senate, Pete Kelly		
Alaska State Senate, Kevin Meyer		
California State Senate, Daniel Alavarez		
California State Senate, Senator Mike McGuire		
Energy Producing States Coalition, Senator Chuck Winder		
Florida House of Representatives, Jason Fischer		
Georgia State Senator Frank Ginn		
Georgia State House of Representatives, Don Parsons		
Georgia State House of Representatives, Jason Spencer		
Georgia State Representative, Charles Martin		
Mississippi State Senate, Angela Burks Hill		
Mississippi State House of Representatives, Gary V. Staples		
Mississippi State Senate, Charles Younger		
Mississippi State Senate, Terry Burton		
New Jersey General Assembly, Timothy Eustace		
New Jersey State Senate, Bob Smith		
New Jersey 11th Legislative District Monmouth County, Eric Houghtaling and Joann Downey		
South Carolina General Assembly, Chip Campsen III.		

Commenter Type	Organization	
State-level Elected Officials	South Carolina House of Representatives, Jason Elliott	
	South Carolina House of Representatives, Lee Hewitt	
	South Carolina House of Representatives, Bill Sandifer	
	South Carolina State Senate, George Campsen	
	South Carolina State Senate, Paul G. Campbell	
	Texas State House of Representatives, Dennis Paul	
	Texas State Senate, Craig Estes	
	Texas State Senate, Don Huffines	
	Texas State House of Representatives, Brooks Landgraf	
	Virginia Environment and Renewable Energy Caucus, Alfonso Lopez	
	Virginia State Senate, Frank W. Wagner	
	Wyoming State Senate, Eli Bebout	
Members of Congress	Thirty-Six Senators: Murkowski (AK), Cassidy (LA), Cornyn (TX), Strange (AL), Capito (WV), Barrasso (WY), Risch (ID), Hatch (UT), Sullivan (AK), Lee (UT), Wicker (MS), Gardner (CO), Inhofe (OK), Enzi (WY), Kennedy (LA), Boozman (AR), Crapo (ID), Daines (MT), Tillis (NC), Flake (AZ), Cotton (AR), Alexander (TN), Cruz (TX), Blunt (MO), Hoeven (ND), Rounds (SD), Heller (NV), Thune (SD), Shelby (AL), Isakson (GA), Portman (OH), Young (IN), Burr (NC), Lankford (OK), Roberts (KS), Cochran (MS)	
	Thirty Senators: Merkley (OR), Markey (MA), Menendez (NJ), Booker (NJ), Nelson (FL), Whitehouse (RI), Blumenthal (CT), Franken (MN), Shaheen (NH), Cardin (MD), Cantwell (WA), Baldwin (WI), Wyden (OR), Van Hollen (MD), Feinstein (CA), Gillibrand (NY), Reed (RI), Warren (MA), Duckworth (IL), Hassan (NH), Murray (WA), Harris (CA), Peters (MI), Sanders (VT), Hirono (HI), Durbin (IL), Leahy (VT), Brown (OH), Stabenow (MI), Cortez Masto (NV)	
	120 Members of the U.S. House of Representatives Committee on Natural Resources	
	103 Members of Congress	
	75 Members of Congress: Breakdown of signatories by state: AZ-2, CA-17, CO-2, DC, FL-3, HI, IL-6, KY, MA-3, MD-2, ME, MI2, MN, MO, NC-2, NJ-2, NV, NY-7, OR-2, PA-2, RI, TN, TX, VA-4, VT, WA, WI	
	68 Members of Congress: Breakdown of signatories by state: AZ, CA-8, CO, FL-8, GA, IL-2, KY, MA-5, MD-2, ME, MN-2, MO, NC-4, NH-2, NJ-9, NY-7, OR-2, PA-3, RI, SC, TN, VA-4, VT	
	39 Members of Congress: Breakdown of signatories by state: AZ, CA-20, CO, DC, HI, KY, MA, MD, MI, MN, NJ, NY, OR-4, RI, VA, WA-2	
	10 Members of Congress: Costa (CA-16), Richmond (LA-2), Lee (TX-18), Bennie Thompson (MS-2), Gonzalez (TX-15), Green (TX-29), Peterson (MN-7), Sewell (AL-7), Plaskett (VI), Veasey (TX-33)	
	Senator Bill Nelson, Florida	
	Congresswoman Kathy Castor, Florida	
	Congressman Donald McEachin, Virginia	
	Congressman Tom Rice, South Carolina	
	Tribes and Tribal Organizations	Arctic Inupiat Offshore, LLC
		Arctic Slope Regional Corporation
Bering Sea Elders Group and Association of Village Council Presidents		
Blue Lake Rancheria		
Bristol Bay Native Association		
Confederated Tribes of Coos, Lower Umpqua & Siuslaw Indians		
Coquille Indian Tribe		
Federated Indians of Graton Rancheria		
Gullah/Geechee Nation		
Kashia Band of Pomo Indians of the Stewart's Point Rancheria		
Kawerak, Inc.		
Makah Tribe		

Commenter Type	Organization
Tribes and Tribal Organizations	Makah Tribal Council
	Native Village of Savoonga
	Native Village of Shishmaref
	Native Village of St. Michael
	Northern California Tribal Chairmen’s Association
	Olgoonik Corporation, The Native Village Corporation for Wainwright, Alaska
	Quileute Tribal Council
	San Luis Rey Band of Mission Indians
	Santa Ynez Band of Chumash Indians
	Scotts Valley Band of Pomo Indians
Form Letter Campaigns	Friends of the Earth (Megan Coglianese)
	CREDO
	Friends of the Earth
	Sierra Club
	Center for Biological Diversity
	Ocean Conservancy
	Consumer Energy Alliance
	Food and Water Watch
	Audubon California
	Oceana (1)
	Oceana (2)
	Wildlife Conservation Society
	Conservation Voter of South Carolina
	Alaska Wilderness League
	NRDC
	The Pew Charitable Trusts
	Surfrider Foundation
	Veterans
	World Wildlife Fund
	Environment America
	Earthjustice
	Oil Change International
	Save Our Sea NC
	Sierra Club-Virginia Chapter
	Southern Alliance for Clean Energy
	Virginia Petroleum Council
	Greenpeace USA
	North Carolina League of Conservation Voters
	North Carolina Conservation Network
	Climate Writers
	Joe Jansen
	Virginia League of Conservation Voters
	Campaign A
	Environmental Action
	Campaign B
	David Bennett
	Kristen Brown
	Peter Smith
	Lacey Hicks
	Shane Farnor
Elizabeth Slikas	
Greater Port Arthur Chamber of Commerce, William McCoy	
NCLCV	

Commenter Type	Organization
Form Letter Campaigns	Campaign C
	Southern Chemical Corporation
	Thomas Jefferson Institute for Public Policy, et al

Note: Individual commenters from the general public are not listed; see Section A.1.11 for a summary of comments from the general public.

A.1 GOVERNORS AND STATE AGENCIES

A.1.1 OCS Governors Coalition

OCS Governors Coalition

Document ID: BOEM-2017-0050-49664

The OCS Governors Coalition was created by governors from coastal states in May 2011 to promote constructive dialogue on OCS energy resource planning and development between coastal state governors and Federal policy makers. The bipartisan group of governors supports policies that encourage a safe, responsible expansion of offshore oil, natural gas, and renewable energy development to the benefit of the nation, their states, and the citizens. The Coalition’s comment letter, signed by Governors Paul LePage of Maine, Kay Ivey of Alabama, Phil Bryant of Mississippi, Greg Abbott of Texas, and Bill Walker of Alaska, states that they believe it is prudent to include all leasing options in the Draft Proposed Program, understanding that circumstances affecting leasing decisions could change during the course of the program’s development and implementation. The Coalition believes that access to offshore energy resources will allow coastal states and communities to realize great economic opportunities and that the successful development of the Gulf of Mexico and the initial exploration of Alaska’s OCS demonstrate how responsible offshore energy development can generate many good paying jobs, spur activity in a host of associated industries, and generate billions of dollars in tax revenue. The Coalition also believes that states must have an up-to-date assessment of the potential resource base off their coasts to inform decisionmaking regarding offshore development and, thus, welcome the decision to reevaluate permits to conduct seismic surveys in the Mid- and South Atlantic. The Coalition also strongly urges the Administration to support existing revenue sharing with states, as well as any legislative efforts to expand revenue sharing to all participating coastal states. Further, they urge that the existing revenue sharing cap for the Gulf states be lifted.

A.1.2 Alaska Region

Alaska Governor Bill Walker

Document ID: BOEM-2017-0050-49697

The governor supports responsible leasing and activity in the OCS, grounded in community input and robust environmental protection. The governor notes that it is a state priority and fundamentally consistent with its laws, goals, and policies. The governor attached his letter of October 6, 2016, in which he “unambiguously express[ed] the State’s interest in including sales in the Beaufort and Chukchi OCS areas” as they were not included in the 2017–2022 Program with Cook Inlet, the third area that the governor nominated in his earlier letter.

Alaska Department of Natural Resources
Document ID: BOEM-2017-0050-49612

The Alaska Department of Natural Resources (DNR) believes at least three lease sales should be conducted in each of the three primary Alaskan OCS areas—the Chukchi Sea, the Beaufort Sea, and Cook Inlet—during the 2019–2024 period. DNR states that this will allow interest to be gauged over the course of the program and allow multiple opportunities for the state and Federal government to benefit from potential leasing activity. DNR states that Arctic OCS leasing, and potential subsequent development activity, has a number of ecological and community considerations that must be taken into account, but ultimately has important economic, social, and environmental benefits from the state perspective. DNR states that offshore development in Cook Inlet has supplied a substantial amount of Alaska’s community energy needs. DNR states that inherent in the statutory direction of sharing benefits across regions is that there is some activity in prospective regions that support development when environmental risks can be appropriately mitigated. Instead of this balance, the most recently developed BOEM OCS oil and gas leasing program for 2017–2022 saw no lease sales in the northern Arctic and only one within the Cook Inlet area for the entire five-year period. DNR states that rather than no leasing at all that completely deprives the nation and the state from sharing in the statutorily recognized benefits of development, an equitable balance must be established that sees lease sales offered in the Arctic. DNR states that in Alaska, there is currently little offshore commerce or transit, and correspondingly limited support infrastructure. DNR states that any developments need to consider and support the continued ecological use of the OCS by local communities, but there are significant state and national benefits in establishing a more robust network in the Arctic. DNR states that measured and regulated OCS development is fundamentally consistent with Alaska’s laws and essential to support the state’s long-term goals of providing a robust economic and civic base for its residents and that the Trans-Alaska Pipeline System (TAPS) serves as the state’s economic backbone and a globally impactful piece of the national infrastructure. DNR states that identifying new resource potential through leasing and exploration to support its continued efficient operation is one of the foremost goals of the state and that the presence of the existing extensive oil and gas infrastructure on the North Slope further supports the state goal of OCS activity that increases Alaska’s employment opportunities and supports the nation’s export of energy to partners and allies around the world.

A.1.3 Pacific Region

California Attorney General
Document ID: BOEM-2017-0050-49583

The California Attorney General expresses strong opposition to inclusion of any California planning area in the new National Program. Interior last conducted a sale for Federal tracts offshore California in 1984, and Interior last included California planning areas in a National program in the 1987–1992 Program. The Attorney General notes that this lack of leasing of areas offshore California has not posed an obstacle to the development of plentiful supplies of domestic oil and gas. The Attorney General is not aware of any evidence that the oil and gas industry has significant interest in again attempting to explore and develop offshore California, stating that industry has shown this lack of interest in several ways, including that the major oil companies that leased tracts offshore California in the 1980s have largely given up their leases and operations. The Attorney General notes that any company seeking to develop offshore of California would also face a challenging regulatory environment. The Attorney General notes that the California Coastal Commission implements California’s federally approved coastal management program

and is thus the California state agency with regulatory authority over offshore leasing, exploration, and development and production. The Attorney General notes that Interior will have to determine that it is conducting lease sales for areas offshore California in a manner that is fully consistent with the state's coastal management program, and lessees also will have to certify that their activities are consistent with the program. The Attorney General notes that the Coastal Commission has articulated in the past that it is difficult for it to understand how it could find that construction and operation of new hazardous infrastructure both offshore California and along California's splendid coast is consistent with the coastal program and that many coastal local governments have made express their opposition to onshore support facilities.

California Coastal Commission

Document ID: BOEM-2017-0050-46653

The California Coastal Commission steadfastly opposes any new leasing in "frontier" areas of the OCS, noting that activities in undeveloped areas off California would require new platforms, offshore and onshore pipelines, and other infrastructure that would likely cause significant adverse effects on coastal resources. The Commission states that producing oil and gas in these areas could have significant, long term, and far-reaching effects on marine and coastal wildlife, commercial fishing, wetlands, ocean and beach users, and coastal tourism and that additional offshore oil production increases the risk of an oil spill occurring and potentially causing devastating state-wide environmental and economic impacts. The Commission states that expanded use of fracking and other well-stimulation treatments could result in chemical discharges that harm marine resources and that producing oil and gas also results in significant emissions of carbon pollution (greenhouse gases), thereby contributing to climate change and rising sea levels, all of which threaten many of the resources integral to the California coast. The Commission states that new onshore infrastructure and facilities to support offshore oil and gas development could have adverse impacts on water quality, agricultural lands and uses, recreation, environmentally sensitive habitat areas, scenic vistas, and archeological resources. The Commission is the agency with CZM regulatory authority and thinks it is difficult to see how the construction and operation of new hazardous industrial infrastructure offshore and along California's magnificent coast could be approved consistent with California's coastal protection laws.

California Fish and Game Commission

Document ID: BOEM-2017-0050-49719

The California Fish and Game Commission passed a resolution on June 22, 2017, supporting the prohibition of oil and gas leasing in Federal waters off California.

California State Lands Commission

Document ID: BOEM-2017-0050-49721

The California State Lands Commission vociferously opposes any new oil and gas leasing in the Pacific OCS as such development poses a threat to California's ocean and marine environment and economy. The Commission manages oil and gas resources in state waters and noted that a new lease has not been issued since 1968.

California Governor Jerry Brown, Oregon Governor Kate Brown, and Washington Governor Jay Inslee (West Coast Governors Coalition)**Document ID: BOEM-2017-0050-49578**

The governors of California, Oregon, and Washington express their strong opposition to the inclusion of any new proposed oil and gas lease sale off their shared coast. The governors noted that the states' people understand the looming catastrophe of climate change that requires the Nation to move away from fossil fuel consumption to a more prosperous, sustainable and clean energy economy. The governors note that the states played a leadership role in the establishment of the U.S. Climate Alliance—a coalition of states committed to achieving the U.S. government's prior goal of reducing carbon dioxide emissions by 2025.

Hawaii Governor David Ige**Document ID: BOEM-2017-0050-51353**

The Hawaii Governor recommends the exclusion of the waters off Hawaii in the National Program. He states that there are no indigenous oil and gas resources and lacks an OCS. The governor notes that the state looks to its natural resources—wind, solar, geothermal, and the possibility of renewable energy resources from wind and ocean wave resources—to assist in achieving its goal of generating 100 percent of Hawaii's energy in the electricity sector from renewable energy resources by the year 2045.

Oregon Governor Kate Brown's Office**Document ID: BOEM-2017-0050-49816**

Oregon Governor Brown's Energy Policy Advisor submitted comments on her behalf, stating that the state had supported the congressional moratorium on the west coast since 1990 and had a long history of opposing efforts to lease for oil and gas in Oregon OCS waters. The Energy Policy Advisor notes that state laws and policies prioritize long-term use and protection of renewable resources and that Oregon's various ocean-related plans, including their CZM plan, are guided by such. The Energy Policy Advisor notes that in 2010 the state passed a law prohibiting oil and gas leasing in the Oregon Territorial Sea. Oregon is opposed to the inclusion of any Oregon OCS lands in the 2019–2024 National Program.

Washington Departments of Ecology, Natural Resources, and Fish and Wildlife**Document ID: BOEM-2017-0050-49524**

The agencies oppose the inclusion of areas adjacent to Washington in the Washington-Oregon Planning Area and noted significant concerns about the added risks and impacts on ocean and community resources that would result from oil and gas leasing and development in their offshore waters. The agencies stated that oil and gas leasing, exploration, and production on the OCS is inconsistent with Washington State's laws, policies, and goals. Washington State law prohibits oil and gas exploration, production, and drilling in the state's marine waters. Revised Code of Washington (RCW) 43.143.010 and RCW 90.58.160 establishes state policies guiding ocean management, which are currently included as part of Washington's federally approved CZM Program, including prioritizing ocean uses that do not adversely impact renewable resources over those that have adverse impacts on renewable resources, conserving fossil fuels, and protecting existing ocean uses and ocean resources from likely long-term significant adverse effects, and creates a framework for developing marine plans for Washington's waters, including addressing potential for marine renewable energy (RCW 43.372).

A.1.4 Gulf of Mexico Region¹

Alabama Governor Kay Ivey

Document ID: BOEM-2017-0050-49698

The governor states that the State of Alabama has a keen awareness of the importance of oil and gas production to the state's economy and national security and has long supported a balanced and reasonable leasing program, contingent on all OCS activities adjacent to Alabama being carried out in compliance with state laws, rules, and regulations and consistent with its CZM program. The governor states that Alabama has long requested protection for live bottom habitats, pinnacle reefs, chemosynthetic communities, and other sensitive environments and noted that the state also has long opposed leasing within 15 miles off Baldwin County to minimize visual and other impacts. The governor urges that all unleased areas of the OCS be included in the DPP. The governor emphasizes that revenues should be shared with adjacent states and supports the existing sharing, but believes it should be expanded and enhanced.

Florida Department of Environmental Protection, Department of State, Florida Fish and Wildlife Conservation Commission, Florida Geological Survey, and Treasure Coast Regional Planning Council

Document ID: BOEM-2017-0050-49640

The Florida Department of Environmental Protection (FDEP) coordinated a review by several state agencies. The Department states that Florida's coastal and offshore areas have high environmental and economic value not only for Florida, but also for the Nation. In addition, FDEP notes that several areas offshore Florida are considered an essential component for developing and sustaining military readiness and that the state remains concerned about the effects of OCS oil and gas activities on marine and coastal environments and the sensitive biological resources and critical habitats associated with them as well as the military activities critical to the Nation's security. FDEP states that as BOEM proceeds with the development of a proposed program for oil and gas activities, the long-term protection of Florida's sensitive coastal and marine resources should be of paramount concern. Enclosed were comments from the Florida Department of State, Florida Fish and Wildlife Conservation Commission, Florida Geological Survey, and Treasure Coast Regional Planning Council as part of the review.

Louisiana Department of Natural Resources

Document ID: BOEM-2017-0050-19783

The Louisiana DNR, Office of Coastal Management supports exploration and development throughout OCS waters and stated that domestic expansion will present positive opportunities for American workers and business owners, while benefiting the entire Nation. The Office notes that the coastal area of Louisiana continues to suffer adverse cumulative and secondary impacts from these activities and that Louisiana has endured wetland losses at an alarming rate throughout the 50-year history of BOEM lease sales in the Gulf of Mexico (GOM) and continues to do so today. The Office does not believe Louisiana has received adequate habitat mitigation commensurate with these impacts and stated that the upcoming OCS leasing program presents a fresh opportunity to rectify the situation, and develop a protocol for addressing these impacts. The Office states that at this early stage in lease sale planning, it is appropriate

¹ Gulf of Mexico section includes comments from Florida that address both Atlantic and Gulf of Mexico.

for BOEM to embrace its role as steward of these Federal resources and address the secondary and cumulative impacts resulting from these OCS activities.

Texas Railroad Commission, Chair

Document ID: BOEM-2017-0050-49538

The Chair of the Texas Railroad Commission, the agency with oversight of the Texas energy industry, conveys strong support for a program that includes all 26 planning areas and stated that excluding areas at the outset and in the absence of critical environmental analysis would be premature and potentially harmful to efforts to enhance American energy security.

Texas Railroad Commissioner Christian

Document ID: BOEM-2017-0050-49523

The Commissioner of the Texas Railroad Commission conveys his staunch support for developing a new leasing program that includes all 26 OCS planning areas in the development of the DPP and stated that excluding regions from leasing without critical environmental analysis would be premature and harm efforts to ensure American energy security.

Texas Railroad Commissioner Sitton

Document ID: BOEM-2017-0050-49602

The Commissioner of the Texas Railroad Commission supports a robust leasing program that includes all 26 planning areas.

A.1.5 Atlantic Region

Connecticut Department of Energy and Environmental Protection

Document ID: BOEM-2017-0050-49730

The Connecticut Department of Energy and Environmental Protection comments that the state has consistently opposed the inclusion of the North Atlantic in a National Program. The Department states that if the North and Mid-Atlantic were to be included, the state's laws, goals, and policies, as contained in its Coastal Zone Management (CZM) Act, must be addressed, which include a list of resources and uses typifying the coastal environment and a description of the adverse impacts on such resources and uses that could result from development activities. The Department notes that the state supports the development of alternative energy sources and actions aimed at conserving fossil fuels.

Delaware Governor John Carney

Document ID: BOEM-2017-0050-49493

The State of Delaware is opposed to any future leasing, exploration, development, or production of oil and gas in the Atlantic Ocean. The governor states that reinitiating program development at this time is an inefficient use of government resources and merely politicizes what should be a data-driven and public process. The governor states that the marine habitats and the species that rely on them are nationally shared resources that do not adhere to federally designated offshore boundaries and that the canyons that extend from off Massachusetts to North Carolina are of particular importance.

Delaware Department of Natural Resources and Environmental Control

Document ID: BOEM-2017-0050-49496

The Delaware DNR and Environmental Control states that it has been on record for almost a decade opposing offshore oil and gas exploration in the Mid-Atlantic region and that these comments reiterate

concerns previously expressed by the Department during the preparation of the 2017–2022 Program, and outline pertinent regulatory requirements of the State of Delaware. The Department states that the current program will meet national energy needs; therefore, there is no legitimate economic justification for exploration in the Mid-Atlantic. The Department states that the state’s 1971 Coastal Zone Act, adopted into the state’s CZM program in 1979, requires Federal applicants to be wholly consistent with the state’s Coastal Zone Act. The Department states that promotion of alternative energy development in the Mid Atlantic is of utmost importance to the citizens of Delaware and that the Department is adamantly opposed to oil and gas lease sales and exploration in the Atlantic OCS.

Georgia Department of Natural Resources

Document ID: BOEM-2017-0050-49659

The Georgia DNR, on behalf of Governor Dial, states support for environmentally sound efforts to increase the domestic oil and gas reserves of the United States. The Department notes several issues that must be considered in any leasing program involving Georgia offshore waters including the impacts of oil and gas exploration and production on: 1) the physical environment; 2) the biological environment; and 3) the socioeconomic environment of the state. The Department includes a more detailed discussion of these categories of impact in the Technical Addendum to the letter. In summary, the state supports the preparation of an OCS oil and gas leasing program provided that all relevant environmental and societal issues are fully addressed. The Department states that given the current need for greater energy security in the United States, the state supports an effective state and Federal partnership that explores options for new energy resources.

Maryland Attorney General

Document ID: BOEM-2017-0050-49575

The Attorney General of Maryland writes to express strong opposition to any efforts to open up the Mid-Atlantic OCS lease area to oil and gas exploration and drilling, as it would cause unacceptable and significant environmental and economic effects on the State’s natural resources and coastal communities. In March 2015, the commenter voiced opposition to the proposed Atlantic lease sale in the 2017–2022 DPP. After an extensive public process, BOEM decided to remove the Mid-Atlantic area from the current Program and acknowledged that drilling off the Atlantic coast is ill-advised due to market dynamics, strong local opposition, and conflicts with competing commercial and military ocean uses. Those concerns remain unchanged today. Drilling off the Mid-Atlantic coast continues to be ill-advised and ignores the strong opposition from the local communities that would be most impacted by oil and gas drilling. Accordingly, the current Program should remain in place through 2022 and any new Program should exclude the Mid-Atlantic OCS for oil and gas exploration and drilling activities.

Maryland Department of Natural Resources

Document ID: BOEM-2017-0050-49494

The Maryland DNR opposes opening up the Mid-Atlantic OCS lease area for oil and gas exploration and development activities as part of the 2019–2024 National OCS Oil and Gas Leasing Program, stating that from both an economic and environmental perspective, Governor Hogan’s administration is opposed to offshore oil and gas drilling off our coast and has serious concerns about seismic surveys and testing in the Atlantic Ocean. The Department stated that over the past several years, Maryland has worked together with Mid-Atlantic local, state, Federal, and tribal partners, as well as citizens, to begin charting a future for the ocean that ensures a healthy ocean ecosystem and supports sustainable ocean uses. The

Department stated that Maryland is concerned about the threat of oil spills and their direct and indirect effects on coastal and bay ecosystems and economies and that these risks raise significant questions about the cost and benefit of pursuing oil and gas leasing in sensitive coastal environments. The Department urges the exclusion of the Atlantic OCS lease areas from the 2019-2024 planning program.

Massachusetts Governor Charles Baker
Document ID: BOEM-2017-0050-49771

The governor states that the Commonwealth does not support inclusion of areas of the North Atlantic adjacent to or affecting Massachusetts and stated that neither exploration nor leasing has been justified in the North Atlantic for more than three decades and that model still holds true. The governor supports wind energy in the OCS off Massachusetts and BOEM's coordination of such efforts.

Massachusetts Attorney General
Document ID: BOEM-2017-0050-49550

Because of the risks it poses to the Massachusetts economy and its coastal ecosystem, the Commonwealth's Attorney General strongly opposes opening up any portion of the Atlantic—or any other new ocean areas—to oil and gas leasing. The Attorney General states that our country does not require expanded offshore fossil fuel extraction to meet our future energy needs, nor can we afford the increased GHG emissions that would result from such development. The Attorney General states that sea level rise from climate change already threatens our coastal communities and urges BOEM to withdraw its notice, discontinue preparation of a new program, and maintain the recently finalized program, which forecloses leasing in any new areas of the Gulf and Arctic Ocean, and in the entire Atlantic and Pacific OCS.

Massachusetts Energy and Environmental Affairs, Coastal Zone Management Office
Document ID: BOEM-2017-0050-49506

The Commonwealth's Coastal Zone Management Office reiterates the position of the governor and attached the governor's comment letter opposing oil and gas leasing in the North Atlantic.

New York Attorney General, Environmental Protection Bureau
Document ID: BOEM-2017-0050-49556

The Environmental Protection Bureau submitted comments on behalf of the state's Attorney General, focusing on the legal obligations of BOEM to address the potential climate change implications of development of a new National Program. The Bureau believes that in preparing a new Program, the requirements of Section 18 of the OCS Lands Act dictate full consideration of whether expanded oil and gas on the OCS would interfere with the U.S. ability to mitigate the substantial adverse societal impacts of climate change.

New York Departments of State and Environmental Conservation and Energy Research and Development Authority
Document ID: BOEM-2017-0050-49625

The New York Departments of State and Environmental Conservation and the Energy Research and Development Authority cite the state's energy plan developed under the direction of Governor Andrew Cuomo that seeks to grow the state's clean energy industry, reduce emissions that contribute to the frequency of extreme weather events, and manage its coastal waters in a manner to mitigate potential harm to communities and environment. The departments state that any renewed consideration of oil and

gas development off the coast of New York would disrupt existing plans to develop clean offshore wind generation and harm the state's continued efforts to protect and preserve the quality of life for New Yorkers and that activities associated with any OCS oil and gas exploration and production offshore would have reasonably foreseeable effects on New York's coastal uses and natural resources that go beyond discrete siting concerns and threaten New York's coastal economy. The departments state that these effects pertain to enforceable coastal policies of New York's federally approved Coastal Management Program and would be subject to Federal consistency review and that the review would include State Coastal Policy 29, which specifically addresses the diversity of OCS uses and resources important to New York State's coastal and statewide economy. The departments state that of particular concern are potential effects that oil and gas activities could have on the current and future conditions of the state's energy economy and ocean environment, including the potential for oil spills and contamination.

New Jersey Department of Environmental Protection
Document ID: BOEM-2017-0050-49674

The Department of Environmental Protection, on behalf of Governor Chris Christie, strongly opposes any waters off its coastline (North and Mid-Atlantic) being considered for inclusion in this leasing program and stated that New Jersey has consistently and steadfastly opposed any industrialization of its coast, including the exploration and development of offshore oil and natural gas resources, nor into any portion of the Atlantic Ocean that could negatively impact New Jersey's precious natural resources or vibrant coastal communities. The Department states that the risk of adverse impacts on its marine waters and the species that depend on them is unacceptable.

North Carolina Governor Roy Cooper
Document ID: BOEM-2017-0050-49606

The governor states that drilling threatens the state's coastal economy and environment therefore requests that the current leasing program be maintained with the prohibition of oil and gas leasing off the North Carolina coast. The governor included a comment letter from the Secretary of Environmental Quality that reiterated the state's opposition and presented a summary of the unique geographical and marine environments and the socioeconomic, legal, and policy frameworks that must be considered in the evaluation of including the waters of the state's coast. In the attached letter from the Department of Environmental Quality, it was noted that the state has had a CZM program since 1974. Energy policies first adopted in 1979 were codified as law in 2010 and approved as enforceable policies by the National Oceanic and Atmospheric Administration (NOAA) in 2016. These include lists of the types of nearshore and offshore sensitive areas to be avoided, required mitigation where impacts cannot be avoided, and restoration of sites when facilities are abandoned.

North Carolina Lieutenant Governor Dan Forest
Document ID: BOEM-2017-0050-00304

As Lieutenant (Lt.) Governor and as chair of the North Carolina Energy Policy Council, the commenter writes in support of including the Federal lands off the coast of North Carolina for oil and natural gas exploration. The Lt. Governor states that the North Carolina Energy Policy Council, which is the central energy policy planning body of the state, recommended in its last comprehensive report that "harnessing offshore energy reserves in an environmentally safe and responsible manner will lead to greater economic prosperity for North Carolina." The Lt. Governor encourages legislative efforts to promote revenue

sharing with coastal energy states and stated that to bring offshore energy development to North Carolina, the state will need to develop onshore infrastructure, ports and inlets, and regulatory programs as well as obtain local support. The Lt. Governor states that without revenue sharing, many coastal residents feel that they are being asked to bear all the costs and risks without reaping any of the rewards. The Lt. Governor states that offshore production could bring economic benefits and thousands of jobs to the state as well as the Nation's economy and that this would strengthen the Nation's economic security as well as energy independence.

Virginia Governor Terence McAuliffe

Document ID: BOEM-2017-0050-49554

The governor states his understanding that BOEM is considering for inclusion in the new National OCS Program all unleased areas off the U.S. OCS, including unleased areas off the coast of Virginia. The governor states that, as was made clear in the state's comments submitted during the process to develop the 2017–2022 Program, a primary concern that must be satisfied for Virginia to be included in the leasing area is a revenue-sharing agreement between participating Atlantic coast states and the Federal government. The governor states that as the parties are no closer to resolving this issue; Virginia requests that the Commonwealth not be included in the new Program.

Virginia Lieutenant Governor Ralph Northam

Document ID: BOEM-2017-0050-49502

The Lt. Governor's Chief of Staff stated that the Lt. Governor's position has not changed from a February 26, 2016, letter submitted to BOEM in which the Lt. Governor asked that Virginia be excluded from the National OCS Program. The Lt. Governor cites effects of climate change, military and NASA assets, tourism, a growing seafood industry, and the uncertainty over royalty disbursements.

A.2 LOCAL GOVERNMENTS

A.2.1 Alaska Region

North Slope Borough

Document ID: BOEM-2017-0050-49652

The North Slope Borough (NSB) states that it has been a partner with the oil and gas industry, the State of Alaska, and the Federal government since its incorporation in 1972. The NSB states that responsible natural resource development is essential to the vitality of the North Slope and that, to date, resource development is a major economic generator for the region. The NSB states that resource development provides direct benefits, such as jobs and dividends distributed through local and regional Alaska Native corporations, and moreover, the NSB's taxation of oil and gas infrastructure provides the bulk of its revenues, which are used to fund its facilities, operations, and services that benefit all residents of the North Slope. The NSB states that if exploration, development, and production do occur on the OCS, the Federal government and industry must implement comprehensive measures to ensure that these activities will be conducted in a safe and responsible manner, which include but are not limited to: (1) continuing to enhance and realistically test oil spill prevention and response capabilities under the full range of foreseeable Arctic conditions; (2) restricting the number of lease sales to a manageable level and requiring consultation with impacted communities; (3) excluding or deferring from lease sales areas that are critical to subsistence hunting, and requiring offshore leaseholders and operators to enter into Conflict Avoidance Agreements with the Alaska Eskimo Whaling Commission and other marine mammal user

groups; (4) funding and conducting scientific research and monitoring, with appropriate peer-review, of the potential effects of industrial activity on the Arctic marine ecosystem; (5) requiring lease holders to conduct comprehensive, pre-activity, site-specific research in areas of proposed operations; (6) supporting and implementing a revenue-sharing mechanism and job training activities to help mitigate the impacts of development on affected communities; and (7) requiring the transportation of OCS-produced oil via subsea pipelines to shore-based facilities whenever possible.

A.2.2 Pacific Region

California, City of San Luis Obispo

Document ID: BOEM-2017-0050-51355

The City of San Luis Obispo opposes any oil and gas activity off its coast.

California, City of Santa Barbara

Document ID: BOEM-2017-0050-49718

The City of Santa Barbara passed Resolution 17-084 on July 25, 2017, calling for “support, in state and Federal waters in the Pacific Ocean along the United States: 1) a ban on new drilling, tracking, and related techniques; 2) a phase-out of all oil and gas extraction; and 3) a framework for responsible renewable energy development.”

California, Santa Barbara County

Document ID: BOEM-2017-0050-24128

The County of Santa Barbara opposes to any new oil and gas lease sales in the Pacific OCS.

California, Santa Barbara Air Pollution Board

Document ID: BOEM-2017-0050-49518

The Santa Barbara Air Pollution Board is concerned about the impacts on air quality from any new leasing that could result from increased construction, drilling, and transportation of crude oil to market. The Board emphasizes that these concerns need to be addressed in the EIS and that any activity has coastal zone consistency.

California, Ventura County

Document ID: BOEM-2017-0050-08622

The Ventura County Board of Supervisors voted to express its strongest opposition to any new oil and gas lease sales in the Pacific OCS and stated that new offshore oil and gas exploration is incompatible with Ventura County’s thriving tourism and fishing economy, and that it is not consistent with the sustainable, green coastal economy the County is striving to develop.

Washington, North Pacific Coast Marine Resources Committee

Document ID: BOEM-2017-0050-49544

The North Pacific Coast Marine Resources Committee, an advisory committee primarily to some counties in Washington, requests that information from the state Marine Spatial Plan (currently a draft) be represented and documented in the DPP, including any anticipated environmental and economic consequences of oil and gas development. The Committee does not feel that the exploration and development of oil and gas resources offshore of the Olympic Peninsula can be conducted in a safe and environmentally sound manner.

A.2.3 Gulf of Mexico Region²

Louisiana, Greater Lafourche Port Commission

Document ID: BOEM-2017-0050-47967

As the manager of the Nation's busiest energy port servicing the oil and gas industry in the GOM, the Commission states that the benefits to the Nation of continued and expanded oil and gas exploration and production in the GOM is absolutely essential to not only the economic future, but environmental sustainability in the face of climate change. The Commission states that while the Port is grateful to be able to service the 6 percent of the Nation's OCS areas available for development, the other 94 percent of OCS areas off-limits to offshore oil and gas development deserve to have the opportunity to decide for themselves if they wish to capitalize on opportunities to create American jobs, grow America's economy, improve America's national security, and ensure America's energy dominance well into the future.

Louisiana, Madison Parish Port Commission

Document ID: BOEM-2017-0050-49764

The Madison Parish Port Commission states that all 26 planning areas should be included in the DPP, that access in the GOM should be expanded, and that additional energy-related revenue sharing would go a long way to helping fund projects and programs vital to Louisiana.

Florida, City of Coconut Creek

Document ID: BOEM-2017-0050-49499

The City of Coconut Creek in southeastern Florida is opposed to expansion of offshore drilling in the Atlantic Ocean.

Florida, Martin County

Document ID: BOEM-2017-0050-08702

Martin County in southeastern Florida opposes the expansion of offshore drilling in the Atlantic Ocean.

Florida, Miami-Dade County

Document ID: BOEM-2017-0050-49747

Miami-Dade County passed Resolution R-651-17 on June 20, 2017, opposing offshore exploration and drilling in the Eastern GOM and Atlantic region and opposes the issuance of permits enabling the use of airguns for seismic.

Florida, Monroe County

Document ID: BOEM-2017-0050-49539

Monroe County, including the Florida Keys and located between the Atlantic and GOM, strongly supports the extension of the moratorium on drilling in the Eastern GOM beyond 2022 and remains strongly opposed to any expansion of drilling in the GOM, the Straits of Florida, or off the Atlantic Coast of Florida. The commenter states that Monroe County has a longstanding opposition to offshore drilling and has passed several resolutions on the issue dating back to 1987, and as recently as April 2017.

² Gulf of Mexico section includes Florida local governments, both Gulf and Atlantic coasts.

Florida, Pinellas County**Document ID: BOEM-2017-0050-49576**

Pinellas County, a peninsula on the central Gulf coast of Florida, states opposition to offshore drilling in the Eastern GOM and supports making the current moratorium permanent.

Florida, St. Lucie County**Document ID: BOEM-2017-0050-49605**

St. Lucie County on the Atlantic coast of Florida states opposition to drilling off the coast of Florida.

A.2.4 Atlantic Region**New Jersey, Borough of Avalon****Document ID: BOEM-2017-0050-18373**

The Borough of Avalon states opposition to all offshore oil and gas exploration off the coast of New Jersey, including seismic airgun blasting to search for oil and gas and offshore deposits.

New Jersey, Borough of Stone Harbor**Document ID: BOEM-2017-0050-49790**

The Borough of Stone Harbor states opposition to all offshore oil and gas exploration off the coast of New Jersey, including seismic airgun blasting to search for oil and gas and offshore deposits.

New Jersey, Cape May County**Document ID: BOEM-2017-0050-49791**

By Resolutions 113-15 and 675-16, the Cape May County Board of Chosen Freeholders states that they took action to oppose offshore drilling and seismic air gun testing in the Atlantic Ocean. The County of Cape May states that they remain convinced today, as it was at the adoption of these resolutions, that offshore oil and gas development is an unreasonable threat to its citizens, environment, and economy.

New York, Brookhaven Long Island**Document ID: BOEM-2017-0050-49684**

A Supervisor from the Town of Brookhaven, Long Island, expresses his strong opposition to a proposed leasing program for offshore drilling in the Atlantic and Arctic Oceans. The Supervisor asks BOEM to oppose any effort to reopen the Atlantic or Arctic Oceans for offshore drilling and states that opening the Atlantic to offshore drilling would put New York's coastal communities' jobs and ecosystems in danger.

North Carolina, Bald Head Island**Document ID: BOEM-2017-0050-49638**

Bald Head Island comments that the current program as finalized in January 2017 did not include any lease sales in the Mid-Atlantic or South Atlantic planning areas. The commenter states that as a community that could be directly and dramatically impacted by oil and gas exploration and leasing in proximity to its beaches, marshes, wildlife and other natural resources, Bald Head Island opposes this untimely reopening of the process. The commenter states that oil and gas development near Bald Head Island is inconsistent with the history, economy, culture, and environment of this special place. The commenter provides details about its location, environment, and areas of particular concern, and addressed the questions raised in the RFI. The commenter also attached a 2015 Resolution opposing seismic testing and offshore drilling.

North Carolina, Caswell Beach**Document ID: BOEM-2017-0050-49541**

Caswell Beach, located on a southeastern North Carolina barrier island, asks BOEM to investigate and to take into consideration possible adverse effects related to oil and gas drilling activities, including seismic testing, near the Atlantic outfall of the Cape Fear River and the local economy due to the *National OCS Program 2019–2024*.

North Carolina, Duck**Document ID: BOEM-2017-0050-46728**

The Town of Duck submits a 2014 Resolution in opposition to offshore fracking and drilling.

North Carolina, Kill Devil Hills**Document ID: BOEM-2017-0050-49553**

The Mayor of Kill Devil Hills submits the letter sent to the governor expressing consistent opposition to offshore oil and gas exploration. The submission included earlier actions expressing the opposition.

North Carolina, Southport, Mayor**Document ID: BOEM-2017-0050-49571**

The Mayor of Southport expresses opposition to proposed 2019–2024 OCS oil and natural gas leasing program, to allow seismic surveying and offshore exploration and drilling off the North Carolina Coast. The commenter includes two earlier passed resolutions in opposition to seismic surveying and offshore oil and gas exploration.

North Carolina, Southport, Alderman**Document ID: BOEM-2017-0050-49566**

The Alderman expresses opposition to oil and gas leasing off the coast of North Carolina, including related activities such as seismic testing. The commenter states that the current program should not be modified after all planning areas in the Atlantic Ocean were removed from the 2017–2022 Program. The commenter states that the city passed a resolution in opposition to seismic testing and offshore oil and gas exploration.

North Carolina, Sunset Beach**Document ID: BOEM-2017-0050-49492**

Sunset Beach submits a June 5, 2017, Resolution in opposition to exploration and production of petroleum products off the coast of North Carolina.

South Carolina, Georgetown County**Document ID: BOEM-2017-0050-49627**

The County of Georgetown submits a July 25, 2017, Resolution in opposition to seismic testing and offshore drilling activity off the South Carolina coast.

South Carolina, Hilton Head Island**Document ID: BOEM-2017-0050-49811**

The Town of Hilton Head Island opposes reconsideration of the geophysical permits using seismic airguns in the Atlantic. The Town states concern about the seismic testing itself and sees it as the first step toward oil drilling off the coast of South Carolina.

South Carolina, Horry County**Document ID: BOEM-2017-0050-51350**

The Horry County Council expresses its opposition to offshore exploration drilling along the South Carolina coast and in the adjacent Atlantic Ocean. The county also opposes seismic airgun blasting in the Atlantic Ocean. The County Council believes that the slight and speculative benefit of oil and gas exploration and drilling, which would likely accrue to the global energy market, is not worth the risk of even a single incident that would cripple the local and state-wide economy.

South Carolina, Seabrook Island**Document ID: BOEM-2017-0050-49812**

The Town of Seabrook Island considers the potential adverse environmental impacts associated with constructing and operating offshore oil and gas industry and its supporting infrastructure would far outweigh any potential economic benefits to the State of South Carolina and its coastal communities.

South Carolina, Sullivan's Island**Document ID: BOEM-2017-0050-49807**

The Town of Sullivan's Island submits a 2015 Resolution in opposition to seismic testing and offshore drilling activities.

Virginia, Virginia Beach**Document ID: BOEM-2017-0050-49507**

The City of Virginia Beach submits a June 20, 2017, Resolution in opposition to offshore oil and gas exploration, including seismic testing.

A.3 PUBLIC INTEREST GROUPS

Alaska Eskimo Whaling Commission, Jessica Lefevre**Document ID: BOEM-2017-0050-49565**

The Alaska Eskimo Whaling Commissions (AEWC) expresses support for continued leasing in the Arctic OCS because of the importance offshore activities have to their local economy. The commenter states cooperation between BOEM, offshore operators, and their organization is crucial to their operations. The commenter states their whalers negotiate with offshore developers annually to determine the best way for their operations to coexist. Therefore, the commenter requests BOEM sponsor discussions among AEWC representatives, agency personnel, and offshore operators to develop a plan for providing long-term support for joint work to balance the subsistence needs of northern Alaskan communities and development goals for the Arctic OCS.

Alaska Marine Conservation Council, Kelly Harrell**Document ID: BOEM-2017-0050-24940**

The commenter expresses opposition to offshore drilling in Alaska and supports the existing withdrawal of the North Aleutian Basin. Bristol Bay's economy strongly relies on commercial and recreational fishing, and the commenter argues that the ecological, cultural, and economic resources in the Bristol Bay are too valuable to risk with development of offshore drilling.

Albermarle Garden Club, Carter**Document ID: BOEM-2017-0050-49834**

The commenter expresses opposition to offshore oil and gas and seismic testing in the Atlantic. The commenter argues that oil and gas drilling risks jobs in commercial fishing and shellfish industries, tourism, and the health of both wildlife and humans. The commenter further argues seismic testing is potentially deadly to aquatic life, and these harms are not worth the risk.

Americans for Prosperity, Jeremy Price**Document ID: BOEM-2017-0050-10125**

The commenter expresses support for the inclusion of all 26 planning areas in the development of the DPP for the 2019–2024 offshore oil and gas leasing program. The commenter supports the new program reconsidering the Alaskan Arctic after its removal from the 2017–2022 Program. The commenter argues that oil and gas development of the Chukchi and Beaufort seas would result in job creation and both state and Federal revenue, as well as increase the longevity of the TAPS.

Association to Preserve Cape Cod, Don Keeran**Document ID: BOEM-2017-0050-49501**

The commenter expresses opposition to any changes to the current program that would open up leasing in the outer continental shelf of the Atlantic and Arctic Oceans. The commenter argues that sensitive coastal ecosystems on the Atlantic, such as Cape Cod, would be devastated by an oil spill anywhere along the coast. The commenter requests the moratorium on oil and gas drilling in the Atlantic and Arctic Oceans be preserved and more investments in renewable energy sources be made.

Atlantic States Marine Fisheries Commission, Lisa Havel**Document ID: BOEM-2017-0050-49560**

The commenter expresses opposition to the inclusion of the Atlantic OCS from Maine to Florida from the 2019–2024 Program. The commenter states the commercial and recreational fishing industries supported nearly half a million jobs and over \$20 billion in revenue for the Atlantic coast in 2015 alone. The commenter argues it is unknown how seismic surveys would impact marine species, but these industries are far too valuable to risk.

Audubon California, Michael Lynes**Document ID: BOEM-2017-0050-49533**

The commenter expresses opposition to the inclusion of the Pacific OCS and California planning areas from the 2019–2024 Program. The commenter argues that these marine ecosystems are too sensitive and valuable to put in harm's way for the sake of oil and gas extraction. The commenter further argues that oil and gas activity goes against the interests of the states along the Pacific Coast, whose economies all rely on coastal industries such as fishing and tourism.

Camden Creek HOA, Rick Hoffman**Document ID: BOEM-2017-0050-10124**

The commenter expresses opposition to offshore oil and gas drilling in the Atlantic. The commenter argues this activity is too risky and could devastate the economy and environment of South Carolina.

Cars Are Basic, Scott Wenz**Document ID: BOEM-2017-0050-49620**

The commenter expresses support for oil and gas development on and offshore in California. The commenter argues that developing oil and gas reserves on the Pacific coast would serve the interests of the citizens of both the state and the United States, and this development will help the United States become more economically and energy secure.

Center for a Sustainable Coast, David Kyler**Document ID: BOEM-2017-0050-08527**

The commenter expresses opposition to development of a new OCS program that would open any additional planning areas to oil and gas leasing. The commenter argues that the economic benefits would be short-lived and the activity is not justified by domestic energy need, and that these needs could be met with more sustainable forms of energy. The commenter further argues that a potential oil spill would devastate coastal communities, tourism and fishing industries, as well marine and aquatic ecosystems.

Center for Biological Diversity, Earthjustice, Gulf Restoration Network, Sierra Club, Kristen Monsell**Document ID: BOEM-2017-0050-49675**

The commenters express opposition to the expansion of oil and gas development in the Atlantic, Pacific, GOM, and all waters offshore Alaska. The commenters state their concern with expanding oil and gas development and argue that the United States should be transitioning to renewable and clean energy. The commenters argue expansion into areas already protected by a president violates Federal law. The commenters further argue that BOEM should further analyze the risks and impact of offshore oil and gas development on marine ecosystem, surrounding communities, and climate change.

Center for Regulatory Effectiveness, Scott Slaughter**Document ID: BOEM-2017-0050-49564**

The commenter expresses support for expanding oil and gas exploration in the Atlantic. The commenter also supports the proposed 500-meter exclusion zone, as it has shown no evidence of environmental harm in the GOM. The commenter argues that Passive Acoustic Monitoring should be used for exploration, but that the proposed acoustic guidance is flawed and should not be followed.

Cetacean Society International, William Rossiter**Document ID: BOEM-2017-0050-9651**

The commenter expresses opposition to including the Atlantic Planning area in the new 2019–2024 leasing program. The commenter argues there should be no reason to reconsider this area other than Administrative pressure. The commenter further argues that seismic testing and development in this area would directly threaten some endangered species, such as the north Atlantic right whale, and there are a number of laws including the Endangered Species Act and the National Environmental Policy Act (NEPA) that exist to protect these species from harm. The commenter argues that without seismic surveys and with these protective acts in place, it will be difficult to find companies that will want to lease these areas.

Chesapeake Bay Foundation, Chris Moore**Document ID: BOEM-2017-0050-49532**

The commenter expresses opposition to oil and gas drilling in the Atlantic OCS. The commenter argues oil and gas drilling and exploration could lead to pollution that would derail current Chesapeake Bay restoration efforts. The commenter further explains oil and gas exploration could negatively impact fishing and tourism industries, causing millions of dollars in profit loss. The commenter states the Atlantic leases were removed after years of public and stakeholder input and should not be included in the 2019–2024 Program.

Clean Ocean Action, Cindy Zipf**Document ID: BOEM-2017-0050-49635**

The commenter expresses opposition to oil and gas drilling in the Atlantic OCS and requests that the RFI be rescinded and the current 2017–2022 leasing program remain. The commenter expresses concern for the waters off the coast of New Jersey and New York and the potential risks offshore drilling poses to marine life diversity, tourism, recreational and commercial fishing, and property values. The commenter also argues that oil and gas drilling will further accelerate climate change and put the coasts at risk of sea level rise and sea surges. The commenter states that expanded oil and gas leasing will not make America energy-independent and will only benefit private companies.

Coastal Carolina Riverwatch, Larry Baldwin and James Corner**Document ID: BOEM-2017-0050-48075**

The commenter expresses opposition to the inclusion of the Atlantic OCS in the 2019–2024 leasing program. The commenter argues that oil and gas leasing in the Atlantic would be detrimental to the coast's marine life, the U.S. military, fishing and tourism industries, and the populations inhabiting these states. This planning area was removed from the 2017–2022 leasing program after two years of stakeholder input and widespread opposition. The commenter further argues the oil and gas reserves contain a relatively small amount of oil, and that any activity would not be worth the risks it poses to the coast.

Coastal Coordination Program of the Ocean Foundation, Richard Charter**Document ID: BOEM-2017-0050-24262**

The commenter expresses opposition to development of a new program, notably any new OCS leases in Alaskan waters. The commenter argues that inclusion of the Arctic Ocean ignores the ecological significance and environmental sensitivity of the region, as well as the lack of response capability and infrastructure in the event of an oil spill. The commenter also opposes reintroducing the Atlantic lease sales, arguing that the oil and gas development in the area would present military space-use conflicts and threaten the coastal economy and fisheries of the region.

Consumer Energy Alliance, Dave Holt**Document ID: BOEM-2017-0050-49593**

The commenter expresses support for expanding leasing opportunities in the Atlantic, GOM, and Arctic. The commenter argues that developing these leasing areas would create nearly one million jobs and generate billions of dollars in revenue for the states and Federal Government. The commenter further argues that oil and gas development is more environmentally safe than it has ever been, and development of these areas is critical to the energy and economic security of the United States.

Consumer Energy Alliance—Florida, Kevin Doyle**Document ID: BOEM-2017-0050-51114**

The commenter expresses support for the development of a new leasing program and urges inclusion of all 26 planning areas in the DPP. The commenter states that excluding regions under consideration at the beginning of the process without critical environmental analysis would be premature and hurt American energy security. The commenter argues that offshore resource development provides significant economic impact for Florida, citing the revenue and jobs created by offshore resource development in the GOM.

Earthjustice, Erik Grafe**Document ID: BOEM-2017-0050-49670**

The commenter requests that BOEM abandon the effort to modify the current 2017–2022 oil and gas leasing program. The commenter expresses concern for offshore drilling in the Arctic OCS and requests that the Chukchi Sea and Beaufort Sea planning areas be excluded from the program. The commenter states that the Arctic region is warming more rapidly and offshore drilling is incompatible with attempts to limit climate change. The commenter further argues that the risks associated with an oil spill would be exacerbated by limited spill response capabilities.

Edisto Island Community Association, Fred Palm**Document ID: BOEM-2017-0050-49841**

The commenter expresses opposition to seismic testing off the mid- and south Atlantic Coasts, as well as offshore oil and gas exploration. The commenter argues that not only has the energy sector has not expressed demand for more oil, but that policy should be moving towards more renewable energy. The commenter also argues that industries that rely on a healthy coastal habitat, such as commercial fishing and tourism, are too valuable to risk with seismic testing or exploration.

Energy Institute of Alabama, Blake Hardwich**Document ID: BOEM-2017-0050-19796**

The commenter expresses support for the expansion of offshore oil and gas leasing proposed in the 2019-2024 Program. The commenter argues that expanding leasing will result in economic activity in the form of job creation and Federal and state revenue. The commenter further argues that utilizing all available offshore energy resources will help strengthen the energy and economic security of the United States.

Environmental Defense Center, at al., Kristen Hislop**Document ID: BOEM-2017-0050-49579**

The commenter expresses opposition to the inclusion of the Pacific OCS region from the National program and requests that it be excluded from the program. The commenter states that this region includes several National Marine Sanctuaries, National Parks and Monuments, and state marine protected areas, and development of these areas is not consistent with their protection. The commenter argues that oil and gas development would cause significant environmental harm to these already sensitive areas and exacerbate global warming.

Florida Wildlife Federation, Manley K. Fuller**Document ID: BOEM-2017-0050-19718**

The commenter expresses opposition to any changes to the current 2017–2022 Program and opposes all new lease sales in the Atlantic, Pacific, and Arctic Oceans and Eastern GOM. The commenter argues that not only would the tourism economy of the east coast suffer in the event of an oil spill, but endangered marine mammals such as turtles and whales would be devastated. The commenter states that benefits of this activity are not significant enough to risk the economy and fragile ecosystems of the east coast.

Friends of the Earth—US, Gary Hughes**Document ID: BOEM-2017-0050-49587**

The commenter requests that the Pacific OCS be excluded from the 2019–2024 leasing program. The commenter states that offshore drilling is incompatible with California’s ecologically unique and protected coast and an oil spill would pose risks to endangered and threatened species. The commenter states that local economies, business and property owners, and the local fishing industry in California have already suffered economic loss due to spills. The commenter argues that oil spills are not the only risk posed by offshore drilling, but air and water pollution, and seismic instability as well.

Georgia AgriBusiness Council, Bryan Tolar**Document ID: BOEM-2017-0050-49529**

The commenter expresses support for the development of a new OCS leasing program, including the addition of all planning areas in the Atlantic OCS. The commenter argues that including the Atlantic Planning areas is crucial to maintain industry interest and would allow for more environmentally and economically effective exploration in the Atlantic OCS. The commenter further argues that development of this region could result in job creation and revenue for both the states and Federal Government.

Georgia Conservancy, Charles McMillan**Document ID: BOEM-2017-0050-49535**

The commenter expresses opposition to oil and gas leasing in the Atlantic Ocean off Georgia’s coast. The commenter argues that oil and gas leasing activity would disrupt the lives of residents, and damage critical ecosystems and the coastal economy. The commenter requests that BOEM move these leasing areas forward in the DPP and that they provide a detailed assessment of the ecological, hazardous, and economic impacts this activity would have on Georgia’s coastal environments.

Gulf Economic Survival Team, Lori LeBlanc**Document ID: BOEM-2017-0050-49559**

The commenter expresses support for developing a new leasing program that includes all 26 OCS planning areas. The commenter argues that the GOM should stand as the best example of the benefits oil and gas exploration can bring, citing the number of jobs created and the amount of revenue oil and gas production and brought the region. The commenter further argues that in order for the United States to become energy secure and energy dominant, the government must explore all available energy resources, including expanding leasing in the Gulf and other untapped leasing areas.

Greenpeace USA, Timothy Donaghy**Document ID: BOEM-2017-0050-49577**

The commenter requests that no lease sales be scheduled during the 2019–2024 proposed program and that BOEM conducts a comprehensive analysis of the climate change costs of existing or proposed

offshore oil and gas extraction. The commenter states that oil and gas drilling has already caused serious damage to the GOM, and expanding lease sales in the Arctic, Atlantic, and Pacific OCS would place those communities at risk. The commenter argues that exploiting these resources in the Arctic is inconsistent with international efforts to limit global warming and would lock the United States into oil and gas infrastructure for many decades.

Indivisible Northampton County, Joe Guest

Document ID: BOEM-2017-0050-00048

The commenter expresses opposition to expanding offshore oil and gas drilling. The commenter argues that oil and gas exploration is not critical to our Nation's energy security or energy independence. The commenter further argues that oil and gas drilling could lead to a devastating oil spill.

Jersey Shore Partnership, Margot Walsh

Document ID: BOEM-2017-0050-49940

The commenter expresses opposition to seismic testing in the Atlantic Ocean, especially off the coast of New Jersey. The commenter argues that there is little economic benefit to this proposal, and would cause harm to marine life, tourism, and the health and safety of the coastal residents.

League of Women Voters of Carteret County, Carol Geer

Document ID: BOEM-2017-0050-49498

The commenter expresses opposition to oil and gas activity off the Atlantic coast. The commenter argues that oil and gas development off the coast of North Carolina would be detrimental to water quality and marine life. The commenter also argues that North Carolina and other Atlantic coast states have long opposed oil and gas activity off their coasts because of the potential impacts it could have on fishing and tourism industries.

League of Women Voters of North Carolina, Margaret Salinger

Document ID: BOEM-2017-0050-19236

The commenter expresses opposition to coastal drilling and seismic testing in the Atlantic. The commenter argues that the environmental threat this activity poses for the North Carolina coast is not worth the small amount of oil and gas that could be generated. The commenter further argues that the country should be investing in more sustainable energy resources in the near future.

League of Women Voters of the Lower Cape Fear, NC, Clarice Reber

Document ID: BOEM-2017-0050-47906

The commenter expresses opposition to offshore drilling in the Atlantic. The commenter argues that activity in the Atlantic threatens the fishing and tourism industries that are vital to the North Carolina economy. The commenter further argues that the benefits of OCS drilling were exaggerated by high oil prices, and the U.S. economy would benefit more from reducing its dependence on carbon-based fuels.

League of Women Voters of New Jersey, Nancy Hedinger

Document ID: BOEM-2017-0050-49634

The commenter expresses opposition to the inclusion of the North and Mid-Atlantic Ocean in the 2019-2024 DPP. The commenter states that offshore drilling will have a devastating effect on natural resources and water quality, as well as the tourism and recreational and commercial fishing industries in New Jersey. The commenter supports moving towards more renewable energy resources.

Lynnhaven River NOW, Karen Forget
Document ID: BOEM-2017-0050-50158

The commenter expresses opposition to seismic testing, as well as offshore oil and gas exploration and drilling off the Virginia coast in the Atlantic. The commenter explains that oil spills are difficult to clean, and clean coasts are critical to the economy of Virginia. The commenter argues that oil and gas are toxic to critical commercial fishing species such as blue crab and oysters, and loss of these populations would be detrimental to the fishing industry. The commenter also argues that this activity would negatively impact wetlands, which help reduce flooding and erosion.

Los Angeles Waterkeeper, Jeannette Baudelaire
Document ID: BOEM-2017-0050-49614

The commenter expresses opposition to any expansion of oil and gas leasing and requests reconsideration of efforts to open the Atlantic, Arctic, Florida, and other Gulf Coast waters, as well as California's coastline to expanded offshore oil and gas leasing. The commenter argues that offshore oil and gas leasing and development poses threats to coastal tourism and fishing industries, as well as ecologically damaging impacts from the release of wastewater, leaks, and spills. The commenter states that the current 2017–2022 Program should be maintained.

ManaSota-88, Inc., Glenn Compton
Document ID: BOEM-2017-0050-08562

The commenter expresses opposition to offshore oil and gas drilling off the coast of Florida and requests all areas off the Florida coast be excluded from the OCS program. The commenter argues that the EISs for the OCS have been inadequate. The commenter explains that commercial fishing, recreation, and tourism are vital to coastal economies and an oil spill would devastate these industries. The commenter argues oil and gas activity, including seismic exploration would significantly impact fragile ecosystems and their inhabitants, including seagrass, sea turtles, and deep sea benthic communities.

Mid-Atlantic Fishery Management Council, Jessica Coakley
Document ID: BOEM-2017-0050-

The commenter expresses concern about the potential impacts oil and gas drilling could have on sensitive marine environments in the Atlantic Ocean. The commenter argues that there is not a sufficient amount of information available to predict how oil and gas development would impact fish, marine mammals, and aquatic ecosystems. The commenter further argues that renewable energy could be developed in a manner that meets energy needs and has a minimal impact on marine habitats and fisheries.

Mississippi Energy Institute, Patrick Sullivan
Document ID: BOEM-2017-0050-08588

The commenter expresses support for the development of a new leasing program and urged the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

National Audubon Society, Sarah Greenberger**Document ID: BOEM-2017-0050-49503**

The commenter expresses opposition to expanded offshore oil and gas leasing and development in the Atlantic, Pacific, and Arctic Oceans, and the Eastern Gulf of Mexico, and urged the current program be maintained. The commenter argues expanding oil and gas exploration and development in sensitive areas such as the Arctic Ocean would put marine and coastal bird habitats at risk. The commenter further argues oil and gas development in the Arctic would be risky due to the climate and lack of infrastructure. The commenter states oil and gas development has never occurred in the Atlantic Ocean, and argued development would conflict with other ocean uses.

National Parks Conservation Association**Document ID: BOEM-2017-0050-49582**

The commenter expresses opposition to offshore oil and gas leasing and development in the Atlantic, Pacific, and Arctic oceans, and the Eastern GOM. The commenter expresses concern for coastal national parks in the Atlantic and Pacific oceans, and argues that offshore drilling poses threats such as costal industrialization, spills, and leaks that could impact the economic output of the parks and the jobs they support. The commenter also states that an oil spill could threaten marine wildlife and migratory birds. The commenter expresses concern for the weakening of safety rules, such as the 2016 Well Control Rule.

Natural Resources Defense Council, Alexandra Adams**Document ID: BOEM-2017-0050-49646**

The commenter expresses opposition to the development of a new National oil and gas leasing program and requests that the Atlantic, Pacific, and Arctic regions, as well as the North Aleutian Basin, Bristol Bay, Cook Inlet, and the GOM be excluded from the new program. The commenter argues that offshore drilling threatens the ecosystems, geological features, and ocean-based economies of the Atlantic Ocean, the unique marine wildlife and fishing and tourism industries of the Pacific Ocean, and the rich marine ecosystems and fishing industry of the Arctic. The commenter also argues that the Arctic region possesses limited oil spill response capabilities.

New England Fishery Management Council, John Quinn**Document ID: BOEM-2017-0050-49789**

The commenter expresses opposition to the inclusion of the Atlantic planning areas in the 2019–2024 Program due to concerns that hydrocarbon development would have on marine resources and human communities. The commenter argues the commercial and recreational fishing industry is too valuable to risk any potential harm that could be caused by oil and gas drilling in the Atlantic.

New England Fishery Management Council, Thomas Nies**Document ID: BOEM-2017-0050-48171**

The commenter expresses opposition to the inclusion of the Atlantic planning areas in the 2019–2024 leasing program. The commenter states that they recognized the importance of domestic energy development, but argued this activity in the Atlantic could jeopardize the recreational and commercial fishing industries that are critical to coastal economies. The commenter further argues that oil and gas development risks marine resources and associated human communities and requested the Atlantic planning areas be excluded from the most recent program. The commenter explains that renewable energy resource should be considered, as they will have less of an impact on marine life.

New Jersey Conservation Foundation, Alison Mitchell**Document ID: BOEM-2017-0050-50121**

The commenter expresses opposition to the inclusion of the North and Mid-Atlantic planning areas in the OCS oil and gas leasing program. The commenter urges BOEM to maintain the restriction for oil and gas exploration in the Atlantic. The commenter argues that there isn't scientific evidence to support this policy reversal and the risks pose too significant a threat to marine life, water quality, and coastal communities to justify moving forward.

New Jersey Council of Diving Club, John Fullmer**Document ID: BOEM-2017-0050-50443**

The commenter expresses opposition to offshore oil development off the coast of New Jersey and all of the east coast. The commenter states that oil pollution impacts fish and marine life, and argues that ships will strike oil rigs should offshore drilling be developed in the region. The commenter states that offshore drilling will pollute the beaches of New Jersey and destroy the recreational and commercial fishing industry.

North Carolina Coastal Federation, Ana Zivanovic-Nenadovic**Document ID: BOEM-2017-0050-49555**

The commenter expresses opposition to oil and gas exploration and drilling in the Mid- and South-Atlantic ocean. The commenter is concerned with the effects of seismic surveys on marine wildlife, and the potential for spills. The commenter states that oil spilled in previous disasters has persisted in oceans in large amounts and digested by marine organisms, compromising the health, growth and reproductions of many species. The commenter further argues that the tourism and recreation industries of North Carolina rely on healthy ecosystems, and could be compromised if these ecosystems are threatened.

North Carolina Council of Churches, Jennifer Copeland**Document ID: BOEM-2017-0050-48990**

The commenter expresses opposition to offshore drilling in the Atlantic and requests the Atlantic be permanently protected from oil and gas drilling. The commenter argues oil and gas activities threaten coastlands, marshes, and the habitats of countless birds and fishes. The commenter further argues that the likelihood of a spill is too great to justify moving forward with this program.

Northwest Atlantic Marine Alliance, Amy MacKown**Document ID: BOEM-2017-0050-49622**

The commenter expresses opposition to the inclusion of the Atlantic OCS in the 2019-2024 oil and gas leasing program. The commenter states that the health and habitats of fish species would be affected by offshore oil and gas exploration and development. The commenter further argues that offshore drilling would also pose public health risks for consumers of certain species of fish, and would interfere with fishing operations, impacting the industry. The commenter states that seismic exploration poses unknown threats to the environment and coastal zone, and that oil spills are one of the most concerning risks of offshore oil production.

Ocean Conservancy, National Audubon Society, Pew Charitable Trusts, WWF, Oceana, Andrew Hartsig

Document ID: BOEM-2017-0050-49589

The commenter requests that the Chukchi and Beaufort planning areas be excluded from any future oil and gas leasing program, and that the current 2017–2022 Program be maintained. The commenter also expresses support for comments submitted on behalf of local tribes and communities that request planning areas in the Bering Sea and North Aleutian Basin be excluded from the DPP. The commenter argues that the Chukchi and Beaufort Sea planning areas are vitally important for a functioning marine ecosystem, and that the Arctic does not have the economy to support oil and gas development. The commenter further argues that the regions should be excluded due to limited spill response capabilities and a lack of drilling infrastructure. The commenter requests that BOEM address science gaps and consult with local tribes and communities before making leasing decisions.

Oceana—Florida, Erin Handy

Document ID: BOEM-2017-0050-49599

The commenter states that offshore oil and gas exploration and drilling are neither desired nor necessary off the coast of Florida, and requests that no new lease sales be scheduled in the Atlantic OCS. The commenter states that the potential risks to marine and coastal ecosystems, tourism, fishing and recreation industries, and coastal communities are too great to justify new lease sales, and requests that the 2017–2022 Program be maintained.

Oceana—South Carolina, Samantha Siegel

Document ID: BOEM-2017-0050-49668

The commenter states that offshore oil and gas exploration and drilling are neither desired nor necessary off the coast of South Carolina, and requests that no new lease sales be scheduled in the Atlantic OCS. The commenter states that the potential risks to marine and coastal ecosystems, tourism, fishing and ocean-based recreation industries, and the coastal communities that depend on them are too great to justify new lease sales, and requests that the 2017–2022 Program be maintained.

Oceana—Georgia, Samantha Siegel

Document ID: BOEM-2017-0050-49669

The commenter states that offshore oil and gas exploration and drilling are neither desired nor necessary off the coast of Georgia, and requests that no new lease sales be scheduled in the Atlantic OCS. The commenter argues that the potential risks to marine and coastal ecosystems, tourism, fishing and ocean-based recreation industries, and the coastal communities that depend on them are too great to justify new lease sales, and requests that the 2017–2022 Program be maintained.

Oceana—Delaware, Caroline Wood

Document ID: BOEM-2017-0050-49673

The commenter states that offshore oil and gas exploration and drilling are neither desired nor necessary off the coast of Delaware, and requests that no new lease sales be scheduled in the Atlantic OCS. The commenter argues that the potential risks to marine and coastal ecosystems, tourism, fishing and ocean-based recreation industries, and the coastal communities that depend on them are too great to justify new lease sales, and requests that the 2017–2022 Program be maintained.

Oceana—Maryland, Caroline Wood
Document ID: BOEM-2017-0050-49672

The commenter states that offshore oil and gas exploration and drilling are neither desired nor necessary off the coast of Maryland, and requests that no new lease sales be scheduled in the Atlantic OCS. The commenter argues that the potential risks to marine and coastal ecosystems, tourism, fishing and ocean-based recreation industries, and the coastal communities that depend on them are too great to justify new lease sales, and requests that the 2017–2022 Program be maintained.

Oceana—North Carolina, Randy Sturgill
Document ID: BOEM-2017-0050-49690

The commenter states that offshore oil and gas exploration and drilling are neither desired nor necessary off the coast of North Carolina, and requests that no new lease sales be scheduled in the Atlantic OCS. The commenter argues that the potential risks to marine and coastal ecosystems, tourism, fishing and ocean-based recreation industries, and the coastal communities that depend on them are too great to justify new lease sales, and requests that the 2017–2022 Program be maintained.

Oceana—Virginia, Caroline Wood
Document ID: BOEM-2017-0050-49690

The commenter states that offshore oil and gas exploration and drilling are neither desired nor necessary off the coast of Virginia, and requests that no new lease sales be scheduled in the Atlantic OCS. The commenter argues that the potential risks to marine and coastal ecosystems, tourism, fishing and ocean-based recreation industries, and the coastal communities that depend on them are too great to justify new lease sales, and requests that the 2017–2022 Program be maintained.

Oceana, Jacqueline Savitz
Document ID: BOEM-2017-0050-51354

The commenter requests that the Atlantic, Pacific, and Arctic oceans and the Eastern GOM be excluded from the proposed 2019–2024 oil and gas leasing program. The commenter also requests that the proposed program not include any protected areas such as National Marine Sanctuaries, Marine National Monuments, or withdrawn areas. The commenter states that oil spills can negatively impact marine life and have long-lasting impacts on ecosystems, such as the BP Horizon Oil Spill. The commenter argues that harms from oil and gas drilling such as oil spills, ocean acidification, and climate change outweigh the potential benefits.

One Hundred Miles, Alice Keyes
Document ID: BOEM-2017-0050-49609

The commenter requests that the Administration uphold the 2017–2022 Program that excludes the Atlantic OCS. The commenter expresses concern for offshore drilling off the coast of Georgia. The commenter argues that the natural and historical assets found on the coast of Georgia far outweigh the potential benefits from offshore drilling.

One More Generation, Olivia Ries
Document ID: BOEM-2017-0050-24101

The commenter expresses opposition to offshore oil and gas drilling in the Atlantic, as well as seismic testing. The commenter states the devastation the *Deepwater Horizon* spill caused should serve as

cautionary tale for further coastal drilling. The commenter argues that oil and gas drilling could have a significant impact on marine life, such as dolphins and turtles.

Plastic Ocean Project, Inc., Bonnie Monteleone

Document ID: BOEM-2017-0050-49648

The commenter expresses opposition to oil and gas exploration and development off the coast of North Carolina. The commenter expresses concern for the impacts of offshore drilling on unique fish species and other marine wildlife. The commenter argues that offshore drilling will be a major threat to tourism, which relies on charter fishing, beach recreation, hotel lodging, and restaurants.

Santa Barbara Channelkeeper, Kira Redmond

Document ID: BOEM-2017-0050-49631

The commenter expresses concerned for oil and gas exploration and development in the Santa Barbara Channel. The commenter states that offshore drilling threatens the unique biology of the channel, as well as the local economy that relies on healthy marine ecosystems. The commenter states that communities along the channel rely on tourism, coastal recreation and the commercial fishing industry, which could be negatively impacted by offshore drilling. The commenter argues that offshore drilling poses other threats besides oil spills, such as release of wastewater, drilling muds, air pollutants and emissions.

SC Environmental Law Project, Ameilia Thompson

Document ID: BOEM-2017-0050-49654

The commenter expresses concern for oil and gas exploration and development in the Atlantic OCS. The commenter argues that offshore drilling could threaten the commercial fishing business that relies on healthy populations of marketable fish, as well as the tourism industry that depends on a healthy ocean and attractive beaches. The commenter argues that though the oil and gas industry offers promises of improved technology and new regulations, these improvements cannot prohibit the 20 percent of oil spills resulting from human error. The commenter further argues that the Atlantic OCS residents would be exposed to the risks of offshore drilling with no benefits, and military training would be compromised by seismic and drilling equipment.

Securing America’s Future Energy, Alexander Adams

Document ID: BOEM-2017-0050-49608

The commenter expresses support for oil and gas exploration and development in the Atlantic OCS as well as responsible energy production in the Arctic. The commenter argues that harnessing offshore resources will help the United States become energy independent. The commenter states that coastal states should have the opportunity to receive a portion of the revenue generated by offshore drilling. The commenter recommends retaining performance metrics regarding spills and inspections.

Sierra Club, Michael Brune

Document ID: BOEM-2017-0050-49655

The commenter expresses opposition to offshore leasing and drilling in all areas for the 2019–2024 Program. The commenter states that offshore drilling puts coastal community health, economic well-being, and the environment at risk. The commenter argues that drilling in the Atlantic would threaten popular beaches, the tourism industry, and conflict with military readiness. The commenter further argues that the Eastern GOM is critical for military testing and training activities, and drilling infrastructure would be incompatible.

Sierra Club - Croatan Group, Michael Murdoch**Document ID: BOEM-2017-0050-49655**

The commenter expresses opposition to the new 2019–2024 offshore oil and gas lease program. The commenter argues that any jobs that would be apparently gained by establishing an oil and gas industry could mean even more jobs lost to the tourism, fishing, and recreation industries that depend on a healthy coast and clean oceans. The commenter offers to work with the Federal Government to help develop the clean energy sector in the state of North Carolina.

South Atlantic Fishery Management Council, Michelle Duval**Document ID: BOEM-2017-0050-08273**

The commenter expresses opposition to seismic airgun surveys in the Mid- and South-Atlantic and states support for BOEM's removal of the Atlantic OCS from the 2017–2022 Program. The commenter describes the organization's mandate to protect and conserve fish habitat and maintain the recreational and commercial fisheries along the Atlantic coast. The commenter states concern for the broader issue of excessive sound in the ocean and the negative impacts of noise on soundscapes and acoustic habitat of marine animals.

South Carolina Wildlife Federation, Steve Gilbert**Document ID: BOEM-2017-0050-48375**

The commenter expresses opposition to oil and gas drilling and seismic testing in the Atlantic and requests that the Atlantic planning areas be removed from consideration in the new OCS program. The commenter argues oil and gas operations pose a significant threat to marine and coastal resources, including marine fish and marine mammals. The commenter further argues that damage to the coast would impact fishing and tourism industries, which are a significant part of the South Carolina economy.

Southern Alliance for Clean Energy, Chris Carnevale**Document ID: BOEM-2017-0050-49545**

The commenter expresses concern for oil and gas exploration and development in the Atlantic OSC and GOM. The commenter requests that the Administration adheres to the lease schedule in the 2017–2022 Program in the Atlantic and cancel remaining scheduled sales in the GOM. The commenter states that offshore drilling in the Atlantic will not boost energy security or independence, and would not generate economic gain. The commenter also states that drilling infrastructure deters tourism, which could impact the coastal economies, and that oil spills threaten public health.

Southern Environmental Law Center on behalf of Cape Fear River Watch, et al., Sierra Weaver**Document ID: BOEM-2017-0050-49667**

The commenters express opposition to oil and gas drilling and exploration in the Mid- and South Atlantic planning regions. The commenters state their organizations and many others spoke out and are opposed to including these areas during the DPP. The commenters argue that oil and gas drilling efforts could risk hundreds of coastal communities and fragile ecosystems along the east coast.

Surfrider Foundation, Katie Day**Document ID: BOEM-2017-0050-49598**

The commenter expresses opposition to offshore oil and gas drilling off the Atlantic coast, Pacific coast, Eastern GOM, and Alaska. The commenter requests that, should the Administration move forward with developing a new leasing program, BOEM take into consideration coastal communities' reliance on

healthy marine ecosystems for industries such as tourism, recreation, and commercial fishing. The commenter also requests a comprehensive review and analysis of potential impacts to both the environment and coastal communities.

Surfrider Foundation, Outer Banks Chapter, Matt Walker

Document ID: BOEM-2017-0050-49505

The commenter expresses opposition to oil and gas leasing in the Atlantic and requests BOEM rescind the Atlantic lease. The commenter argues that coastal tourism and fishing already generate more jobs than the estimated number of jobs oil and gas leasing was estimated to bring. The commenter further argues the risk of a spill is too great, and that coastal communities would likely have a difficult time recovering from a spill. The commenter states that North Carolina could be a good candidate for offshore wind energy development and suggests that BOEM instead invest in clean and renewable energy programs.

Texas Conservative Coalition Research, John Colyandro

Document ID: BOEM-2017-0050-19215

The commenter expresses support for the inclusion of all 26 OCS planning areas in the DPP. The commenter argues that there is large energy potential in the oil reserves currently off limits to production. The commenter further argues that expanding domestic energy production would reduce dependence on foreign oil and increase both economic and energy security in the United States

The CLEO Institute, Caroline Lewis

Document ID: BOEM-2017-0050-50876

The commenter expresses opposition to oil and gas drilling and seismic testing in the waters off the coast of Florida, as well as the Arctic and Atlantic OCS. The commenter argues that offshore drilling puts the waters and coastal communities at risk of oil spill, and worsens climate change. The commenter states that clean energy is the fastest-growing and cheapest source of energy.

The Nature Conservancy, Stephanie Bailenson

Document ID: BOEM-2017-0050-49597

The commenter expresses opposition to expanding lease sales and offshore drilling in the Atlantic OCS. The commenter expresses concern for the ecological significance and vulnerability of coastal and marine resources and requests that BOEM provide special consideration for protected species and sensitive habitats. The commenter also expresses concerns about the industry's ability to mitigate the risks of oil spills and the spill response capabilities.

The Wilderness Society, Lois Epstein

Document ID: BOEM-2017-0050-49658

The commenter requests that lease sales in the Arctic Ocean be excluded from the 2019–2024 proposed leasing program. The commenter urges the Department exclude additional lease sales in the Beaufort Seas planning area. The commenter argues that the Arctic Region is at risk for a large spill that the United States does not have the resources to properly clean up. The commenter requests that BOEM engage Arctic residents and tribes during OCS planning and decisionmaking. The commenter recommends that quantification of potential GHG emissions, as well as an analysis of climate change impacts, be integrated into the NEPA analysis conduction for the new program.

Turtle Island Restoration Network, Andrew Ogden**Document ID: BOEM-2017-0050-49647**

The commenter states that a new oil and gas leasing program is unnecessary and flawed. The commenter is concerned about offshore drilling in the Arctic OCS and argues that oil and gas development will exacerbate warming in the Arctic. The commenter also states that the United States is unprepared and unable to clean up a spill in the Arctic waters, and requests that the Chukchi and Beaufort planning areas remain off limits. The commenter also states that the Department of Defense (DOD) and Congressional representatives are opposed to expanded lease sales in the GOM.

Voces Verdes, Adrienna Quintero**Document ID: BOEM-2017-0050-50891**

The commenter expresses opposition to expanded oil and gas drilling in the Atlantic and Arctic OCS. The commenter states that offshore drilling poses risks to oceans, beaches, and marine life, as well as coastal communities that depend on healthy oceans for fishing, recreation, and the revenue from tourism. The commenter argues that clean energy is now the fastest-growing and cheapest source of power in the country.

Wildlife Conservation Society, Angela Noakes**Document ID: BOEM-2017-0050-49637**

The commenter urges BOEM to ensure that the new National OCS Program continues to provide the necessary protections for important coastal and ocean ecosystems and wildlife. The commenter states that offshore drilling and seismic testing poses risks such as noise, increased ship traffic, and spill that threaten marine wildlife, coastal economies, and unique ecosystems in the Atlantic and Arctic OCS. The commenter requested that stakeholders be engaged throughout the planning process.

World Wildlife Fund—U.S. Arctic Program, Margaret Williams**Document ID: BOEM-2017-0050-49657**

The commenter expresses opposition to the inclusion of the Arctic in the 2019–2024 leasing program and urges BOEM maintain the exclusion of the North Aleutian Basin planning area. The commenter argues that the risk of spill in the Arctic is large, and the spill response capabilities are lacking. The commenter also states that fossil fuel demand is declining and offshore drilling would exacerbate climate change in the Arctic region.

A.4 FEDERAL AGENCIES

Department of Commerce, National Oceanic and Atmospheric Administration**Document ID: BOEM 2017-0050-51339**

The Department of Commerce is generally supportive of involvement in the new program, and states that the Department's assets related to ocean resources science and stewardship are located within NOAA, who prepared input for the recent RFI, which was attached to the letter. In the attachment titled "NOAA Input re: NOEM National OCS Program 2019–2024 Request for Information," NOAA states they will provide BOEM with science-based guidance for development of mitigation measures necessary to minimize impacts on marine resources, per statutory mandates related to the Endangered Species Act, Marine Mammal Protection Act, the National Marine Sanctuaries Act, Coastal Zone Management Act, and the Magnuson-Stevens Fishery Conservation and Management Act. NOAA encourages BOEM to collaborate proactively to identify and evaluate potential impacts to living marine resources. NOAA

identifies five recommendations for consideration: shoreside infrastructure, response capabilities, joint vulnerability research, use of buffer zones, and data access. NOAA also identifies tools to support characterizing the OCS: Environmental Setting and Conditions in National Marine Sanctuaries, NOAA Environmental Sensitivity Index, Environmental Response Management Application, and Essential Fish Habitat Mapper Tool (links to documents provided in attachment).

Department of Defense**Document ID: BOEM-2017-0050-49738**

The DOD fully supports the development of energy resources in a manner compatible with military operations, readiness, and the safety of military personnel and the public. The commenter states that DOD supports further analysis of the established uses of the OCS prior to proposing a lease sale in the Mid- and South Atlantic Program Area and will continue to work collaboratively with USDOJ, BOEM, and other stakeholders. The commenter states that DOD is prepared to provide additional information and continue its close cooperation on offshore energy development.

Department of Homeland Security, U.S. Coast Guard**Document ID: BOEM- 2017-0050-49830**

The U.S. Coast Guard is generally supportive of its collaborative partnership with BOEM for all energy development initiatives in the new program, and recognized their recently completed Atlantic Coast Port Access Route Study that will assist with better coordinated activities requiring extraordinary consideration in maritime regions to strengthen the Nation's infrastructure, energy independence, and economy.

Department of Justice**Document ID: BOEM- 2017-0050-49739**

The Department of Justice has no additional comments to provide but expresses support in collaboration and development of the new National Program.

Department of State**Document ID: BOEM- 2017-0050-49829**

The Department of State has no additional comments to provide but is generally supportive of involvement and collaboration on the new Program, as necessary.

Department of Transportation**Document ID: BOEM- 2017-0050-49831**

The Department of Transportation generally supports safe and reliable methods of transportation associated with oil and gas production in all waters and air space of the program planning areas, and acknowledges overlapping interest that oil and gas producers, marine and pipeline operators, and aviators transport products safely on the OCS, as well as the adequacy and availability of transportation infrastructure. The commenter references the Deepwater Port Act of 1974 where the Department of Transportation is the lead licensing authority for development of offshore deepwater ports.

Marine Mammal Commission**Document ID: BOEM-2017-0050-49639**

The Marine Mammal Commission encourages BOEM to undertake a comprehensive analysis of the Nation's energy needs and the relative costs and benefits of meeting those needs from a variety of

renewable and non-renewable energy sources. The Commission supports maintaining the current 2017–2022 schedule of lease sales, with the exception of the proposed lease sale in Cook Inlet. The Commission encourages BOEM to re-evaluate its methodology for estimating and using non-market values for protected species. The Commission recommends several ways in which BOEM could improve its analyses, including the incorporation of new information regarding the effects of oil spills on marine mammals. The Commission cites concern for the beluga whale population in Cook Inlet, recommends that BOEM maintain the December 2016 Presidential withdrawal areas in the Chukchi Sea and Beaufort Sea, recommends that BOEM support the collection of additional data on subsistence use patterns, recommends continued restriction of leasing in the Eastern GOM Planning Area, and recommends exclusion of all Pacific planning areas.

National Aeronautics and Space Administration

Document ID: BOEM-2017-0050-19625

The National Aeronautics and Space Administration (NASA) expresses concern regarding oil and gas leasing near the facility's launch and flight operations, and states that their primary concern with future oil and gas development that could result in the need to protect additional persons and property when conducting launch operations in the Atlantic Ocean, as well as suborbital launch operations in the Poker Flat Research Range in Alaska. The commenter's areas of greatest concern on the OCS are the Mid- and South Atlantic and Beaufort Sea planning areas. The commenter references its own mission impact assessment as a cooperating agency in the 2017–2022 OCS Oil and Gas Leasing Program Programmatic Environmental Impact Study (EIS), and will provide input to BOEM. The commenter intends on active participation in the new Program and requests designation as a cooperating agency when Programmatic EIS preparation begins, noting that efforts have begun to update their previously submitted 2017–2022 Program mission impact assessment.

National Marine Fisheries Service, Alaska Region, Habitat Conservation Division

Document ID: BOEM- 2017-0050-49822

The Habitat Conservation Division states that Alaska does not currently have a CZM Program to manage its Federal BOEM planning areas in the Alaska OCS, and supports the need for collaboration on future studies and risk assessments. The commenter recognizes that large data gaps exist with regard to marine fisheries and habitat in Alaska and are working towards filling these gaps by identifying studies needed to better inform management decisions. The commenter remains consistent in affirming that the moratoria for the North Aleutian Basin remain in place. The commenter suggests conducting assessments in the proposed planning areas using an Ecosystem Based Management approach to incorporate “scientific advice on fisheries, development, energy, ecotourism, conservation, sanctuaries, and other relevant factors.” The commenter notes that Arctic conditions will change, which could create an increase in vessel traffic in an area where emergency response capabilities are limited, which BOEM should take into consideration. The commenter also states the possible increased anthropogenic footprint in the area in the event of oil and gas development, which should yield analysis of effects on marine and estuarine habitat areas. The commenter specifically notes that differences between the Cook Inlet planning area and the Chukchi and Beaufort Sea planning areas, which could be assessed using the Ecosystem Based Management approach to understand interactions within and between ecosystems. The commenter references their updated *Impacts to Essential Fish Habitat from Non-fishing Activities* report that provides general recommended conservation measures for oil and gas exploration and development options to avoid and minimize adverse impacts.

U.S. Environmental Protection Agency
Document ID: BOEM- 2017-0050-49832

The U.S. Environmental Protection Agency has no comments to provide, but is generally supportive of involvement in the new program, and offers assistance with facilitating and coordinating input on the new program as well as the Draft Programmatic EIS.

A.5 ENERGY EXPLORATION & PRODUCTION INDUSTRY AND ASSOCIATIONS

API, NOIA, IPAA, USOGA, IADC, IAGC, AOGA
Document ID: BOEM-2017-0050-49552

The American Petroleum Institute (API), National Ocean Industries Association (NOIA), Independent Petroleum Association of America (IPAA), U.S. Oil and Gas Association (USOGA), International Association of Drilling Contractors (IADC), International Association of Geophysical Contractors (IAGC), Alaska Oil and Gas Association (AOGA), and Petroleum Equipment & Services Association (PESA) state their support for inclusion of all OCS areas with the potential to generate jobs and new revenue. They specifically state their full support of keeping existing areas of the GOM and Alaska available for leasing and urge BOEM to make new areas in the Atlantic, Eastern GOM, Beaufort and Chukchi Seas of Alaska, and the Pacific available for leasing as part of the program. The commenters encourage BOEM to include all 26 planning areas in the DPP for further evaluation to ensure that an area is not eliminated from consideration prematurely.

Anadarko Petroleum Corporation
Document ID: BOEM-2017-0050-49701

Anadarko Petroleum Corporation urges BOEM to keep existing areas in the GOM available for leasing and additionally make new areas available, particularly the Mid- and South Atlantic and the Eastern GOM. The commenter asks BOEM to consider 10-year initial lease periods for all deep water leases, with the potential for additional time for development in frontier areas. They also ask BOEM to consider lowering royalty rates for all water depths to match the recent change in waters less than 200 meters deep.

Arctic Slope Regional Corporation (ASRC) Exploration, LLC (AEX)
Document ID: BOEM-2017-0050-49623

AEX applauds BOEM's efforts to reevaluate their 2017–2022 Leasing Program and propose the 2019–2024 Leasing Program include the Arctic Planning Areas. AEX strongly encouraged the inclusion of the Arctic Planning Areas in the 2017–2022 Leasing Program and was disappointed by BOEM's decision to exclude the Arctic in the 2017–2022 Program. The commenter encourages BOEM, in analyzing Arctic Leases, to consider potential impacts on subsistence as well as the success of existing mitigation measures like the Conflict Avoidance Agreement. The commenter notes that including the lease sales in the Arctic in the 2019–2024 Program can offset the current production and economic decline and promote business development and investments across the North Slope, including needed infrastructure.

BP Exploration & Production Inc.
Document ID: BOEM-2017-0050-49595

BP supports the Obama Administration's "all-of-the-above" energy plan, which includes renewables, while recognizing the key role of oil and gas resources from the OCS in meeting the Nation's energy needs. The commenter believes BOEM should not only expand access for exploration and production but

should also provide lease and royalty flexibility in consideration of the economic and technological challenges faced in the OCS. The commenter supports including an Atlantic OCS lease sale in 2020, which will encourage more industry participation to future seismic acquisition programs. The commenter also supports holding region-wide lease sales in the GOM, but suggests adjusting the cadence to one lease sale per year, preferably in May.

Chevron U.S.A., Inc.**Document ID: BOEM-2017-0050-49497**

Chevron U.S.A., Inc. states that the Federal Government should move expeditiously to open unavailable submerged lands with believed resource potential for exploration and development. They rank planning areas in order of priority, starting with the Central, Western, and Eastern GOM planning areas being ranked first, second, and third, respectively. The commenter notes that while there is limited current information, the Atlantic is of some interest, with the Mid-, North, and South Atlantic ranked fourth, fifth, and sixth, respectively. The Southern California Planning area was ranked seventh.

Cobalt International Energy**Document ID: BOEM-2017-0050-49592**

Cobalt fully supports keeping all existing exploration and production areas in the GOM and Alaska in the DPP and strongly recommends that at this point in the development of 2019–2024 Five Year Program, all 26 planning areas of the OCS be considered for inclusion in the DPP, including areas currently under a temporary moratorium, like the Eastern GOM. Additionally, the commenter notes BOEM's change in royalty rates for shallow water and requests BOEM consider a similar reduction for all new leases in all water depths. The commenter also recommends BOEM discontinue its "7-years-plus-three-years" lease term for water depths from 800 to 1,600 meters, believing that it is prudent, due to new rules and regulations, to provide a full 10 year lease term for all waters greater than 800 meters.

Diamond Offshore**Document ID: BOEM-2017-0050-49736**

Diamond Offshore states that it is important that all 26 OCS planning areas are fully explored to discover the oil and gas potential. The commenter specifically mentions the potential of the Atlantic OCS, Eastern GOM, and the Beaufort and Chukchi Seas offshore Alaska.

Enven Energy Ventures**Document ID: BOEM-2017-0050-48038**

Enven Energy Ventures is supportive of the inclusion of all 26 planning areas in the development of the DPP. The commenter strongly supports the inclusion of the Eastern GOM, along with the continued inclusion of the Central and Western GOM. They focus on the GOM due to the ability to realize quick and impactful results, with the Eastern GOM residing in close proximity to existing infrastructure and the existence of available seismic data would allow for quick resource development with minimal footprint.

Shell Oil Company**Document ID: BOEM-2017-0050-49563**

Shell strongly recommends the Secretary make new OCS areas available to assess the extent of United States energy resources as expeditiously as practicable. The commenter cites the 2017–2022 Program analysis that showed the national benefits of offshore oil and gas production outweigh potential risks and was disappointed that the previous Administration denied access to most planning areas outside of the

GOM and therefore urges this administration to quickly replace the current National OCS Program and grant access to new areas.

Statoil USA E & P, Inc.

Document ID: BOEM-2017-0050- 49643

Statoil believes that at this point in the Program development process, all OCS areas with the potential to generate jobs and new revenue should be considered for inclusion in the DPP. The commenter fully supports keeping existing areas in the GOM and Alaska available for leasing in the 2019–2024 Program and also urges BOEM to make new areas in the Atlantic, Eastern GOM, and the Pacific available for leasing as part of the Program. The commenter also recommends that the Program only include one GOM areawide sale per year, as opposed to the current Program, which offers two GOM areawide sales.

A.6 NON-ENERGY EXPLORATION & PRODUCTION INDUSTRY AND ASSOCIATIONS

Airlines for America, John Hiemlich

Document ID: BOEM-2017-0050-46462

The commenter expresses support for the development of a new leasing program and urged the inclusion of all 26 OCS planning areas in the Draft Proposed Program. The commenter states that billions of barrels of undiscovered resources exist in Federal waters that could help meet the Nation’s oil and natural gas needs for more than a decade as well as contribute to job creation, increased government revenue, and Gross Domestic Product.

Alaska Chamber, Curtis Thayer

Document ID: BOEM-2017-0050-08652

The commenter expresses support for the development of a new leasing program and specifically requests that the Beaufort and Chukchi Seas in the Arctic OCS be included. The commenter argues that these areas hold an overabundance of oil and gas resource that would provide jobs for the region and aid the United States in solidifying energy security. The commenter further argues that the development of Alaska’s OCS would maintain the TAPS as a critical link in energy distribution. Finally, the commenter states that there is strong support among Alaska residents for offshore exploration and production of oil and gas.

Alaska Chamber of Commerce, et al., Christopher Guith

Document ID: BOEM-2017-0050-49656

The commenter expresses support for expansion of offshore leases in the eastern Gulf of Mexico, Alaska, and the Atlantic for energy development. The commenter argues offshore energy development is critical for long-term energy security. The commenter explains continued and expanded offshore oil and gas exploration will help the United States remain competitive in the energy market.

Alaska District Council of Laborers, A.J. Merrick

Document ID: BOEM-2017-0050-49580

The commenter expresses support for the inclusion of the Beaufort and Chukchi Seas as well as other expanded leasing opportunities in the DPP. The commenter argues development of the OCS in Alaska will help lead to energy security and independence, as well as job creation and state revenue. The commenter explains that there are large quantities of oil in the Alaskan OCS that are currently restricted

from development. The commenter further states development of the Alaskan OCS will enhance the long-term viability of the TAPS.

Alaska Longline Fisherman’s Association, et al., Karen Gillis
Document ID: BOEM-2017-0050-49617

The commenter expresses support for the existing withdrawal of the Bristol Bay and the North Aleutian Basin, and urges these areas remain excluded from the 2019–2024 Program. The commenter explains that the commercial fishing industry in Alaska accounts for nearly half of domestic seafood production and employ tens of thousands of Alaskans. The commenter argues that the fishing industry, as well as many other valuable Alaskan industries, depends on clean water.

Alaska Longline Fisherman’s Association, et al., Karen Gillis
Document ID: BOEM-2017-0050-49617

The commenter expresses support for the existing withdrawal of the Bristol Bay and the North Aleutian Basin, and urges these areas remain excluded from the 2019–2024 Program. The commenter explains that the commercial fishing industry in Alaska accounts for nearly half of domestic seafood production and employ tens of thousands of Alaskans. The commenter argues that the fishing industry, as well as many other valuable Alaskan industries, depends on clean water.

Alaska Trucking Association, Aves Thompson
Document ID: BOEM-2017-0050-09835

The commenter expresses support for developing a new leasing program and urged the inclusion of 26 OCS planning areas in the development of the DPP. The commenter expresses that Alaskan offshore development would create business and job opportunities for the transportation industry and trucking companies in particular. The commenter argues that the immense resources available in the Alaskan OCS would generate jobs and significant government revenue. The commenter further argues that the development of Alaska’s OCS would maintain the TAPS and support American energy independence.

Alyeska Pipeline Service Co., Tom Barrett
Document ID: BOEM-2017-0050-47651

The commenter expresses support for expanded access to offshore oil and gas leasing, especially in the Beaufort and Chukchi Seas in Alaska. The commenter argues that increased oil and gas development in the Alaskan Arctic will help increase the longevity of the TAPS. The commenter explains that TAPS has been operating below capacity and this inactivity is creating issues for maintaining the structure.

American Chemistry Council, Owen Kean
Document ID: BOEM-2017-0050-08706

The commenter expresses support for developing a new leasing program and urged the inclusion of 26 OCS planning areas in the development of the DPP. The commenter argues that the exclusion of any planning areas at this initial phase would be premature and threaten the Nation’s energy security. The commenter describes the various uses of natural gas in manufacturing and chemical industries and the economic impact of allowing oil and gas development in offshore areas.

American Forest & Paper Association, Jerry Schwartz**Document ID: BOEM-2017-0050-49653**

The commenter expresses support for developing a new leasing program and urged the inclusion of all 26 OCS planning areas in the development of the DPP. The commenter argues that excluding regions from leasing consideration without critical environmental analysis would be premature and harm efforts to ensure American energy security. The commenter states that the United States is currently only utilizing 20 percent of its oil reserves, and development of these areas could result in half a million jobs and billions of dollars in government revenue.

American Highway Users Alliance, Gregory Cohen**Document ID: BOEM-2017-0050-10121**

The commenter expresses support for the development of a new leasing program and urged the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

American Iron and Steel Institute (AISI), Thomas J. Gibson**Document ID: BOEM-2017-0050-49607**

The commenter expresses support for the inclusion of all 26 planning areas, especially the Atlantic, Alaskan and Eastern Gulf of Mexico areas, in the development of the Draft Proposed Program. The commenter explains the Atlantic planning area has the potential to produce billions of barrels of oil and trillions of cubic feet of natural gas, providing significant energy and economic benefits. The commenter argues the Gulf of Mexico has served as an example of safe energy development and supports maintaining all lease sales in the Gulf. The commenter also argues that restrictions on development in the Beaufort and Chukchi seas should be lifted so the large quantity of untapped oil and gas can be utilized. The commenter argues increased domestic energy development will increase energy security and stimulate the economy.

American Society of Landscape Architects, Nancy Somerville**Document ID: BOEM-2017-0050-49584**

The commenter opposes expanding oil and gas exploration beyond the scope of the current leasing program. The commenter argues offshore oil and gas exploration is already contributing to GHG emissions and should be reduced to minimize our impact on climate change. The commenter further argues that oil and gas development would impact recreation and tourism economies that rely on healthy coasts.

Associated General Contractors of Alaska, John MacKinnon**Document ID: BOEM-2017-0050-47888**

The commenter expresses support for including all 26 OCS planning areas in the development of the DPP. In addition to boosting U.S. economic growth, the commenter stated offshore development in Alaska would extend the longevity of the TAPS, which further ensure the Nation's energy security.

Associated Industries of Florida, Brewster Bevis**Document ID: BOEM-2017-0050-49520**

The commenter expresses support for the inclusion of the Atlantic OCS in the 2019–2024 OCS Leasing Program. The commenter argues that the economic impact of offshore oil and gas development would benefit Florida residents and businesses. The commenter states support for the expansion of revenue sharing to states beyond the GOM.

Bald Head Association, Judy Porter**Document ID: BOEM-2017-0050-49590**

The commenter requests BOEM retain the current 2017–2022 OSC leasing program, including maintaining the exclusion of the Atlantic OCS. The commenter argues offshore oil and gas exploration would negatively impact their community in coastal North Carolina.

Bayou Industrial Group, Denny Borne**Document ID: BOEM-2017-0050-47958**

The commenter expresses support for developing a new leasing program and urged the inclusion of 26 OCS planning areas in the development of the DPP. The commenter cites existing sites in the GOM as examples of offshore drilling operations that are safe and productive as well as environmentally responsible. The commenter argues that Federal waters hold immense recourses that could greatly benefit the Nation's economy if access would be granted.

C + L Creative, Laura Butcher**Document ID: BOEM-2017-0050-09829**

The commenter expresses support for the development of a new leasing program and urged the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

Cape May County Chamber of Commerce, Vicki Clark**Document ID: BOEM-2017-0050-49967**

The commenter expresses opposition to the development of a new leasing program, the opening of the Atlantic OCS to offshore development, and related activities including seismic testing. The commenter argues that vulnerable and unique habitats that exist along the coast would be threatened if offshore oil and gas development were allowed in the Atlantic. The commenter states further that development of resources along the coast would impose unwanted infrastructure development on the area and would negatively impact the commercial and residential fishing industries.

Carteret County Chamber of Commerce, Tom Kies**Document ID: BOEM-2017-0050-49967**

The commenter expresses opposition to seismic testing and offshore oil drilling in the Atlantic OCS.

Caterpillar Inc., Wayne Zemke**Document ID: BOEM-2017-0050-10113**

The commenter expresses support for the development of a new leasing program and urged the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides

significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

Chemical Industry Council of Illinois, Mark Biel

Document ID: BOEM-2017-0050-08631

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues offshore oil and gas resource development in the Atlantic, Alaskan Arctic, and GOM could result in hundreds of thousands of jobs and billions of dollars in government revenue. The commenter further argues the country's economic and energy security is dependent on expanding oil and gas resource use.

Chickasaw Distributors, Inc., Brad Baker

Document ID: BOEM-2017-0050-50907

The commenter urges a new National Program be developed with maximum access to all offshore resources. The commenter argues that allowing access to areas currently off-limits to oil and gas production could result in hundreds of thousands of jobs and billions of dollars in government revenue. The commenter further argues offshore development is vital to ensuring American energy dominance and decreasing or eliminating reliance on foreign oil.

Clay County Chamber of Commerce, Doug Conkey

Document ID: BOEM-2017-0050-49516

The commenter expresses support for inclusion of all the Atlantic OCS planning areas in the development of the 2019–2024 DPP. The commenter argues prematurely excluding the planning areas in the Atlantic would deny businesses and citizens of the coast the opportunity to understand the benefits and opportunity drilling in this region would allow. The commenter further argues that in order for the United States to move towards energy independence and energy security, it is necessary to explore all of the energy resources.

Committee of 100 for Economic Development, Inc., Michael Olivier

Document ID: BOEM-2017-0050-45770

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter states that excluding regions under consideration at the beginning of the process without critical environmental analysis would be premature and hurt American energy security. The commenter argues oil and gas production in the Gulf of Mexico shows the economic and energy benefits development can bring to a region, and that expanded access to the Gulf of Mexico will only help the economies of the Gulf Region.

COOL Environmental Consulting, Patrick Cotter

Document ID: BOEM-2017-0050-49636

The commenter expresses opposition to the 2019–2024 OCS Oil and Gas Leasing Program. The commenter argues the new OCS program jeopardizes marine sanctuaries and other sensitive marine environments. The commenter argues this activity could also violate Federal or state environmental laws and regulations.

Covington County Chamber of Commerce, Marie Shoemake**Document ID: BOEM-2017-0050-08485**

The commenter expresses support for the development of a new leasing program and urged the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

Dare County Tourism Board and Outer Banks Visitors Bureau, Susie Walters and Lee Nettles**Document ID: BOEM-2017-0050-48610**

The commenter expresses opposition to offshore oil and gas exploration and seismic testing off the coast of North Carolina. The commenter argues that offshore resource development would negatively impact the tourism industry that is critical to the economy of the region. The commenter states that tourism and the oil and gas industries cannot coexist.

Elite Parking, Dane Grey**Document ID: BOEM-2017-0050-49509**

The commenter expresses support for the inclusion of all planning areas in the initial planning phase, notably the Arctic OCS. The commenter argues oil and gas development in the Gulf of Mexico is critical to the economy of Florida, creating and sustain jobs and generating state revenue.

Energy Industries of Ohio, Robert M. Purgert**Document ID: BOEM-2017-0050-49581**

The commenter states support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter states that immense reserves of oil and gas in these areas would help businesses and increase the quality of life for Americans. The commenter argues that developing resources in U.S. waters that are subject to strict safety and regulatory requirements would help protect the environment, instead of relying on imports from countries with less strict standards.

EnSCO, Brady**Document ID: BOEM-2017-0050-49744**

The commenter expresses support for expanding offshore oil and gas development and exploring all 26 OCS regions using seismic testing to determine the full OCS potential of the United States. The commenter argues that oil and gas development is a vital part of the Texas and national economies, employing tens of thousands of workers, and generating billions of dollars in state and Federal revenue. The commenter argues it is necessary to at least explore the potential of regions such as the Alaskan Arctic to understand the full energy potential of the United States.

Garden Club of Virginia, Wendy Vaughn**Document ID: BOEM-2017-0050-49546**

The commenter expresses opposition to offshore oil and gas exploration and drilling off the coast of Virginia and all planning areas in the Atlantic OCS, as well as seismic airgun blasting. The commenter explains these leasing areas were removed from the 2017–2022 Program after consideration of public comment and relevant economic and environmental factors, and requests the current program not be modified. The commenter argues that ocean-based industries are too valuable to risk for the sake of oil and gas drilling.

Gate Petroleum Company, Buzz Hoover
Document ID: BOEM-2017-0050-49517

The commenter expresses support for the development of a new OCS leasing program and urges the inclusion of all Atlantic planning areas in the DPP. The commenter argues that development of the Atlantic could result in hundreds of thousands of jobs and billions of dollars in state and Federal revenue. The commenter states that seismic estimates of the oil supply in the Atlantic OCS are more than 30 years old and should be updated. The commenter argues that the economic and energy security of the United States depends on utilizing all available energy sources.

Georgia Chamber of Commerce, Clark
Document ID: BOEM-2017-0050-49751

The commenter expresses support for the development of a new leasing program and urges the inclusion of all Atlantic OCS planning areas in the development of the DPP. The commenter argues development of the Atlantic OCS could result in hundreds of thousands of jobs and billions of dollars in government revenue. The commenter explains long-term economic and energy security in the United States requires access to the Nation's abundant natural resources.

Georgia Association of Manufacturers, G.L. Bowen
Document ID: BOEM-2017-0050-49534

The commenter expresses support for the development of a new leasing program, and more specifically for the inclusion of the Atlantic OCS. The commenter cites the creation of jobs, additional economic activity, and generation of government revenue as reasons to open the Atlantic OCS to leasing. The commenter argues that the limitation of planning areas in the early stages of draft program development is not appropriate. The commenter further argues that oil and gas development in OCS areas will help ensure American energy security and reduce the trade deficit.

Greater Iberia Chamber of Commerce, Janet Faulk Gonzales
Document ID: BOEM-2017-0050-19464

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter states that excluding regions under consideration at the beginning of the process without critical environmental analysis would be premature and hurt American energy security. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created by offshore resource development in the GOM.

Greater New Orleans Inc., Michael Hecht
Document ID: BOEM-2017-0050-49603

The commenter expresses support for the development of a new leasing program and urges inclusion of all 26 planning areas in the DPP. The commenter states that excluding regions under consideration at the beginning of the process without critical environmental analysis would be premature and hurt American energy security. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created by offshore resource development in the GOM.

Greater Port Arthur Chamber of Commerce, William McCoy
Document ID: BOEM-2017-0050-08345

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also stated that economic gains from oil and gas development would trickle through the economy of the entire country.

Greater Tomball Area Chamber of Commerce, Bruce Hillegeist
Document ID: BOEM-2017-0050-49508

The commenter states support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore oil and gas development is intimately tied to the region and pursuing development further would greatly benefit the community's economy.

Hooper Family Seafood, Penny Hooper
Document ID: BOEM-2017-0050-29775

The commenter expresses opposition to offshore oil and gas drilling in the Atlantic Ocean. The commenter argues that offshore development would harm the environment and economy of the North Carolina coast, further arguing that the jobs created by oil and gas drilling are often filled by imported labor. The commenter also states that there is an inherent responsibility to protect and preserve the environment for future generations.

Houma-Terrebonne Chamber of Commerce, Suzanne Nolfo Carlos
Document ID: BOEM-2017-0050-10044

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

Illinois Chamber of Commerce, Katie Stonewater
Document ID: BOEM-2017-0050-49557

The commenter states support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter states that immense reserves of oil and gas in these areas would help businesses and increase the quality of life for Americans. The commenter argues that developing resources in U.S. waters that are subject to strict safety and regulatory requirements would help protect the environment, instead of relying on imports from countries with less strict standards.

Industrial Energy Consumers of America, Paul Cicio
Document ID: BOEM-2017-0050-49572

The commenter expresses support for expanding oil and gas development in the GOM, Alaska, and the Atlantic Coast. The commenter supports an "all-of-the-above" approach to energy policy and argues utilizing the OCS of the United States could contribute to economic and energy security.

Jacksonville Axemen Rugby League, Drew Slover**Document ID: BOEM-2017-0050-49510**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter states that excluding regions under consideration at the beginning of the process without critical environmental analysis would be premature and hurt American energy security. The commenter argues that offshore resource development provides significant economic benefits for the State of Florida, leads to lower travel costs for tourists, and increased spending power for residents.

JAX Chamber, Christopher Quinn**Document ID: BOEM-2017-0050-24553**

The commenter expresses support for the inclusion of the South Atlantic planning areas that were previously removed, in the development of a new leasing program. The commenter cites the economic impacts of opening the Atlantic to offshore drilling, including the creation of jobs and increased economic activity. The commenter requests that BOEM investigate the inclusion of the Atlantic rigorously and not dismiss the viability of the region outright.

Lime Instruments, Rob Stewart**Document ID: BOEM-2017-0050-28738**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP, specifically leases off the coast of Texas. The commenter states that excluding regions under consideration at the beginning of the process without critical environmental analysis would be premature and hurt American energy security. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created by offshore resource development in the GOM.

Louisiana Mid-Continent Oil Gas Association and the Louisiana Association of Business and Industry, Lori LeBlanc**Document ID: BOEM-2017-0050-49561**

The commenter expresses support for the development of a new leasing program that includes exploration of leasing in the Mid- and South Atlantic, Eastern GOM, and the Pacific. The commenter states the expansion of territories would help meet energy demands and cites the economic benefits experienced by Louisiana and GOM area, including protection of natural resources, tourism, and coastal communities. The commenter recommends BOEM evaluate opportunities to reduce royalty rates for current and future leases in the GOM.

Louisiana Oil Marketers Convenience Store Association, Natalie Isaacks**Document ID: BOEM-2017-0050-18515**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter requests BOEM increase oil and gas leasing within the GOM for the benefit of the coastal states. The commenter also stated that economic gains from oil and gas development would trickle through the economy of the entire country.

Lynden Inc., Jeanine St John**Document ID: BOEM-2017-0050-08716**

The commenter expresses support for continued lease sales in the Alaska OCS and urges the inclusion of all 26 planning areas in the development of the DPP. The commenter states that lease sales within the Arctic could support the TAPS and would positively impact the economy of the region. The commenter argues that the subsistence and environmental impacts of offshore development could be mitigated through responsible drilling practices and that the untapped resources of the Alaskan OCS would support an energy-independent America. The commenter also states that the lease sales by BOEM represent stability and predictability that allow industry to engage in long-term strategies to pursue offshore resources.

Manufacture Alabama, George Clark**Document ID: BOEM-2017-0050-08615**

The commenter expresses support for the development of a new leasing program and urges inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

Marine & Industrial, Steve Barker**Document ID: BOEM-2017-0050-49641**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP, specifically leases off the coast of Alabama. The commenter states that excluding regions under consideration at the beginning of the process without critical environmental analysis would be premature and hurt American energy security. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created by offshore resource development in the GOM.

Mexico Beach Charters, BBT, LLC, Recreational Fishing Alliance-Forgotten Coast Chapter, Captain Tom Adams**Document ID: BOEM-2017-0050-08616**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

Mississippi Farm Bureau Federation, A. Whittington**Document ID: BOEM-2017-0050-49512**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

Mississippi Manufacturers Association, Jay Moon**Document ID: BOEM-2017-0050-46794**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter states that excluding regions under consideration at the beginning of the process without critical environmental analysis would be premature and hurt American energy security. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created by offshore resource development in the GOM.

Mobile Area Chamber of Commerce, William Sisson**Document ID: BOEM-2017-0050-08434**

The commenter expresses support for expanding oil and gas exploration in the GOM, Alaska, and the Atlantic. The commenter argues if more areas are opened to offshore exploration and development, the resulting economic activity and energy production could do great things for our Gulf coast region and the Nation. The commenter argues offshore oil and gas exploration is safer than ever, and increased exploration will help strengthen national and energy security.

National Association of Charterboat Operators, Capt. Bob Zales, II**Document ID: BOEM-2017-0050-10040**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also stated that economic gains from oil and gas development would trickle through the economy of the entire country.

National Association of Manufacturers, Ross Eisenberg**Document ID: BOEM-2017-0050-49567**

The commenter expresses support for expanded lease access to the OCS, including the Eastern GOM, Pacific, Atlantic, and Alaska. The commenter argues to move the country forward in energy security and independence, all options need to be explored and expanded, including renewable energy and oil and gas exploration. The commenter further argues allowing seismic surveys in the Atlantic, Eastern GOM, and Pacific would allow policy makers, manufacturers, and other stakeholders to understand the potential resources these areas hold. The commenter explains that developing additional oil and gas resources will grow the economy and help create jobs.

NACS, Paige Anderson**Document ID: BOEM-2017-0050-29603**

The commenter expresses support for developing a new leasing program and urges the inclusion of all 26 OCS planning areas in the development of the DPP. The commenter supports policies that ensure a stable domestic supply of energy, such as the DPP. The commenter notes that many of the energy resources are in inaccessible areas in the Atlantic, Alaskan Arctic, and GOM.

New Orleans Chamber of Commerce, G. Ben Johnson**Document ID: BOEM-2017-0050-46948**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter states that excluding regions under consideration at

the beginning of the process without critical environmental analysis would be premature and hurt American energy security. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created by offshore resource development in the GOM.

North Star Terminal & Stevedore Co. LLC, Scott Vierra

Document ID: BOEM-2017-0050-19527

The commenter expresses support for the continued leasing of the Arctic OCS. The commenter argues that current oil and gas drilling in the region has been done in an environmentally sound manner. The commenter states that excluding the Alaskan OCS could jeopardize long-term energy and economic security of the Nation.

North Star Terminal & Stevedore Co. LLC, Steven Post

Document ID: BOEM-2017-0050-19476

The commenter expresses support for the continued leasing of the Arctic OCS. The commenter argues that current oil and gas drilling in the region has been done in an environmentally sound manner. The commenter states that excluding the Alaskan OCS could jeopardize long-term energy and economic security of the Nation.

Ohio AgriBusiness Association, Christopher Henney

Document ID: BOEM-2017-0050-08715

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore oil and gas resource development in the Atlantic, Alaskan Arctic, and the GOM could result in hundreds of thousands of jobs and billions of dollars in government revenue. The commenter further argues that the country's economic and energy security is dependent on expanding oil and gas resource use.

Ohio Cast Metals Association, Kevin Schmidt

Document ID: BOEM-2017-0050-08717

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore oil and gas resource development in the Atlantic, Alaskan Arctic, and GOM could result in hundreds of thousands of jobs and billions of dollars in government revenue. The commenter further argues that the country's economic and energy security is dependent on expanding oil and gas resource use.

One Acadiana, Andre Breaux

Document ID: BOEM-2017-0050-08514

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

Pacific Drilling Services Inc.**Document ID: BOEM-2017-0050-49594**

The commenter expresses its support of the proposed development of a new National OCS Oil and Gas Leasing Program for 2019–2024. It is important that all 26 OCS regions are fully explored to delineate their oil and gas potential. The Atlantic OCS is estimated to contain 4.72 billion barrels of oil and 37.5 trillion cubic feet of natural gas, while the Eastern Gulf of Mexico holds an estimated 5.07 billion barrels of oil and 16.08 trillion cubic feet of natural gas. These amounts represent more than 20 times the 2012 Federal offshore oil production and more than 94 times the 2012 Federal offshore natural gas production. In the Arctic, it is vital that the United States maintains and accelerates opportunities to develop offshore oil and gas in the resource rich Beaufort and Chukchi seas. The region holds an estimated 23.6 billion barrels of oil and 104 trillion cubic feet of natural gas. It is strategically important that these estimates be refined.

Panama City Boatmen Association, Captain Bob Zales, II**Document ID: BOEM-2017-0050-10041**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

Partnership for Affordable Clean Energy, Laura Schepis**Document ID: BOEM-2017-0050-08863**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore oil and gas resource development in the Atlantic, Alaskan Arctic, and GOM could result in hundreds of thousands of jobs and billions of dollars in government revenue. The commenter further argued the country's economic and energy security is dependent on expanding oil and gas resource use.

Peassal Operating Company, Peassal**Document ID: BOEM-2017-0050-49797**

The commenter expresses opposition to offshore drilling in the Atlantic coast. The commenter argues fishing and tourism industries are vital to the economy of North Carolina and rely on healthy coasts. The commenter further argues that little net benefit would come from this activity.

Petroleum Marketers Association of America, Rob Underwood**Document ID: BOEM-2017-0050-08885**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore oil and gas resource development in the Atlantic, Alaskan Arctic, and GOM could result in hundreds of thousands of jobs and billions of dollars in government revenue. The commenter further argues that the country's economic and energy security is dependent on expanding oil and gas resource use.

Pink Petro, Katie Mehnert**Document ID: BOEM-2017-0050-10122**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

Ports Association of Louisiana, David Allain**Document ID: BOEM-2017-0050-30022**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that the exclusion of any planning areas at this initial phase, before critical environmental analysis, would be premature and threaten the Nation's energy security. The commenter further argues that continued and expanded leasing within the GOM would provide jobs and increase state revenue.

Public Lands Council, Dave Eliason**Document ID: BOEM-2017-0050-49649**

The commenter expresses support for the development a new leasing program and urges the inclusion of all 26 OCS planning areas in the development of the DPP. The commenter argues that excluding regions from leasing consideration at the outset and without critical environmental analysis would be premature and harm efforts to ensure American energy security.

Resource Development Council, Carl Portman**Document ID: BOEM-2017-0050-48544**

The commenter expresses support for the development of a new leasing program and urges BOEM to expand access to the Beaufort and Chukchi Seas and the greater Arctic OCS that were restricted by the 2017–2022 Program. The commenter also requests that BOEM consider the expansion of leasing in the GOM and Atlantic OCS. The commenter argues that these areas hold immense resources that would greatly benefit the American economy and stabilize energy production. The commenter further argues that oil and gas production in the Arctic would support the TAPS and allow the pipeline to remain viable in the long-term. The commenter states that impacts on subsistence living and the environment could be mitigated through the use of new technology.

Rig-Chem, LLC, Lori Davis**Document ID: BOEM-2017-0050-48950**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

Rowan Companies, Michael Lawson**Document ID: BOEM-2017-0050-08875**

The commenter expresses support for the development of a new National OCS oil and gas leasing program for 2019–2024. A robust offshore energy program is important to businesses offering offshore

contract drilling services and support hundreds of thousands of jobs. Opening offshore production areas would help businesses as well as support U.S. goals of energy dominance.

Saltchuk, Harry McDonald

Document ID: BOEM-2017-0050-49600

The commenter expresses support for the inclusion of Arctic Leases in the 2019–2024 Program. The commenter states many industries in Alaska are dependent on oil and gas development, including shipping and transportation industries. The commenter argues new OCS leases will provide economic opportunity for decades to come. The commenter states the people of Alaska are interested in sustainable development of these regions as well.

Sealark Investments, Inc., John Schwarz, Jr.

Document ID: BOEM-2017-0050-18892

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

SolstenXP, Inc., Jesse Mohrbacher

Document ID: BOEM-2017-0050-49543

The commenter states that the State of Alaska is dependent on continued access to oil and gas resources including state and local governments, native tribes, and public health and safety. The Beaufort and Chukchi Seas have extensive oil and gas resources, and the North Slope provides existing pipeline infrastructure, including the TAPS. The commenter suggests BOEM consider the past record of safe OCS well development and government oversight when assessing environmental safety and sensitivity in Alaskan Arctic waters, the state and Federal economic benefits associated with Arctic OCS oil and gas development, and the importance of OCS oil development to secure America's energy needs.

South Carolina Chamber of Commerce, Ted Pitts

Document ID: BOEM-2017-0050-47020

The commenter urges BOEM to approve additional offshore leases when developing the 2019–2024 Program. The commenter argues that more offshore exploration and leasing would increase America's energy independence, leading to an increase in economic stability for employers and improving national security.

South Carolina Manufacturers Alliance, Lewis Gossett

Document ID: BOEM-2017-0050-49815

The commenter expresses support for developing a new leasing program and urges the inclusion of all Atlantic OCS planning areas in the development of the DPP. The commenter argues development of the Atlantic OCS could result in hundreds of thousands of jobs and billions of dollars in government revenue. The commenter further argues including the Atlantic planning areas would allow for economic and environmental analyses to be conducted to know the full benefits development in this area could offer.

South Carolina Small Business Chamber of Commerce, Frank Knapp**Document ID: BOEM-2017-0050-49573**

The commenter expresses opposition to offshore oil drilling in the Atlantic. The commenter states that experiences in the Gulf of Mexico and Pacific are examples of the harm an oil spill can have on coastal communities and economies, including impacts to beaches and tourism. The commenter reminds BOEM that the decision to open the Atlantic to offshore drilling would have a lasting impact on marine animals and coastal economies.

South Central Industrial Association, Jane Arnette**Document ID: BOEM-2017-0050-49519**

The commenter expresses support for the National OCS Oil and Gas Leasing Program including allowance of leasing in current and new areas where potential resources are unknown, such as the Mid- and South-Atlantic. The commenter states south Louisiana is home to the country's leading ports in the oil and gas industry and vitality of the area's economy. The commenter states the oil and gas industry can safely coexist with shipping, commercial and recreation fishing, tourism, and military activity. The commenter recommends BOEM issue permits for the collection of new Atlantic seismic data to replace the aging information upon which current decisions are based.

Southern Chemical Corporation, Jan Spin**Document ID: BOEM-2017-0050-08612**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues offshore oil and gas resource development in the Atlantic, Alaskan Arctic, and GOM could result in hundreds of thousands of jobs and billions of dollars in government revenue. The commenter further argued the country's economic and energy security is dependent on expanding oil and gas resource use.

South Louisiana Economic Council, Vic Lafont**Document ID: BOEM-2017-0050-47944**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

St. Mary Chamber of Commerce, Donna Meyer**Document ID: BOEM-2017-0050-08650**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also stated that economic gains from oil and gas development would trickle through the economy of the entire country.

St. Tammany West Chamber of Commerce, Lacey Toledano**Document ID: BOEM-2017-0050-08441**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides

significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

Steel Tank Institute-Steel Plate Fabricators Association, Wayne Geyer

Document ID: BOEM-2017-0050-17231

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues offshore oil and gas resource development in the Atlantic, Alaskan Arctic, and GOM could result in hundreds of thousands of jobs and billions of dollars in government revenue. The commenter further argued the country's economic and energy security is dependent on expanding oil and gas resource use.

Steve Pratt Enterprises, Steve Pratt

Document ID: BOEM-2017-0050-19240

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore development, specifically in the Beaufort and Chukchi Seas would bolster the United States economy and establish the country as a top energy producer. The commenter also argues that Alaskan offshore development would extend the longevity of the TAPS and help the United States achieve energy self-sufficiency.

Texas Association of Business, Stephen Minick

Document ID: BOEM-2017-0050-08343

The commenter expresses support for the development of a new leasing program and urges BOEM to include all 26 planning areas in the initial draft program. The commenter argues that increased access to offshore resources will strengthen the national economy while reducing the cost of energy for businesses and citizens. The commenter cites past development in the GOM as a demonstration of the contributions of oil and gas leasing on local, regional, and state economies.

Texas Association of Manufacturers, Richard Bennett

Document ID: BOEM-2017-0050-08437

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

Texas Trucking Association

Document ID: BOEM-2017-0050-19243

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter states that excluding regions under consideration at the beginning of the process without critical environmental analysis would be premature and hurt American energy security. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created by offshore resource development in the GOM.

Teyatech Inc., Ron Perry**Document ID: BOEM-2017-0050-49663**

The commenter expresses support for the inclusion of Arctic OCS lease areas, specifically the Beaufort and Chukchi seas, in the OCS Oil and Gas 2019–2024 Program. The commenter argues the oil and gas resources in this region could mean hundreds of jobs for Alaskans, as well as revenue for the state. The commenter further argues oil and gas development in the Arctic Sea would increase the viability of the TAPS.

The Plaza Group, Randy Velarde**Document ID: BOEM-2017-0050-08704**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

The Town Dock, Katie Almeida**Document ID: BOEM-2017-0050-49569**

The commenter expresses opposition to exploration or leasing in the North Atlantic. The commenter expresses concern for the impact that pollution from chemicals used during the drilling process could have on those whose businesses depend on a healthy ocean ecosystem. The commenter supports a moratorium on both exploration and drilling in the North Atlantic.

The State Chamber of Commerce Mississippi Economic Council, Scott Waller**Document ID: BOEM-2017-0050-49601**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter states that excluding regions under consideration at the beginning of the process without critical environmental analysis would be premature and hurt American energy security. The commenter argues that offshore resource development provides significant economic impact for Mississippi, citing the revenue and jobs created by offshore resource development in the GOM.

Thibodaux Chamber of Commerce, Cody J Blanchard**Document ID: BOEM-2017-0050-49823**

The commenter expresses support for developing a new leasing program and incorporating all 26 OCS planning areas. The commenter argues further development of the GOM could result in hundreds of thousands of jobs and billions of dollars in government revenue. The commenter further argues OCS development can occur alongside other industries, just as it does with Louisiana's fishing industry.

Transocean, Bond**Document ID: BOEM-2017-0050-49825**

The commenter expresses support for the proposed development of a new National OCS Oil and Gas Leasing Program for 2019–2024. A robust offshore energy program would be important to drilling businesses as well as the entire U.S. economy and energy security. The commenter supported seismic testing in all 26 OCS regions.

Transportation Institute, Andrew Strosahl**Document ID: BOEM-2017-0050-08860**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues offshore oil and gas resource development in the Atlantic, Alaskan Arctic, and GOM could result in hundreds of thousands of jobs and billions of dollars in government revenue. The commenter further argues the country's economic and energy security is dependent on expanding oil and gas resource use.

Udelhoven Oilfield System Services, Inc., Jim Udelhoven**Document ID: BOEM-2017-0050-27985**

The commenter expresses support for including all 26 OCS planning areas in the development of the DPP, specifically Federal waters off Alaska. The commenter explained that it is vital for Alaska and the Nation to maintain opportunities to develop oil and natural gas off Alaska, including Beaufort and Chukchi Seas. In addition to benefiting the U.S. economy, Alaskan offshore development will help extend the longevity of the TAPS.

Virginia Beach Hotel Association, Diana Burke**Document ID: BOEM-2017-0050-48508**

The commenter expresses opposition to offshore drilling in the Atlantic Ocean, and more specifically off the coast of Virginia. The commenter explains that the risk of environmental harm represents a liability that coastal communities cannot assume, given the heavy reliance on the tourism industry. The commenter states that more cohesive, substantive, and unbiased information is needed on the impacts of offshore drilling and that the communities of the Virginia coast cannot support a decision on drilling until that research is provided.

Virginia Beach Restaurant Association, Laura Habr William Gambrell**Document ID: BOEM-2017-0050-48473**

The commenter states opposition to all offshore oil and gas exploration or drilling off the coast of Virginia, including the use of seismic airgun blasting surveys. The commenter argues that the Atlantic OCS region was removed from the 2017–2022 Program after careful consideration and BOEM should not modify the current program. The commenter states concern over the potential for oil spills and the impact of offshore drilling on the environment and tourism industry.

Virginia Chamber of Commerce, Barry DuVal**Document ID: BOEM-2017-0050-08630**

The commenter expresses support for the development of a new leasing program and urges BOEM to include all 26 planning areas in the initial draft program. The commenter argues that the Atlantic OCS holds significant oil reserves that would help the United States achieve long-term energy security and reduce the trade deficit with other countries. The commenter also argues that the projected revenue generation from oil and gas development has only increased since the previous seismic surveys were conducted.

Virginia Manufacturers Association, Brett Vassey**Document ID: BOEM-2017-0050-49562**

The commenter expresses support for including all planning areas, including the entire Atlantic OCS in the DPP. The commenter argues development of the Atlantic OCS could result in hundreds of thousands

of jobs and billions of dollars in public revenue, with significant benefits in Virginia. The commenter states current seismic estimates are out of date and new surveys should be conducted to accurately estimate the full potential of the Atlantic planning areas. The commenter argues developing Atlantic OCS would help bring economic and energy security to the east coast and the United States.

Virginia Petroleum Council, Miles Morin
Document ID: BOEM-2017-0050-51199

The commenter expresses support for the expansion of oil and gas leasing and development in the OCS. The commenter argues that the U.S. needs to take full advantage of the potential benefits that offshore exploration and production can bring, such as economic activity, new jobs, and stable energy prices. The commenter further argues that offshore drilling will strengthen the national security of the United States.

Vivlamore Companies, Frontier Supply Company, Sunrise Bagel & Espresso, MV Investments, The Showcase, Regency Fairbanks Hotel, Tubby's, Bill Vivlamore
Document ID: BOEM-2017-0050-18863

The commenter expresses support for the development of a new leasing program and urges BOEM to include all 26 planning areas in the initial draft program. The commenter expresses disappointment on the removal of the Alaskan OCS from the 2017–2022 Program and urges the inclusion of the Beaufort and Chukchi Seas. The commenter argues that the area holds immense reserves that could produce economic benefits but access to these areas is extremely limited. The commenter further argues that the development of Alaska's OCS would maintain the TAPS and support American energy independence.

W.D. Scott Group, Inc., William Scott
Document ID: BOEM-2017-0050-08657

The commenter expresses support for the development of a new leasing program and urges inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

Wisconsin Industrial Energy Group, Todd Stuart
Document ID: BOEM-2017-0050-49536

The commenter expresses support for the inclusion of all 26 OCS planning areas in the DPP. The commenter states it is premature to exclude regions without first conducting environmental analysis. The commenter states opening currently off-limit areas in the Atlantic, Alaskan Arctic, and GOM would ensure cost effective and environmentally sound domestic energy.

Wrightsville Beach Chamber of Commerce, Susan Bulluck
Document ID: BOEM-2017-0050-50118

The commenter states that if offshore oil and gas drilling would pose a risk to critical economic sectors, then it should be avoided at all costs. The commenter explains that the tourism and fishing industries are the cornerstone of the coastal economy and states that alternative energy sources should be pursued if traditional energy would threaten local businesses and jobs.

A.7 STATE-LEVEL ELECTED OFFICIALS

Fourteen Members of the North Carolina House of Representatives

Document ID: BOEM-2017-0050-49788

Fourteen members of the North Carolina House of Representatives express support for the inclusion of the Atlantic in the 2019–2024 Program and state that North Carolina would benefit from oil and natural gas development as it would provide jobs and generate substantial economic activity within the state. The commenters urge the prompt approval of pending applications to conduct seismic surveys and support the expansion of revenue-sharing.

Alabama State House of Representatives, Lynn Greer

Document ID: BOEM-2017-0050-62531

The commenter expresses support for the development of a new leasing program and the consideration of all 26 Offshore Planning Areas during this initial phase. The commenter argues U.S. waters contain great quantities of oil that can help support state and Federal economies through revenue sharing and job growth. The commenter further argues that expanded access to planning areas in the GOM will increase economic gain for Alabama and the entire Gulf coast.

Alabama State House of Representatives, Victor Gaston

Document ID: BOEM-2017-0050-21466

The commenter expresses support for developing a new leasing program and urges the inclusion of all 26 OCS planning areas in the development of the DPP. The commenter argues that excluding regions from leasing consideration at the outset and in the absence of critical environmental analysis would be premature and harm efforts to ensure American energy security.

Alabama State Senator, Steve Livingston

Document ID: BOEM-2017-0050-24755

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP, specifically leases off the coast of Alabama. The commenter states that excluding regions under consideration at the beginning of the process without critical environmental analysis would be premature and hard American energy security. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the GOM.

Alabama State House of Representatives, David. R. Sessions

Document ID: BOEM-2017-0050-49699

The commenter expresses support for the consideration of all 26 offshore planning areas during this initial phase of the program. The commenter argues that U.S. waters contain great quantities of oil that can help support state and Federal economies through revenue sharing and job growth. The commenter further argues expanded access to planning areas in the GOM will increase economic gain for Alabama and the entire Gulf coast.

Alaska State House of Representatives, Charisse Millet

Document ID: BOEM-2017-0050-19997

The commenter expresses support for considering all 26 OCS leasing areas in the development of the new DPP, especially the Beaufort and Chukchi Seas in Alaska that were ultimately removed from the

2017-2022 Program. The commenter argues the development of Alaska's OCS would create jobs and increase economic growth in not just the state, but in the entire country as well. The commenter further argues this development is supported by the majority of the residents of Alaska.

Alaska State House of Representatives, Chris Birch

Document ID: BOEM-2017-0050-23205

The commenter requests BOEM reconsider all unleased areas of the Beaufort and Chukchi in the DPP and more specifically, those areas in the Beaufort and Chukchi that were originally included but later removed from the 2017–2022 Program. The commenter argues the development of Alaska's OCS would prolong the lifespan of TAPS primarily by providing more oil to transport through its system. The commenter argues the development of offshore resources would also create tens of thousands of jobs and increase economic growth in the region.

Alaska Legislature, Senator Cathy Giessel

Document ID: BOEM-2017-0050-08621

The commenter requests BOEM reconsider all unleased areas of the Beaufort and Chukchi in the DPP; more specifically, those areas in the Beaufort and Chukchi that were originally included and then later removed from the 2017–2022 Program. The commenter argues the development of Alaska's OCS would prolong the lifespan of TAPS primarily by providing more oil to transport through its system. The commenter argues this development would also create tens of thousands of jobs and increase economic growth in the region.

Alaska State Senate, John Coghil

Document ID: BOEM-2017-0050-25099

The commenter expresses support for lease sales in the Beaufort and Chukchi Seas and urges that the Hanna Shoal area to be opened up for leasing again. The commenter argues that the development of these areas in Alaska could create tens of thousands of jobs and generate revenue for the state and the Federal Government as well as aid the United States in becoming a global top energy producer.

Alaska State Senate, Pete Kelly

Document ID: BOEM-2017-0050-63786

The commenter expresses support for the development of a new leasing program and requests BOEM reconsider all unleased areas of the Beaufort and Chukchi in the DPP. The commenter argues the development of Alaska's OCS would prolong the lifespan of TAPS primarily by providing more oil to transport through its system. The commenter further argues the development of offshore resources would also create tens of thousands of jobs and increase economic growth in the region.

Alaska State Senate, Kevin Meyer

Document ID: BOEM-2017-0050-49711

The commenter requests that BOEM consider all 26 OCS leasing areas in the development of the DPP. The commenter argues the development of Alaska's OCS would prolong the lifespan of TAPS primarily by providing more oil to transport through its system. This development would also create jobs and increase economic growth in the region.

California State Senate, Daniel Alavarez
Document ID: BOEM-2017-0050-49720

The commenter submits a resolution opposing oil and gas leasing in the Pacific OCS. The commenter argues that California’s fishing, tourism, and recreation industries are too valuable to risk harming with oil and gas development and activity. The commenter requests the Pacific OCS be permanently safeguarded by the President and Congress.

California State Senate, Senator Mike McGuire
Document ID: BOEM-2017-0050-26830

The commenter expresses opposition to the new leasing program. The commenter notes the proposal ignores the opinions of west coast residents who have expressed opposition to new oil and gas drilling. The commenter suggests opening the coasts of California, Oregon, and Washington would threaten the livelihood of millions.

Energy Producing States Coalition, Senator Chuck Winder
Document ID: BOEM-2017-0050-08714

The commenters express support for including all offshore planning areas as part of the 2019–2024 leasing program. The commenters argue that resource potential in the Atlantic, Alaskan Arctic, and GOM could create hundreds of thousands of jobs, and billions of dollars in spending and revenue for both states and the Federal Government.

Florida House of Representatives, Jason Fischer
Document ID: BOEM-2017-0050-19076

The commenter expresses support for including the Atlantic in future oil and natural gas development programs and expanding revenue-sharing to all states with adjacent offshore oil and gas activity. The commenter also supports approval of pending applications to conduct Atlantic oil and gas seismic exploration and issue related permits as well.

Georgia State Senator Frank Ginn
Document ID: BOEM-2017-0050-49515

The commenter expresses support for exploration and leasing in the Atlantic. The commenter argues that resource potential in the Atlantic could create hundreds of thousands of jobs, and billions of dollars in spending and revenue for both states and the Federal Government. The commenter further argues prematurely excluding the Atlantic planning areas from the DPP and the subsequent cost-benefit analyses that follow would deny the citizens and governments of the Atlantic States the ability to realize the potential benefits of oil and gas activity.

Georgia State House of Representatives, Don Parsons
Document ID: BOEM-2017-0050-19076

The commenter expresses support for including all offshore planning areas as part of the 2019–2024 leasing program. The commenter argues that resource potential in the Atlantic, Alaskan Arctic, and GOM could create hundreds of thousands of jobs, and billions of dollars in spending and revenue for both states and the Federal Government.

Georgia House of Representatives, Jason Spencer**Document ID: BOEM-2017-0050-54471**

The commenter expresses support for the development of a new leasing program for 2019–2024 to include all planning areas, especially the Atlantic OCS. The commenter argues that tapping into the resource potential in the Atlantic could create hundreds of thousands of jobs, and billions of dollars in spending and revenue for both states and the Federal Government. The commenter further argues that use of these resources will help lead to long-term energy security.

Georgia State Representative, Charles Martin**Document ID: BOEM-2017-0050-49521**

The commenter expresses support for including all planning areas, especially the Atlantic planning areas, in the 2019–2024 leasing program. The commenter argues that resource potential in the Atlantic could create hundreds of thousands of jobs, and billions of dollars in spending and revenue for both states and the Federal Government. The commenter further argues that use of these resources will help lead to long term energy security.

Mississippi State Senate, Angela Burks Hill**Document ID: BOEM-2017-0050-48217**

The commenter expresses support for the consideration of all 26 offshore planning areas during this initial phase of program development. The commenter argues that U.S. waters contain great quantities of oil that can help support state and Federal economies through revenue sharing and job growth. The commenter further argues that expanded access to planning areas in the GOM will increase economic gain for Mississippi and the entire Gulf coast.

Mississippi State House of Representatives, Gary V. Staples**Document ID: BOEM-2017-0050-49786**

The commenter supports the consideration of all 26 offshore planning areas during this initial phase of the program. The commenter argues that U.S. waters contain great quantities of oil that can help support state and Federal economies through revenue sharing and job growth. The commenter further argues that expanded access to planning areas in the GOM will increase economic gain for the entire Gulf coast.

Mississippi State Senate, Charles Younger**Document ID: BOEM-2017-0050-17334**

The commenter expresses support for developing a new leasing program and urged the inclusion of 26 OCS planning areas in the development of the DPP. The commenter argues that excluding regions from leasing consideration at the outset and in the absence of critical environmental analysis would be premature and harm efforts to ensure American energy security.

Mississippi State Senate, President Pro Tempore Terry Burton**Document ID: BOEM-2017-0050-08651**

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, citing the revenue and jobs created in the Gulf of Mexico. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country.

New Jersey General Assembly, Timothy Eustace**Document ID: BOEM-2017-0050-57292**

The commenter expresses opposition to any offshore drilling for oil and gas, and specifically the leasing and development-related activities off the coast of New Jersey. The commenter states that the New Jersey tourism industry and recreational and commercial fishing industry would be at risk due to offshore oil and gas exploration and drilling. The commenter argues further that the United States should reduce its dependence on fossil fuels and move towards renewable energy sources.

New Jersey State Senate, Bob Smith**Document ID: BOEM-2017-0050-56540**

The commenter expresses opposition to the development of a new offshore leasing program, and specifically opposes oil and gas leasing and related activities off the coast of New Jersey. The commenter states that a new National OCS Program is unwarranted and unwelcome. The commenter also states that the risks from oil and gas development, exploration and production would negatively impact the environment and economy of New Jersey as well as the livelihoods of its citizens.

New Jersey 11th Legislative District Monmouth County, Eric Houghtaling and Joann Downey**Document ID: BOEM-2017-0050-49660**

The commenters express opposition to any efforts to expand oil and gas drilling in the Atlantic Ocean, which could threaten New Jersey's coastal communities. The commenters state that the arguments made against oil and gas drilling in the Atlantic OCS for the current program are still relevant today. The commenters state that an oil spill, like *Deepwater Horizon*, could cause damage to the economy, coastal communities, and coastal resources, as well as threaten endangered species and reduce the quality of life for New Jersey residents.

South Carolina General Assembly, Chip Campsen III and assembly members**Document ID: BOEM-2017-0050-57359**

Thirty-two members of the South Carolina General Assembly express opposition to the inclusion of the Mid- and South-Atlantic planning areas in the 2019–2024 Program. The commenters state that offshore drilling poses serious risks to the unique environment and tourism industry of South Carolina as well as the quality of life of its residents. The commenters also state that the infrastructure development associated with offshore drilling would severely impact the residential and resort development and impede the protection of important wildlife refuges.

South Carolina House of Representatives, Jason Elliott**Document ID: BOEM-2017-0050-48456**

The commenter expresses opposition to the inclusion of the Mid- and South Atlantic planning areas in the 2019–2024 National OCS Oil and Gas Leasing Program. The commenter suggests the effects of a potential oil spill off the coast of South Carolina and other southeastern states could be devastating to their economy and environment. The commenter also states South Carolina's coastline is not conducive to support oil and gas infrastructure.

South Carolina House of Representatives, Lee Hewitt**Document ID: BOEM-2017-0050-08700**

The commenter expresses opposition to the inclusion of the Atlantic OCS region in a future leasing program, specifically oil and gas leasing and related activities off the coast of South Carolina. The

commenter states that constituents are opposed to offshore drilling due to the threat of a drilling disaster and the resulting environmental and economic harm it would bring to South Carolina. The commenter also argues that oil and gas drilling could negatively impact the tourism and commercial and recreational fishing industries, as well as marine life.

South Carolina State Senate, George Campsen

Document ID: BOEM-2017-0050-49810

The commenter expresses opposition to oil and gas drilling off the coast of South Carolina. The commenter states that the associated industrial infrastructure that is necessary for offshore oil and gas drilling should not be allowed along the coast and that it would be incompatible with the current land uses that support tourism, real estate markets, and the ecosystem of the South Carolina coast. The commenter further argues that offshore development is not an economically viable energy source when new technologies and the lower market price of oil are taken into account.

South Carolina House of Representatives, Bill Sandifer

Document ID: BOEM-2017-0050-49808

The commenter expresses support for the development of a new leasing program and urges the inclusion of the Atlantic OCS planning areas. The commenter states that prematurely excluding the Mid- and South-Atlantic planning areas from the program would deny citizens and businesses the opportunity to realize economic, societal, and environmental benefits. The commenter also states that developing these oil and gas resources will ensure U.S. energy security.

South Carolina House of Representatives, Paul G. Campbell

Document ID: BOEM-2017-0050-49809

The commenter expresses support for the development of a new leasing program and urges the inclusion of the Atlantic OCS planning areas. The commenter states that prematurely excluding the Mid- and South-Atlantic planning areas from the program would deny citizens and businesses the opportunity to realize economic, societal, and environmental benefits. The commenter also states that developing these oil and gas resources will ensure U.S. energy security.

Texas State House of Representatives, Dennis Paul

Document ID: BOEM-2017-0050-51361

The commenter expresses support for the development of a new leasing program and recommends the inclusion of all 26 OCS planning areas in the development of the DPP. The commenter states that excluding areas prematurely has the potential to negatively impact the Texas and U.S. economies and could harm efforts to ensure American energy security. The commenter further argues that the oil and gas industry provided the Federal Government with its largest source of revenue in 2014, highlighting the positive economic impact provided by offshore development of resources.

Texas State Senate, Craig Estes

Document ID: BOEM-2017-0050-48621

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 OCS planning areas in the development of the DPP. The commenter states that excluding areas prematurely has the potential to negatively impact the Texas and United States economies and could harm efforts to ensure American energy security. The commenter also argued that the rest of the Nation could

share in the prosperity that Texas has experienced due to oil and gas drilling in the GOM if given greater access to these resources.

Texas State Senate, Don Huffines

Document ID: BOEM-2017-0050-18709

The commenter expresses support for the development of a new leasing program and recommends the inclusion of all 26 OCS planning areas in the development of the DPP. The commenter states that excluding areas prematurely has the potential to negatively impact the economy of Texas and the greater United States. The commenter also stated that allowing private businesses the opportunity to explore and harness this untapped resource in the GOM would help the United States to become energy independent.

Texas State House of Representatives, Brooks Landgraf

Document ID: BOEM-2017-0050-49827

The commenter expresses support for the development of a new leasing program and urges the inclusion of all 26 planning areas in the DPP. The commenter argues that offshore resource development provides significant economic impact for states, specifically Texas, citing the revenue and jobs created in the GOM. The commenter also states that economic gains from oil and gas development would trickle through the economy of the entire country

Virginia Environment and Renewable Energy Caucus, Alfonso Lopez

Document ID: BOEM-2017-0050-49642

The commenter expresses opposition to oil and gas leasing in the Atlantic OCS, and argues that the current 2017–2022 Program should not be changed. The commenter states that the coastal communities of Virginia oppose offshore oil and gas development due to the potential negative impacts of oil spills on marine ecosystems, coastal communities, and economies. The commenter also states that the tourism and fishing industries would be at risk, and that Virginia is the largest seafood producer on the east coast. The commenter argues that offshore drilling could also come in conflict with military training and operations off the coastline.

Virginia State Senate, Frank W. Wagner

Document ID: BOEM-2017-0050-49835

The commenter expresses support for the development of a new leasing program and urges the inclusion of the Atlantic OCS planning areas. The commenter states that prematurely excluding the Mid- and South-Atlantic planning areas from the program would deny citizens and businesses the opportunity to realize economic, societal, and environmental benefits. The commenter also states that developing these oil and gas resources will ensure the Nation's energy security.

Wyoming State Senate, Eli Bebout

Document ID: BOEM-2017-0050-49839

The commenter expresses support for the development of a new leasing program, and the inclusion of all 26 OCS Planning Areas in the development of the DPP. The commenter states that excluding areas prematurely would undermine efforts to ensure American energy security and independence. The commenter argues that opening up access to these resources could generate jobs and government revenue.

A.8 MEMBERS OF CONGRESS

Thirty-Six Senators

Document ID: BOEM-2017-0050-49693

Thirty-six Senators state support for the development of a new oil and gas leasing program. The Senators state that preparation of a new program could help to ensure that prolific regions have not been arbitrarily excluded from competitive leasing. The Senators identify benefits to the economies of all the states, reduction in the Federal deficit, affordable energy, and strengthened national security as key reasons for pursuing a new program.

Thirty Senators

Document ID: BOEM-2017-0050-49692

Thirty Senators express concern over the proposed revision of the 2017–2022 OCS Oil and Gas Leasing Program. The Senators state that the existing program correctly excluded areas from the leasing program that pose a significant environmental, economic, and cultural risk. Specifically identified were the Arctic Ocean, Atlantic Ocean, Pacific coast, and the Eastern GOM.

One Hundred and Twenty Members of Congress

Document ID: BOEM-2017-0050-51333

One Hundred and twenty members of congress request BOEM encourage exploration and leasing in new OCS areas while maintaining investment in traditional offshore development areas. The commenters cite increased job creation, additional government revenue, and affordable and reliable energy supplies for consumers and manufacturing as key benefits to expanding development activities via a new National OCS Leasing Program.

One Hundred and Three Members of Congress

Document ID: BOEM-2017-0050-49696

The commenters are in strong opposition to the Secretarial Order to move toward oil and gas exploration in the Atlantic Ocean and issuance of G&G permits. Offshore exploration, the first step of which is seismic testing, puts at risk coastal economies based on fishing, tourism, and recreation. Numerous studies show the detrimental impacts seismic airgun blasting has on fisheries and marine mammals, thereby affecting the catch anglers bring dockside and the revenue generated by related businesses.

Seventy-Five Members of Congress

Document ID: BOEM-2017-0050-49694

Seventy-five members of Congress request BOEM adhere to the 2017–2022 Program and state opposition to oil and gas leasing in the U.S. Arctic. They further oppose BOEM considering areas previously excluded through executive order. The members of Congress also state that any potential leasing in the 125 million acres of the Arctic previously preserved from future leasing would fall outside of legal authority.

Sixty-Eight Members of Congress

Document ID: BOEM-2017-0050-49695

Sixty-eight members of Congress oppose oil and gas leasing in the Atlantic Ocean and Eastern GOM. The members of Congress indicate that more than 120 local governments have passed formal resolutions opposing oil and gas exploration and/or drilling in the Atlantic or Eastern Gulf, as well as local chambers

of commerce, business associations and Fishery Management Councils. Additional stated reasons listed in opposition include detrimental effects for coastal businesses, fishing communities, tourism, and national security.

Thirty-Nine Members of Congress**Document ID: BOEM-2017-0050-49693**

Thirty-nine members of Congress oppose oil and gas leasing offshore California, Oregon, and Washington. Reasons listed in opposition include threats to ecosystems, the presence of endangered species, and potential detrimental effects to fishing and tourism. The commenters commend BOEM for its effort to lease and permit offshore wind energy projects along the coasts of all three states.

Ten Members of Congress**Document ID: BOEM-2017-0050-49691**

Ten members of Congress support development of a new National Leasing Program, stating that it is especially imperative to fully consider all OCS lands, including areas not part of the current 2017–2022 Program. The members of Congress further state that, under the Obama Administration, significant strides were made by government and industry to advance the safety of offshore exploration and production, and that these should be employed to ensure worker and environmental safety while furthering goals for energy development.

Senator Bill Nelson, Florida**Document ID: BOEM-2017-0050-49748**

Senator Nelson emphasizes the importance of preserving the Eastern Gulf of Mexico Testing and Training Range. He indicates that the area of the OCS from the Military Mission Line to Florida's Gulf coast is off limits by law to oil and gas preleasing, leasing, or any related activity per the 2006 congressional moratorium.

Congresswoman Kathy Castor, Florida**Document ID: BOEM-2017-0050-49726**

The commenter requests BOEM exclude from consideration for leasing the Eastern GOM area. The commenter cites the economic and environmental value of the region as well as the importance of the area to national security and states that the risk of opening the area to leasing outweighs the potential benefits from oil and gas drilling.

Congressman Donald McEachin, Virginia**Document ID: BOEM-2017-0050-49528**

Congressman McEachin opposes oil and gas activities offshore of the Commonwealth of Virginia as well as the rest of the Atlantic and the Eastern GOM. The Congressman identifies potential problems for the Wallops Flight Facility, located in Accomack County, which a 2015 NASA report indicates would be majorly impacted and that the placement of "privately owned towers or other structures would severely constrain or eliminate existing and future Wallops range operations. The Congressman also identifies threats to coastal fisheries, tourism, and recreation related industries as key reasons.

Congressman Tom Rice, South Carolina**Document ID: BOEM-2017-0050-49591**

The Congressman opposes opening waters off the coast of South Carolina for oil and gas production. The Congressman suggests that, given current market conditions, the economic benefits of OCS development offshore of South Carolina are no longer justified.

A.9 TRIBES AND TRIBAL ORGANIZATIONS**A.9.1 Alaska Region****Arctic Iñupiat Offshore, LLC****Document ID: BOEM-2017-0050-49611**

The commenter supports the inclusion of the Arctic OCS because of the positive economic impacts to the Iñupiat people and as a means to sustain the local North Slope economy. The commenter supports the deferral of areas important to subsistence that have been previously analyzed by BOEM, including the Kaktovik Whaling Area, Barrow Whaling Area, and Chukchi Sea 25-Mile Deferral Area and emphasizes the importance of continued collaboration with local Alaska Native stakeholders.

Arctic Slope Regional Corporation**Document ID: BOEM-2017-0050-49615**

The commenter supports the inclusion of planning areas in the GOM, Cook Inlet, Atlantic, and the Arctic OCS and emphasizes the importance of continued consultation with Alaska Native Claims Settlement Act Corporations as required by E.O. 13175. The commenter also emphasizes the importance of incorporation of traditional knowledge, subsistence resource preservation, existing mitigation measures, and community and economic benefits.

Bering Sea Elders Group and Association of Village Council Presidents**Document ID: BOEM-2017-0050-49709**

The commenter requests that BOEM exclude the following planning areas from consideration for inclusion in the 2019–2024 Program: Norton Sound, St. Matthew-Hall, Navarin Basin, Aleutian Basin, and St. George Basin. The commenter affirms the need for engagement in meaningful consultation and incorporation of indigenous knowledge in Agency decision making and identifies the areas in question as importance for subsistence use and commercial fisheries. Four reference attachments were included with the comment letter, pertaining to food security, ecosystem and climate change, and cultural traditions of the northern Bering Sea area as well as a resolution of the Association of Village Council Presidents dated October 19, 2016, that oil and gas or mineral activity or leasing should be prohibited.

Bristol Bay Native Association**Document ID: BOEM-2017-0050-00373**

The commenter requests the North Aleutian Basin Planning Area be excluded from the OCS leasing program. The commenter states that the Bristol Bay area within the North Aleutian Basin is home to a 130-year-old commercial wild salmon fishery that supports 14,000 jobs and generates \$500 million annually. The fishery is identified by the commenter as being of critical importance to the cultural and economic health of the region's Aleut, Eskimo, and Athabascan peoples.

Kawerak, Inc.**Document ID: BOEM-2017-0050-10073**

The commenter opposes the decision to change the current oil and gas management program for Federal waters offshore of Alaska and recommends the exclusion of the Hope, Norton, St. Mathew Hall, and Navarin Basin planning areas from any new programs. The commenter opposes any leasing activities in any of those planning areas.

Native Village of Savoonga**Document ID: BOEM-2017-0050-49840**

The commenter recommends BOEM exclude the Hope, Norton, St. Mathew-Hall, and Navarin Basin planning areas from any new National Program and does not support leasing activities in any of those planning areas. The commenter further encourages the incorporation of indigenous knowledge into BOEM's decision making process and provides specific examples of actions BOEM can undertake to accomplish this through consultation, public meetings, and assessment of the effectiveness of outreach.

Native Village of Shishmaref**Document ID: BOEM-2017-0050-49787**

The commenter recommends BOEM exclude the Hope, Norton, St. Mathew-Hall, and Navarin Basin planning areas from any new National Program and does not support leasing activities in any of those planning areas. The commenter further encourages the incorporation of indigenous knowledge into BOEM's decision making process and provides specific examples of actions BOEM can undertake to accomplish this through consultation, public meetings, and assessment of the effectiveness of outreach.

Native Village of St. Michael, Theresa Kobuk**Document ID: BOEM-2017-0050-51362**

The commenter requests the 2017–2022 Program be maintained for the 2019–2024 proposed lease program, specifically continuing to exclude the Hope, Norton, St. Mathew Hall, and Navarin Basin planning areas. The commenter discusses negatives impacts on low income and minority populations and potential consequences of increased ship traffic. The commenter also expresses continued support of E.O. 13754, which established the Northern Bering Sea Climate Resilience Area and requested BOEM consult tribes in their planning decisions.

Olgoonik Corporation, The Alaska Native Village Corporation for Wainwright, Alaska**Document ID: BOEM-2017-0050-49632**

The commenter supports the inclusion of the Chukchi and Beaufort Seas in any new Oil and Gas leasing program and commends Secretary Zinke's stated goal to include "substantial public involvement and extensive analysis in all stages of the [Program] planning process." The commenter also identifies the importance of outside business investment to incentivize the younger generation to remain in small communities such as Wainwright in the face of limited economic opportunities.

A.9.2 Pacific Region**Blue Lake Rancheria****Document ID: BOEM-2017-0050-48910**

The commenter supports the exclusion of all areas currently excluded from the 2012–2017 Oil and Gas Leasing Program in perpetuity. The commenter further strongly opposes the leasing of any areas offshore

Northern California for oil and gas drilling as well as the exploration or development in any sensitive marine environment in U.S. waters.

Confederated Tribes of Coos, Lower Umpqua & Siuslaw Indians

Document ID: BOEM-2017-0050-49616

The commenter requests that BOEM exclude from consideration for leasing the Pacific OCS, especially the portion of the OCS off of the coast of Oregon. The commenter provides additional context and information concerning their history of using the coastal environment, BOEM's consultation and trust obligations, safety concerns, and potential impacts on cultural resources.

Coquille Indian Tribe

Document ID: BOEM-2017-0050-49729

The commenter identifies the importance of tourism and fishing along the southern Oregon coast and expresses concern regarding the potential for oil and gas leasing in the areas offshore of Coos and Curry Counties. The commenter identifies the importance formal government-to-government consultation and requests BOEM initiate consultation regarding the potential for OCS oil and gas leasing.

Federated Indians of Graton Rancheria

Document ID: BOEM-2017-0050-49746

The commenter expresses concern with the potential for harm to the marine environment that could occur as the result of proposed leasing activities. The commenter emphasizes the need for BOEM to consider the effects on traditional cultural properties and species as well as how communities could be impacted by effects to coastal resources.

Habematolel Pomo of Upper Lake Tribe

Document ID: BOEM-2017-0050-49756

The commenter supports the exclusion of all areas currently excluded from the 2012–2017 Oil and Gas Leasing Program in perpetuity. The commenter further strongly opposes the leasing of any areas offshore Northern California for oil and gas drilling as well as the exploration or development in any sensitive marine environment in U.S. waters.

Kashia Band of Pomo Indians of the Stewart's Point Rancheria

Document ID: BOEM-2017-0050-50671

The commenter strongly opposes oil and gas activities offshore and specifically requests the area from Duncan's Landing to the mouth of the Gualala River (in California) be excluded from consideration for leasing. Additionally, the commenter provides a list of specific topic areas BOEM should consider as it analyzes the potential impacts of oil and gas activity in the offshore. These include impacts on environmental resources, subsistence activities, and recommendations for how BOEM could mitigate the negative impacts associated with potential spills.

Makah Tribe

Document ID: BOEM-2017-0050-49650

The commenter requests the Pacific OSC region be excluded from the National OCS DPP, as these activities pose potential risk to Pacific Ocean ecosystems and treated reserved resources. The commenter also requests BOEM include comprehensive risk assessment and response plans for all regional planning areas being considered in the new program, especially the Pacific and Arctic regions.

Makah Tribal Council**Document ID: BOEM-2017-0050-49773**

The formal position of the Makah Tribal Council is to not include the Pacific OCS region in the National OCS DPP and to oppose any oil and gas exploration or leasing activity off the coast. The commenter identifies a traditional use area and provides treaty information. The commenter further recommends BOEM include a comprehensive risk assessment and response plan for all regional planning areas considered in the program.

Northern California Tribal Chairmen’s Association**Document ID: BOEM-2017-0050-49773**

The commenter strongly opposes the leasing of any areas offshore of Northern California for oil and gas drilling. The commenter also opposes exploration or development activities in any sensitive marine environment in Federal waters and emphasizes that these comments do not constitute required government-to-government consultation that must occur individually with all affected sovereign Tribal governments before leasing can occur.

Quileute Tribal Council**Document ID: BOEM-2017-0050-51348**

The commenter requests that BOEM acknowledge treaty obligations between the Federal Government and treaty tribes of the northwest inclusive of the Quileute Tribe. The commenter opposes oil and gas development activities including leasing and recommends BOEM make funds available to improve understanding of marine productivity and environmental sensitivity.

San Luis Rey Band of Mission Indians**Document ID: BOEM-2017-0050-49537**

The commenter supports keeping all areas that are currently excluded from the 2012–2017 Oil and Gas Leasing Program as perpetual exclusions. The commenter further strongly opposes the leasing of any areas offshore of Northern, Central, and Southern California for oil and gas drilling and as well as other sensitive marine environments in U.S. waters.

Santa Ynez Band of Chumash Indians**Document ID: BOEM-2017-0050-49551**

The commenter opposes all oil and gas leasing along the central coast of California and recommends BOEM exclude from consideration for leasing in perpetuity all areas that were excluded in the 2012–2017 Program.

Scotts Valley Band of Pomo Indians**Document ID: BOEM-2017-0050-49644**

The commenter supports keeping of all the areas currently excluded in the 2012–2017 Oil and Gas Leasing Program as perpetual exclusions. The commenter further opposes any exploration or development in any sensitive marine environment in U.S. waters.

A.9.3 Gulf of Mexico Region

No comment letters from Gulf of Mexico Region tribes or tribal organizations were submitted in response to the RFI.

A.9.4 Atlantic Region

Gullah/Geechee Nation

Document ID: BOEM-2017-0050-28229

The commenter states opposition to all offshore oil and gas exploration off the coast of North Carolina, South Carolina, Georgia, and Florida and to seismic surveys using airguns. The commenter includes for additional reference a resolution dated October 1, 2015, which was submitted to BOEM as part of the previous scoping process for the 2017–2022 National Program. The commenter requests that all planning areas in the Atlantic Ocean be excluded.

A.10 FORM LETTER CAMPAIGNS

Below is a list of form letter campaigns received during the RFI comment period. The list includes the campaigns, including the originating organization (if identified), the total number of submissions in the campaign, and a brief summary of the information provided as part of the campaign.

Form Letter Document ID	Organization/ Commenter Name	Total Submissions in Campaign	Summary of Submission Letter
BOEM-2017-0050-51163	Friends of the Earth (Megan Coglianes)	35,922	<ul style="list-style-type: none"> Proposed Program would put marine ecosystems and coastal economies and communities at risk. The Pacific Coast has been off limits to drilling since the 1980s. The proposed program would solely benefit oil companies.
BOEM-2017-0050-51164	CREDO	89,809	<ul style="list-style-type: none"> Oil and gas drilling in the Gulf of Mexico threatens oceans and coastal regions with dangerous oil spills and worsens the climate crisis.
BOEM-2017-0050-51364	Friends of the Earth	36,247	<ul style="list-style-type: none"> The current program protects certain areas of the OCS from oil drilling activities. Rolling back these protections solely benefits oil companies. The proposed program puts marine ecosystems and coastal economies and communities at risk.

Form Letter Document ID	Organization/ Commenter Name	Total Submissions in Campaign	Summary of Submission Letter
BOEM-2017-0050-51175	Sierra Club	78,036	<ul style="list-style-type: none"> • Opposes oil and gas leasing in the Arctic, Atlantic, and Pacific planning regions. • Public opposition to drilling in these regions was very strong during the previous public comment period.
BOEM-2017-0050-51176	Center for Biological Diversity	24,751	<ul style="list-style-type: none"> • Opposes offshore oil and gas leasing in any and all oceans. • Offshore drilling threatens marine wildlife and coastal communities, and exacerbates climate change. • Defense experts warn that drilling threatens national security and impedes military readiness.
BOEM-2017-0050-51177	Ocean Conservancy	16,757	<ul style="list-style-type: none"> • Opposes expanding oil and gas leasing to additional planning areas. • An oil spill could cause severe impacts to the economies of coastal communities, disrupt recreational and commercial fishing, and harm marine wildlife. • Planning areas under consideration lack necessary infrastructure.
BOEM-2017-0050-51178	Consumer Energy Alliance	15,263	<ul style="list-style-type: none"> • Supports including all unleased areas in the draft leasing program. • Developing these resources will provide jobs and economic growth. • Expanding oil and gas developments will lessen dependence on foreign energy resources.

Form Letter Document ID	Organization/ Commenter Name	Total Submissions in Campaign	Summary of Submission Letter
BOEM-2017-0050-51174	Food and Water Watch	17,110	<ul style="list-style-type: none"> • Opposes offshore drilling off the coast of Florida. • An oil spill could hurt the environment, economy, and tourism and fishing industries.
BOEM-2017-0050-51187	Audubon California	5,786	<ul style="list-style-type: none"> • Opposed to any new oil and gas leasing in the Pacific OCS. • Energy conservation and renewable energy sources will benefit consumers. • California has experienced the consequences of oil spills in the past.
BOEM-2017-0050-51184	Oceana	29,268	<ul style="list-style-type: none"> • Opposes lease sales in the Atlantic, Pacific, and Arctic Oceans and the Eastern Gulf of Mexico. • The unlikely benefits of offshore drilling do not outweigh the risks.
BOEM-2017-0050-51185	Oceana	95	<ul style="list-style-type: none"> • Oppose lease sales in the Atlantic, Pacific, and Arctic Oceans and the Eastern Gulf of Mexico. • Offshore drilling will put marine environments, communities and industries at risk.
BOEM-2017-0050-51173	Wildlife Conservation Society	14,205	<ul style="list-style-type: none"> • Requests that BOEM protects marine life and considers full scope of effects of offshore drilling, specifically in the Atlantic Ocean.
BOEM-2017-0050-51170	Conservation Voter of South Carolina	71	<ul style="list-style-type: none"> • Opposes offshore drilling in the Atlantic OCS and altering the current program.
BOEM-2017-0050-51165	Alaska Wilderness League	19,385	<ul style="list-style-type: none"> • Opposes offshore drilling in the ocean, specifically the Arctic. • Opposes altering the current program.

Form Letter Document ID	Organization/ Commenter Name	Total Submissions in Campaign	Summary of Submission Letter
BOEM-2017-0050-51363	NRDC	43,397	<ul style="list-style-type: none"> • Opposes offshore drilling in the Arctic and Atlantic Oceans. • Offshore drilling threatens marine life and puts coastal communities at risk.
BOEM-2017-0050-51166,51167,51168,51169	The Pew Charitable Trusts	11,528	<ul style="list-style-type: none"> • Opposes offshore drilling in the Arctic OCS. • Offshore areas contribute to the function of the larger ecosystem and should not be put at risk.
BOEM-2017-0050-51172	Surfrider Foundation	2,448	<ul style="list-style-type: none"> • Opposes offshore drilling in the Pacific and Atlantic OCS. • Expanded access poses a threat to natural resources, the economy, and way of life.
BOEM-2017-0050-51183	Veterans	1,676	<ul style="list-style-type: none"> • Opposes the expansion of offshore drilling in the OCS. • New drilling could harm military readiness. • The Eastern GOM is particularly critical to military training and testing activities.
BOEM-2017-0050-51180	World Wildlife Fund	80,497	<ul style="list-style-type: none"> • Opposes oil and gas leasing in the Beaufort and Chukchi Seas. • Offshore drilling poses risks to the environment and wildlife.
BOEM-2017-0050-51181	Environment America	6,392	<ul style="list-style-type: none"> • Opposes offshore drilling off the coasts of Alaska and Florida. • Oceans are home to stunning wildlife and beaches.
BOEM-2017-0050-51189	Earthjustice	27,184	<ul style="list-style-type: none"> • Opposes expanding oil and gas leasing and changing the current program. • Offshore drilling is dangerous and oil spills are inevitable.
BOEM-2017-0050-51190	Oil Change International	1,274	<ul style="list-style-type: none"> • Opposes opening the Atlantic, Arctic, Pacific and GOM to additional oil and gas drilling. • Offshore drilling puts coastal communities and economies at risk.

Form Letter Document ID	Organization/ Commenter Name	Total Submissions in Campaign	Summary of Submission Letter
BOEM-2017-0050-51188	Save Our Sea NC	169	<ul style="list-style-type: none"> • Opposes seismic airgun blasting and offshore drilling in the Atlantic OCS.
BOEM-2017-0050-51171	Sierra Club-Virginia Chapter	955	<ul style="list-style-type: none"> • Opposes offshore drilling in the Atlantic OCS, specifically off the coast of Virginia. • Offshore drilling poses risks to the tourism and aquaculture industries in Virginia.
BOEM-2017-0050-51179	Southern Alliance for Clean Energy	193	<ul style="list-style-type: none"> • Offshore drilling and seismic blasting are not appropriate for the Atlantic coast. • Offshore drilling and seismic blasting jeopardize the environment but also our thriving coastal tourism economy.
BOEM-2017-0050-51199	Virginia Petroleum Council	97	<ul style="list-style-type: none"> • Domestic energy development, including offshore oil and gas in the GOM, and expanded access into new areas of the Alaska, Atlantic and GOM, would benefit the United States and its citizens and help keep U.S. energy renaissance going.
BOEM-2017-0050-51182	Greenpeace USA	1,171	<ul style="list-style-type: none"> • Prohibit new drilling on any U.S. coast in an effort to reduce use of fossil fuels and slow climate change. • Millions of Americans have expressed opposition and concern about offshore drilling. • Coastal communities and governors have urged protection of livelihoods rooted in tourism, fishing, and other coastal activities. • Coastal communities will be affected by seismic testing and oil spills.

Form Letter Document ID	Organization/ Commenter Name	Total Submissions in Campaign	Summary of Submission Letter
BOEM-2017-0050-51195	North Carolina League of Conservation Voters	339	<ul style="list-style-type: none"> Offshore oil and gas drilling would put local communities and industries that rely on clean waters and unspoiled beaches at risk. Oil spills will devastate NC's fisheries, tourism and recreation, and cost thousands of jobs and billions in lost revenue.
BOEM-2017-0050-51194	North Carolina Conservation Network	2,252	<ul style="list-style-type: none"> Requests removal of North Carolina's coast from any future plans for offshore drilling. Oil and gas drilling threatens existing businesses that contribute billions of dollars in revenue and provide good jobs to coastal residents.
BOEM-2017-0050-51200	Climate Writers	5	<ul style="list-style-type: none"> Expressed concern about climate change.
BOEM-2017-0050-51196	Joe Jansen	100,354	<ul style="list-style-type: none"> Domestic energy independence will create jobs, grow the economy, and increase energy security. Supports leasing in Alaska, EGOM, and Atlantic.
BOEM-2017-0050-51356	Virginia League of Conservation Voters	3,649	<ul style="list-style-type: none"> Opposes offshore drilling in the Atlantic. Oil and gas drilling risks the health of communities and industries that rely on clean waters and unspoiled beaches. Oil spills could threaten Virginia's fisheries, tourism and recreation industries.
BOEM-2017-0050-51191	Campaign A	22,000	<ul style="list-style-type: none"> Supports leasing in Alaska, EGOM, and Atlantic. Domestic energy independence will create jobs, grow the economy, and increase energy security.

Form Letter Document ID	Organization/ Commenter Name	Total Submissions in Campaign	Summary of Submission Letter
BOEM-2017-0050-51198	Environmental Action	53,192	<ul style="list-style-type: none"> • Opposes opening the Arctic to oil and gas drilling. • Opposes review of possible new drilling sites off the Atlantic Coast. • Expressed strong opposition to seismic testing and offshore drilling.
BOEM-2017-0050-51192	Campaign B	140	<ul style="list-style-type: none"> • Requests BOEM deny all seismic testing permit requests for the Atlantic. • Seismic airgun blasting can result in displaced fish, reduced catch rates, and disrupts vital feeding and breeding behaviors in marine mammals.
BOEM-2017-0050-00077	David Bennett	8,174	<ul style="list-style-type: none"> • Opposes opening protected areas in the Arctic, Atlantic, and Pacific. • exposing our coastal communities to hazardous oil and gas drilling directly runs counter to the BOEM's mission. • Opening up these fragile ecosystems to drilling jeopardizes our coastal economies, marine wildlife, and climate.
BOEM-2017-0050-08723	Kristen Brown	30,302	<ul style="list-style-type: none"> • Opposes offshore drilling in the Atlantic. • Opening the Atlantic to oil and gas drilling jeopardizes future for short-term industry profits.
BOEM-2017-0050-0097	Peter Smith	6,613	<ul style="list-style-type: none"> • There is no way to responsibly drill in the Arctic. • Supports continued exclusion of the Beaufort and Chukchi seas. • Opposes any new lease sales under the revised program.
BOEM-2017-0050-31745	Lacey Hicks	20,297	<ul style="list-style-type: none"> • Opposes oil and gas drilling in all U.S. coastal waters. • Drilling is risky to coastal residents and jeopardizes

Form Letter Document ID	Organization/ Commenter Name	Total Submissions in Campaign	Summary of Submission Letter
			critical ecosystems. <ul style="list-style-type: none"> • Drilling increases the threat of devastating oil spills, all while driving climate change and threatening our clean energy future.
BOEM-2017-0050-19503	Shane Farnor	4,935	<ul style="list-style-type: none"> • Opposes new oil and gas development in the Atlantic and Pacific. • National parks should be protected from potential spills or harassment.
BOEM-2017-0050-29731	Elizabeth Slikas	10	<ul style="list-style-type: none"> • Opposes any expansion of offshore leasing for oil and gas drilling. • Opening up more areas to offshore drilling would have devastating impacts on coastal communities and climate.
BOEM-2017-0050-08345	Greater Port Arthur Chamber of Commerce, William McCoy	32	<ul style="list-style-type: none"> • Expressed support for developing a new leasing program. • Urged the inclusion of all 26 OCS planning areas including GOM.
BOEM-2017-0050-51197	NCLCV	103	<ul style="list-style-type: none"> • Oil and gas drilling risks the health of communities and industries that rely on clean waters and unspoiled beaches. • Oil spills could threaten Virginia’s fisheries, tourism and recreation industries.
BOEM-2017-0050-51193	Campaign C	23	<ul style="list-style-type: none"> • No seismic testing or offshore drilling in Atlantic. • Activities can ruin the economy, coastline, ecology and way of life for SC residents.
BOEM-2017-0050-08612	Southern Chemical Corporation	9	<ul style="list-style-type: none"> • Expressed support for developing a new leasing program. • Urged the inclusion of all 26 OCS planning areas.

Form Letter Document ID	Organization/ Commenter Name	Total Submissions in Campaign	Summary of Submission Letter
BOEM-2017-0050-50540	Thomas Jefferson Institute for Public Policy, et al.	98	<ul style="list-style-type: none"> • United States should take full advantage of the potential benefits that continued and expanded offshore exploration and production can bring to the United States and its citizens. • Supports expanded access into new areas of the GOM, Arctic, and Atlantic.

A.11 GENERAL PUBLIC

A.11.1 General Comments from Individuals Not Specific to OCS Program Areas

Approximately 815,385 submissions were received from individuals, of which approximately 812,165 were submitted as part of form letter campaigns. Approximately 115,850 (or 14 percent) of the form letter submissions from individuals express general support for the 2019–2024 Program, while approximately 396,431 (or 49 percent) of the form letter submissions from individuals express general opposition. Of the unique submissions received from individuals, numerous submissions provide general comments with regard to the National Program and impacts on the environment, tourism, economy, and increase in the nation’s energy dependence.

Numerous individuals express general support for BOEM’s offshore leasing program, suggesting that continued and expanded exploration and development of U.S. resources, including in areas like the Atlantic, GOM, Pacific, and Alaska, will lead to greater domestic offshore oil and natural gas production, job creation, economic prosperity, and increased energy security for the Nation and local communities. Numerous commenters express support for an energy policy that allows for more leasing, exploration, and development of potential U.S. offshore oil and natural gas resources. One commenter states that developing energy in the U.S. under existing stringent regulatory standards would safeguard the environment by lessening dependence on energy from other nations with less rigorous protections. Others explain that excluding regions from leasing consideration at the outset, and in the absence of critical environmental analysis, would be premature and harm efforts to ensure American energy security.

Numerous individuals express opposition to developing a new offshore leasing program, explaining that new offshore drilling jeopardizes fragile coastal marine ecosystems and coastal economies and put communities at risk. Several commenters urge BOEM to maintain current protections and exclude the Atlantic, Pacific, and Arctic Oceans and the Eastern GOM and all national marine protected areas from the DPP. Commenters state that increasing coastal drilling would go against the millions of Americans who have previously voiced their desire to protect public natural resources. Similarly, commenters express disappointment in BOEM’s decision to reopen the offshore drilling planning process prior to the expiration of the current 2017–2022 Program in which millions of Americans expressed their support for permanent protections to the Arctic, Atlantic, and Pacific oceans. Commenters also note that local and

state government and industry interest in offshore drilling and/or seismic testing has decreased, citing the coastal city resolutions against offshore drilling and/or seismic testing, and Shell's decision to back down on plans to pursue oil in the Arctic because of strong public opposition, costs, and physical risks and challenges.

Commenters in opposition to offshore oil and gas development also cite environmental concerns including oil spills, leaks, and air and water pollution resulting in negative effects on public health, marine resources, and the impacts on recreation and tourism industries. Some commenters express concern for the effects that noise from seismic testing could have on marine wildlife. Several commenters anticipate the negative impacts listed above would worsen if offshore drilling is expanded to additional areas.

Several suggest that because offshore drilling is inherently dangerous, additional devastating oil spills are inevitable. Increased storm severity in the face of climate change will increase the risks of oil spills, accidents, and other environmental harms associated with offshore drilling. Many commenters are concerned about the impact a loss of well control could have and on coastal economics, commercial and recreational fisheries, beaches and shorelines as well as birds, fish, and marine mammals, and suggest that impacts from offshore oil spills can last for decades. Many individuals express concern about the consequences to the tourism industry from an oil spill. Some commenters state that an oil spill would pollute beaches, devastate tourism and recreation, and could result in a loss of industry jobs in coastal communities. Some commenters suggest that many planning areas under consideration for new leasing lack the infrastructure necessary to support offshore oil and gas operations, including remote and dangerous waters off the coast of Alaska, including the Bering Sea and Arctic Ocean.

Several commenters suggest oil and gas drilling would contribute to carbon pollution and would hold back the Nation's transition to clean energies. Commenters encourage the use of alternative energy sources such as wind or solar to move beyond dependence on fossil fuels. Some commenters state that exposing coastal communities to hazardous oil and gas drilling runs counter to BOEM's mission and duty to the American people.

A.11.2 Comments from Individuals Specific to Program Areas

Many individuals provided comments on environmental concerns specific to the Alaska, Atlantic, Pacific and GOM planning areas. Individuals urge BOEM to reject the plan to reopen the Arctic and Atlantic oceans, stating that expanding offshore drilling threatens marine life and puts coastal communities at risk. Individuals state that offshore drilling in the Atlantic could cause injury or death to marine wildlife including whales, sea turtles, and dolphins, and endangered and threatened species like the North Atlantic right whale and the hawksbill and loggerhead sea turtles that utilized the Atlantic Ocean for habitat and migration routes. Individuals also express concern that harmful seismic airgun surveys in the Atlantic Ocean would threaten species in the area. Some commenters request that BOEM deny all seismic testing permit requests for the Atlantic, noting that peer-reviewed studies, including those conducted by the Department of the Interior, concluded that seismic airgun blasting results in displacement of fish, reduced catch rates of some fish species, and disrupts the feeding and breeding behaviors in marine mammals. Commenters also suggest that opening new drilling sites off the Atlantic coast would prolong the country's dependence on fossil fuels at the expense of environment.

Individuals express concern that oil spills in the Arctic, Atlantic, Pacific, 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. Other individuals express concern about effects on marine life in the Arctic, Atlantic, and GOM planning areas due to the toxicity of oil. Commenters also note that opening the Atlantic to oil and gas drilling could jeopardize short-term industry projects if an oil spill were to occur. The commenters note the millions of comments received from individuals, small business owners, tourism authorities, anglers, and elected officials requested offshore drilling in the Atlantic be removed until 2022. Similarly, commenters request the 46 national parks off the Atlantic and Pacific coasts be protected from oil spills, noting visitors to these parks contribute billions of dollars to local economies, support thousands of jobs, and protect marine wildlife. In the Atlantic, commenters specifically discuss concerns for the coasts of Florida, Georgia, South Carolina, North Carolina, Virginia, and New Jersey, and request excluding these coasts from any future oil and gas development. Commenters request that BOEM not allow risky oil and gas drilling in highly sensitive Arctic waters without essential scientific information and an effective plan to clean up an oil spill in the Arctic's extreme conditions. Some commenters suggest that drilling in the Arctic will release black carbon pollution directly onto Arctic ice, which will accelerate melting and put sea ice-dependent species at even greater risk. Commenters discuss the impacts of the 1969 oil spill in Santa Barbara California and the resulting implementation of restrictions.

A few commenters discuss the DOD restrictions on offshore drilling due to incompatibility with the maintenance of military readiness, military activities, and safety concerns. According to a commenter, the DOD had previously determined that no oil and gas activity could occur in portions of the Atlantic. Another commenter, who requests that BOEM maintain the moratorium on oil and gas activities in the GOM beyond 2022, notes that the Eastern GOM Planning Area is also critical to the DOD due to the number of military testing and training activities conducted there. Another commenter suggests that the U.S. military restricts drilling in the Pacific Ocean, stating that 36 percent of the Southern California Planning Area faces site-specific stipulations due to military conflicts.

Several commenters, however, urge BOEM to include all offshore planning areas in the initial phase of the 2019-2024 Program. These commenters reference several benefits of oil and gas development, including how the billions of barrels of oil equivalent in the undiscovered areas could contribute to the Nation's oil and natural gas needs for decades. Commenters cite the economic gains experienced by GOM states and coastal communities with the increase in GOM offshore oil and gas activity, including an increase in Gross Domestic Product and public revenue. Commenters also state that new offshore development will allow America to sustain an energy renaissance and preserve the Nation's energy security.

**APPENDIX B: ECONOMIC ANALYSIS METHODOLOGY FOR THE
2019–2024 NATIONAL OUTER CONTINENTAL SHELF
OIL AND GAS LEASING
DRAFT PROPOSED PROGRAM**

Abbreviations and Acronyms

AEO	<i>Annual Energy Outlook</i>
bbbl	barrels of oil
BOE	barrel of oil equivalent
BOEM	Bureau of Ocean Energy Management
Btu	British thermal units
CO ₂	carbon dioxide
CO	carbon monoxide
DPP	<i>2019–2024 National OCS Oil and Gas Leasing Draft Proposed Program</i>
EIS	environmental impact statement
GHG	greenhouse gas
GOM	Gulf of Mexico
mcf	thousand cubic feet
NEV	net economic value
NO _x	oxides of nitrogen
NSV	net social value
OCS	Outer Continental Shelf
OEEM	Offshore Environmental Cost Model
PFP	Proposed Final Program
PM _{2.5}	Particulate matter with a diameter equal to or less than 2.5 microns
PM ₁₀	Particulate matter with a diameter equal to or less than 10 microns
SO ₂	sulfur dioxide
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
VOC	volatile organic compound
WEB3	When Exploration Begins, version 3

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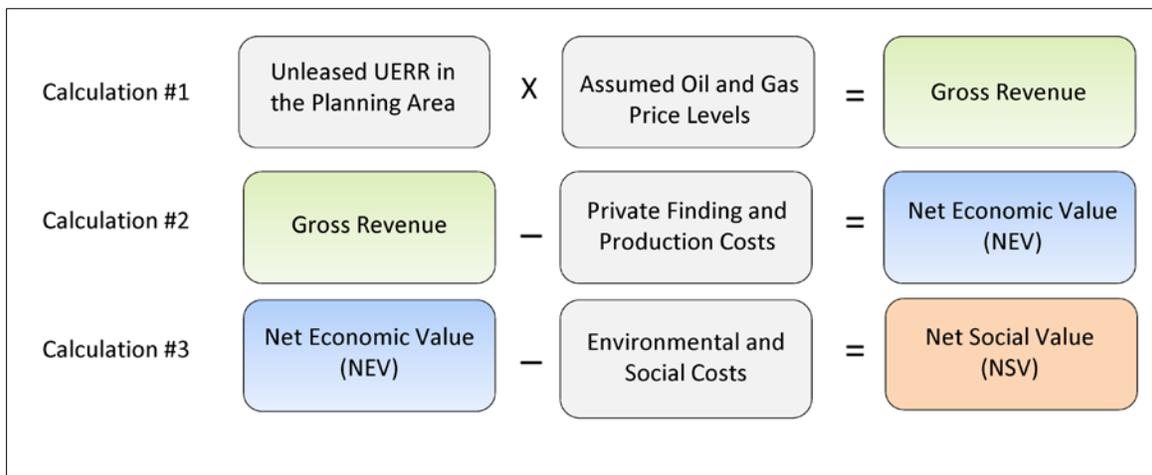
Chapter 1 Net Social Value Analysis Methodology

1.1 INTRODUCTION

The purpose of the net social value (NSV) analysis conducted for the Draft Proposed Program (DPP) analysis is to provide a relative value ranking of planning areas to assist the Secretary in making the initial National OCS Program decision. This includes providing the Secretary with a quantitative metric to compare planning areas based on available resources and the relative private, environmental, and social costs of extracting those resources. The NSV analysis at this stage is an appraisal of the value of each planning area. For the upcoming Proposed Program and Proposed Final Program (PFP) analyses, the analysis uses anticipated production rather than all available undiscovered economically recoverable resources (UERR). Anticipated production reflects more refined assumptions of exploration and development activities and associated production. These later stage analyses also account for other factors that are important in evaluating specific program decisions, such as rig availability, demand conditions, supply-induced price changes on domestic consumers and producers, and the impacts of energy substitutes that would compensate for forgone OCS production in the absence of lease sales under an approved National OCS Program.

The analysis presented here is based on an evaluation of all resources estimated to exist in each planning area. The analysis considers both the value of these resources and the private, environmental, and social costs necessary to explore for, develop, produce, and transport these resources. Figure B-1 summarizes the components of the NSV analysis.

Figure B-1: Components of the DPP Net Social Value Analysis



Key: UERR=undiscovered economically recoverable resources.

The NSV of OCS oil and gas resources is calculated by subtracting both the private and environmental and social costs of exploration, development, production, and transportation from the gross revenue of all UERR in each planning area. The estimates of benefits and costs presented in the NSV analysis were obtained using the same basic methods as those used for the analyses performed for the previous National OCS Programs. The timing assumptions, described in the next paragraph, are the same as those used in the 2017–2022 DPP analysis.

The NSV for the 2019–2024 DPP analysis is calculated through a scenario in which all currently available resources are leased during the initial year of the new National OCS Program (2019). This scenario avoids a circuitous logic whereby the analysis would prematurely presume the size, timing, and location decisions that are to be based, in part, on that same analysis, and so, cannot be made until that analysis is complete. This approach is consistent with the Court’s opinion in *California II* (see Section 2.7 in the DPP) that it was reasonable to use a methodology that avoided that circuitous logic for the ranking of planning areas required by the OCS Lands Act at this stage of the planning process. In this scenario, the resources are discovered and produced at an orderly and expeditious rate typical of each planning area, assuming there are no special constraints that might result from a Secretarial decision on size, timing, and location of lease sales. Each region has specific timing assumptions assigned to it, based on characteristics in that region (e.g., development and production in the Alaska planning areas is expected to start later than production from Gulf of Mexico [GOM] planning areas). Other than considering regional characteristics, there are no binding constraints on the pace of exploration and production. Therefore, it is assumed that as many rigs are available as are necessary for drilling and there are no worker shortages.

When the next round of analyses is prepared for the Proposed Program, the net social benefits analysis will focus only on the planning areas and portions of planning areas (i.e., the program areas) identified for leasing consideration in the DPP decision (see Part I of the DPP). The analysis will only include economic benefit and cost estimates associated with those resources anticipated to be discovered and produced as a result of the new National OCS Program (as opposed to total available resources). The different resource assumptions used at each stage of the National OCS Program are illustrated in Figure 5-8 in the DPP. Further, the Proposed Program analysis will include an estimate of consumer surplus benefits for each program area and will subtract environmental and social costs associated with the energy market substitutes should a new National OCS Program not be approved.

The NSV analysis is approached from a national perspective, which provides the Secretary with a clear picture of the overall balance of benefits and costs tied to the total resources available in each planning area. In addition to this national approach to costs and benefits, another aspect of social value involves comparison of the benefits of incremental employment, labor income, and other such factors associated with OCS oil and gas exploration and development activity. This approach is more appropriate when considering impacts from the local or regional perspective and is used in the analysis on equitable sharing of developmental benefits and environmental risks covered in Chapter 8 of the DPP.

1.2 NSV STEP 1: GROSS REVENUE

The NSV analysis begins with the calculation of the gross revenue from the production of all UERR in each of the 26 OCS planning areas. Gross revenue equals the production of each resource multiplied by the assumed price level (see Figure B-1).

1.2.1 Resource Assumptions

The DPP analysis assumes that all unleased UERR on the OCS as of July 2019 are leased in the first year of the National OCS Program and produced throughout the life of the National OCS Program. The total UERR used for the NSV calculation are shown in the DPP in Table 5-1 in Section 5.3.6, Unleased Undiscovered Economically Recoverable Resources.

1.2.2 Price-Level Assumptions

Leasing from the 2019–2024 Program will stimulate exploration, development, and production activity for decades, over which time oil and natural gas prices could fluctuate drastically. Historical oil price volatility has shown that unanticipated market and political events, new technologies, weather, geopolitical unrest, or economic changes 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 NSV analysis would render it difficult to separate out the effects of assumed price changes and their timing from the resource and cost differences in planning areas on the measures of NSV. Given the extreme uncertainty surrounding oil and natural gas prices over the life of leases sold during this National OCS Program, the analysis includes resource and net benefits evaluated at each level of three sets of real price cases shown in Table B-1. These price cases are consistent with the Bureau of Ocean Energy Management’s (BOEM) *Assessment of Undiscovered Technically Recoverable Oil and Gas Resources of the Nation’s Outer Continental Shelf, 2016* (BOEM 2016a).

Three different sets of flat price cases allow the decision maker to more clearly identify the extent to which net benefits vary under a wide range of general price levels, independent of other input assumptions such as the timing of activities. As recommended by the Office of Management and Budget, a real discount rate of 3 percent is used in the Proposed Program analysis to aggregate the 40 years of effects at a society-wide rate of time preference (OMB 2003).

Table B-1: Price Cases

Oil (per bbl)	Natural Gas (per mcf)
\$40	\$2.14
\$100	\$5.34
\$160	\$8.54

Key: bbl = barrel of oil, mcf = thousand cubic feet of natural gas

The NSV calculation is conducted at three different price cases to show the wide range in available resources and impacts. The Secretary can relatively easily remove lease sales from the National OCS Program schedule if prices and industry interest fall. However, there are instances in which the Secretary cannot add lease sales to a National OCS Program schedule once it is in place, regardless of changing conditions, without following the same multi-step, time-consuming process.

The relationship among price cases, economically recoverable resource estimates, and activity levels is not linear. This is clearly displayed in the DPP in Table 5-1 in Section 5.3.6, where resources are ranked by the \$100/barrel oil price case. If the UERR were ranked by the \$40/barrel or \$160/barrel oil price cases, the ranking of planning areas would be different.

1.3 NSV STEP 2: NET ECONOMIC VALUE

After BOEM estimates the resources' gross revenue, the second stage in the NSV analysis is to calculate the NEV. The NEV equals the discounted gross revenue from the produced oil and natural gas minus the discounted costs of exploring, developing, producing, and transporting the oil and natural gas to the market (i.e., the costs required to realize the economic value of the resources). The NEV can be considered as the present value of the expected economic rent collected from development of the UERR. The Federal Government, as lessor, collects most of the NEV as transfer payments in the form of cash bonuses, rentals, royalties, and taxes. The lessees, as private firms, retain the remainder as economic profits that could be distributed to shareholders or reinvested in exploration and development projects. The NEV therefore can be equated to the sum of the present values of government revenue and a measure of after-tax profits.

The NEV for undiscovered resources in unleased portions of each planning area is calculated by assuming hypothetical schedules of activities covering exploration, development, production, and transportation of the UERR. BOEM's NEV estimates for the planning areas analyzed use the same schedules of exploration, development, and production activities that are used in the environmental and social cost analysis. As discussed, the schedule of activities assumes that all resources are leased in the first year and explored, developed, and produced as quickly as possible, realizing the basic constraints of the particular region. The activities are expressed in aggregated terms, such as exploration wells drilled, platforms installed, and resources produced. Costs specified for the activities are consistent with the costs used for estimating the UERR. Costs are scaled for the different price cases using a cost-price "elasticity factor."¹

Based on the calculated government share and general estimates of foreign shareholder proportions in foreign companies, we use only 95 percent of our estimate of NEV to measure the domestic portion of NEV from a planning area.² In the DPP, Table 5-3 in Section 5.3.3 shows the domestic NEV estimates in the three columns under the Net Economic Value column header.

¹ Elasticity is a measure of responsiveness. In this case, the cost-price elasticity measures the responsiveness of OCS oil development costs to changes in oil prices. The cost-price elasticity was defined based on internal analyses that found that a statistically significant relationship exists between crude oil price and an index of upstream capital cost. These analyses were based in part on indices developed by IHS-CERA, Inc., and were applied to all cost components.

² This reduction is described in BOEM 2017b.

1.4 NSV STEP 3: NET SOCIAL VALUE

The final stage in the NSV analysis subtracts external costs from a planning area's NEV. Beyond the private costs already captured in the NEV estimates, society incurs environmental and social costs from the activities and facilities associated with OCS oil and natural gas exploration, development, and production. The NSV equals the NEV less the present value of environmental and social costs anticipated from the oil and gas activities in each planning area. Environmental and social costs arise from air quality degradation, oil spills, visual and ecological disturbance, and pre-emption of other land uses during the exploration, development, production, and transportation of OCS oil and natural gas resources. In the DPP, Table 5-3 in Section 5.3 presents BOEM's estimates for the NSV, including the environmental and social costs associated with the development of the UERR in OCS planning areas analyzed.

BOEM uses the revised Offshore Environmental Cost Model (OECM) to estimate both the environmental and social costs that would result from OCS activities (Industrial Economics, Inc. and SC&A, Inc. 2015). The OECM models the impact of typical activities associated with OCS production and small oil spills occurring on the OCS. The model uses economic inputs, resource estimates, and exploration and development scenarios as the basis for its calculations. It is not designed to represent impacts from catastrophic discharge events³ or impacts on unique resources such as endangered or threatened species⁴ because these impacts are subject to greater uncertainty and are not as easily monetized.

The OECM calculates the environmental and social costs using the same OCS exploration and development activities used in the NEV analysis. Costs are computed for each of the following categories from activities associated with exploration, development, production, and transportation that might occur with new OCS production:

- environmental costs (air quality and ecology)
- social costs (recreation, property values, subsistence harvests, and commercial fishing).

The OECM estimates air emissions for nine different pollutants: oxides of nitrogen (NO_x), sulfur oxides (SO_x), particulate matter with a diameter of 10 micrograms and 2.5 micrograms (PM₁₀ and PM_{2.5}, respectively), carbon monoxide (CO), volatile organic compounds (VOCs), carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O).

³ 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 severity, efforts to quantify unexpected costs are less meaningful and more uncertain than the other measures considered in the NSV 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 risk and impact of catastrophic oil spills are not considered in the NSV analysis. Catastrophic oil spills are discussed and considered in Chapter 7 and in the paper *Economic Inventory of Environmental and Social Resources Potentially Impacted by a Catastrophic Discharge Event within OCS Regions* (Industrial Economics, Inc. 2014).

⁴ Impacts on unique resources such as endangered species will be discussed in more detail in the Programmatic EIS prepared in conjunction with the Proposed Program decision document. Further, these impacts could be subject to mitigation measures at later stages in the lease sale process.

The OECM applies a monetary value to the first five pollutants, which are known as “criteria air pollutants,” and also to VOCs, which is a precursor to the criteria air pollutant ozone, for which the U.S. Environmental Protection Agency (USEPA) regulates through the National Ambient Air Quality Standards. Greenhouse gas (GHG) emissions in the form of CO₂, CH₄, and NO_x, are included in the discussion of non-monetized impacts.

After reviewing the assumptions underlying the OECM, as well as the current best available information on the impacts on certain species, BOEM determined that, with regard to polar bears and their estimated replacement value, the range of potential impacts and level of uncertainty in the estimates were inconsistent with the uncertainty considered in the remaining environmental and social cost estimates. The heightened level of uncertainty with respect to polar bears causes anomalous model results and, thus, BOEM opted not to include the OECM polar bear results for the NSV analysis conducted at this stage. However, based on the available information on the impacts and valuation of polar bears, BOEM found that the inclusion of the OECM polar bear results were unlikely to affect the relative ranking of planning areas by NSV. BOEM will continue to revise the calculations and assumptions in the model regarding the treatment of polar bears, with the intent of integrating this information in the revised OECM results to be published with the Proposed Program.

It is important to note that at the DPP phase, BOEM does not compare the NSV of a planning area with the NSV that would occur in the absence of leasing. The DPP only considers the environmental and social costs of extracting OCS resources, while the Proposed Program and PFP consider *incremental* environmental and social costs. Incremental environmental and social costs are the costs of producing the resources on the OCS, less the environmental and social costs of the most likely energy market substitutes for these resources. A decision not to hold a sale in any or all of the planning areas means no new leasing would take place in those areas for at least five years and domestic oil and natural gas supply would be reduced. This supply reduction would cause only a small change in hydrocarbon prices so there would be little change in the quantity of oil and natural gas demanded.

In addition to a small amount of reduced consumption, to fulfill demand in the absence of OCS activity or with reduced OCS activity, there would be increases in energy imports, onshore production, and fuel switching (e.g., oil to natural gas, oil to coal). This is an important trade-off in the decision of whether or not to include an area in the Proposed Program and PFP decision. However, the DPP analysis focuses on the ranking of all planning areas assuming that all UERR are leased and produced, and, therefore, it is not fitting to calculate the energy market substitutions and associated environmental and social costs. The incremental environmental and social costs calculated for the program areas in the 2017–2022 Program show that in the absence of a new National OCS Program, the reduced consumption and the environmental and social costs of relying on substitute sources of energy are equal to or greater than these costs from producing area resources under the PFP.⁵

⁵ This is shown in Table 1-7 of the *Economic Analysis Methodology* (BOEM 2016).

To conduct the NSV analysis for the DPP decision document and the subsequent analyses for the Proposed Program and PFP, BOEM’s analysis considers up to the point at which the oil and gas resources mix with other hydrocarbons. Thus, the “downstream” environmental and social costs of processing and refining OCS oil and gas are excluded. This approach was upheld by the U.S. Court of Appeals for the District of Columbia Circuit in *Center for Biological Diversity v. United States Department of the Interior*, where the court ruled that “the text of OCSLA does not require Interior to consider the impact of *consuming* oil and gas extracted under an offshore Leasing Program” (U.S. Court of Appeals 2009, at 484 [emphasis added]). The opinion further states the following:

“as the statutory language and our precedent show, Interior’s obligations under OCSLA extend to assessing the relative impacts of production and extraction of oil and gas on the localized areas in and around where the drilling and extraction occurred. Interior need not consider the impacts of the *consumption* of oil and gas after it has been extracted from the OCS” (*Id.*, at 485; emphasis added).

Though not required for the National OCS Program analysis, to better inform decisionmakers on the impacts of OCS oil and gas leasing, BOEM did consider the full lifecycle GHG emissions for the 2017-2022 Program in its report entitled *OCS Oil and Natural Gas: Potential Lifecycle Greenhouse Gas Emissions and Social Cost of Carbon* (BOEM 2016c). The report found that U.S. GHG emissions would vary only slightly given leasing decisions under the 2017–2022 Program. In fact, the report found that emissions could possibly increase in the absence of new OCS leasing given the energy market substitutes that would replace OCS production (BOEM 2016c). The full report is available at <https://www.boem.gov/OCS-Report-BOEM-2016-065/>.

1.5 NON-MONETIZED IMPACTS

There are other types of environmental and social costs and benefits that are not included in the OEMCM or monetized in the NSV analysis. The NSV analysis captures the important costs and benefits associated with new OCS leasing that can be reliably quantified and estimated. However, there are other potential impacts that cannot be monetized, which are discussed below.

1.5.1 Non-monetized Costs

1.5.1.1 Greenhouse Gas Emissions

The OEMCM estimates the monetary value of possible damages from emissions for six pollutants (NO_x, SO_x, PM₁₀, PM_{2.5}, CO, and VOCs) but does not estimate a monetary value of damages from emissions for GHGs (CH₄, CO₂, and N₂O). Nevertheless, the model does calculate the quantity of GHG emissions that would be emitted. As with the criteria pollutants, GHGs are calculated based on the exploration and development assumptions used in the other aspects of the NSV analysis.

Table B-2 shows the estimated emissions associated with the exploration and development of OCS resources in tons of CO₂ equivalent (CO₂e) for those areas that have hydrocarbon resource potential and/or development potential above negligible. Emissions of CH₄ and N₂O were converted to tons of CO₂e using the USEPA’s Greenhouse Gas Equivalencies Calculator (EPA 2016) of 25 times for CH₄ and 298 times for N₂O.⁶

Table B-2: Greenhouse Gas Emissions

Millions of Tons of CO ₂ Equivalent (CH ₄ , CO ₂ , N ₂ O)			
Planning Area	\$160 Oil Price Case	\$100 Oil Price Case	\$40 Oil Price Case
Central Gulf	172.2	231.7	266.7
Western Gulf	106.7	153.5	169.2
Chukchi Sea	0.0	47.8	60.4
Southern California	27.7	43.7	54.6
Eastern Gulf	32.6	40.1	44.9
Beaufort Sea	5.4	33.8	37.9
Mid-Atlantic	17.8	29.2	38.5
Central California	14.5	22.4	29.4
North Atlantic	13.1	22.1	22.1
Northern California	8.3	15.1	22.4
Cook Inlet	6.9	8.5	8.4
Washington-Oregon	2.4	5.0	6.8
North Aleutian Basin	4.4	4.5	4.6
Gulf of Alaska	0.0	2.7	4.4
South Atlantic	1.8	2.7	3.6

Key: CH₄=methane, CO₂=carbon dioxide, and N₂O=nitrous oxide.

An expanded methodology for estimating the full lifecycle GHG emissions (i.e., emissions from upstream activities as well as the downstream impacts of refining and consumption of OCS oil and gas resources) is included in *OCS Oil and Natural Gas: Potential Lifecycle Greenhouse Gas Emissions and Social Cost of Carbon* (Wolvovsky and Anderson 2017). This report includes the GHG emission estimates associated with the anticipated production under the 2017–2022 Program and was published alongside the 2017-2022 PFP.

1.5.1.2 Onshore Infrastructure

Another category of environmental and social cost that is not monetized in the NSV analysis is the development of onshore infrastructure that directly supports OCS oil and gas activities. In general, the NSV analysis only considers the impacts associated with extracting resources and transporting them to shore. BOEM recognizes that additional environmental and social costs can occur as the result of onshore development and considers them qualitatively here. The majority of these costs are too uncertain to model quantitatively at this stage given uncertainty surrounding the type, quantity, and location of

⁶ The CO₂e conversion factors reflect differences in the Global Warming Potential (GWP) of individual GHGs. The GWP for a specific GHG is predominantly a function of the average time the gas remains in the atmosphere and how strongly it absorbs energy. CO₂ is used as the benchmark for comparison. For example, in the case of CH₄, which has a 100-year GWP factor of 25, CH₄ emissions will cause 25 times as much warming as an equivalent mass of CO₂ emissions over that same 100-year period.

infrastructure needs as well as the unknown potential mitigation measures that other permitting agencies could require to minimize or avoid the environmental impact of any onshore support activities. As noted in the Final Programmatic Environmental Impact Statement (EIS) for the 2017–2022 Program (BOEM 2016a), BOEM is not the permitting or regulatory agency for onshore development. Much onshore infrastructure could be used for existing oil and gas activity onshore or in state waters, other industrial activity near the coasts, or from the energy market substitutes associated with the absence of a sale in a planning area.

The NSV analysis includes the air quality impacts from onshore pipeline construction associated with development in the Chukchi Sea Planning Area. These impacts are relatively foreseeable, because an onshore pipeline would be required to connect the Chukchi Sea to the Trans-Alaska Pipeline System, and these costs are relatively straightforward to monetize using the same quality modeling already captured in the OECM. However, the NSV analysis does not consider other environmental impacts of a potential pipeline.

In general, construction or development of onshore infrastructure could cause changes in air quality, impacts from reductions in coastal marshland, the value of ecosystem services lost (e.g., flood protection), or impacts on water quality. Onshore infrastructure and the possible impacts are discussed in more detail in the Final Programmatic EIS for the 2017–2022 Program (BOEM 2016b) and will be evaluated fully during the development of this National OCS Program and in the subsequent analyses accompanying specific lease sales. The following is a list of the different types of onshore infrastructure, which are generally associated with offshore oil and gas operations:

- **Port Facilities:** Major maritime staging areas for movement between onshore industries and infrastructure and offshore leases.
- **Platform Fabrication Yards:** Facilities in which platforms are constructed and assembled for transportation to offshore areas. Facilities can also be used for maintenance and storage.
- **Shipyards and Shipbuilding Yards:** Facilities in which ships, drilling platforms, and crew boats are constructed and maintained.
- **Support and Transport Facilities:** Facilities and services that support offshore activities. This includes repair and maintenance yards, supply bases, crew services, and heliports.
- **Pipelines:** Infrastructure that is used to transport oil and gas from offshore facilities to onshore processing sites and ultimately to end users.
- **Pipe Coating Plants and Yards:** Sites that condition and coat pipelines used to transport oil and gas from offshore production locations.
- **Natural Gas Processing Facilities and Storage Facilities:** Sites that process natural gas and separate its component parts for the market, or that store processed natural gas for use during peak periods.
- **Refineries:** Industrial facilities that process crude oil into numerous end-use and intermediate-use products.

- Petrochemical Plants: Industrial facilities that intensively use oil and natural gas and their associated byproducts for fuel and feedstock purposes.
- Waste Management Facilities: Sites that process drilling and production wastes associated with offshore oil and gas activities.

Any anticipated onshore infrastructure growth is dependent on existing infrastructure in the planning areas and changes in future offshore drilling. The level of existing onshore infrastructure and amount of new infrastructure varies among the OCS planning areas. While the development of onshore infrastructure to support OCS oil and gas operations could cause environmental and social costs, there would also be developmental economic benefits associated with the construction and operation of the facilities, which are similarly not included in the NSV analysis.

1.5.1.3 *Passive Use Values*

In general, the NSV analysis includes cost estimates of many types of use values, but does not include some values that would be associated as passive use values (also referred to as non-use values). Evidence of passive use values can be found in the trade-offs people make to protect or enhance environmental resources that they do not use.

Within the NSV analysis, certain passive use values are not estimated. The various types of passive use values are as follows:

- Option value: An individual's current value includes the desire to preserve the opportunity to use a resource in the future.
- Bequest value: An individual's value for having an environmental resource available for his or her children and grandchildren to experience. It is based on the desire to make a current sacrifice to raise the well-being of one's descendants. Bequest value is not necessarily equivalent to the value of any information gained as a result of delaying leasing activities.
- Existence value: An individual's utility could be increased by the knowledge of the existence of an environmental resource, even though the individual has no current or potential direct use of the resource.
- Altruistic value: An individual's concern for another.

A large body of literature discusses studies of these values. Estimating passive use values via stated preference surveys, such as the contingent valuation method, requires significant time and resources, and has been subject to scrutiny regarding the validity of results due to their hypothetical nature (i.e., survey respondents express values but are not required to actually pay) (Roach and Wade 2006). While best practices have improved the implementation of these methods over time through integration of validity and scope tests (Shaw and Wlodarz 2013), these methods remains resource-intensive processes.

To the extent that some passive use values exist in the literature, their ability to be transferrable to the BOEM context is probably quite limited. The values were developed using stated preference techniques and the results from such analyses are often highly dependent on the resource and specific context (which would include resource conditions, possible improvements or degradation as a result of policy changes, and payment vehicles). If one were interested in evaluating the extent to which households or individuals

hold passive use values for OCS oil and gas resources, original empirical research would need to be conducted because a benefit transfer approach would not be appropriate given the importance of the specific context for stated preference studies. Total economic value studies (passive use values are part of total economic value) are time consuming and expensive to conduct. These types of studies are most appropriate to conduct in situations where the resources under consideration are unique, where a set of defined changes to the resource can be easily identified, and where the resource(s) are not typically bought and sold in markets. It is not clear this is the case for OCS resources. OCS oil and gas resources are not unique and they are readily bought and sold in markets.

More discussion on the ecological components not included in the NSV analysis is in the report entitled *Forecasting Environmental and Social Externalities Associated with Outer Continental Shelf (OCS) Oil and Gas Development - Volume 1: The 2015 Revised Offshore Environmental Cost Model (OECM)* (BOEM 2015a).

1.5.1.4 *Additional Impacts from Non-Catastrophic Oil Spills*

The NSV analysis quantifies the costs of animal mortality and lost habitat from an oil spill through habitat equivalency analysis, where costs are estimated in terms of the anticipated expense to restore or recreate damaged habitat. The NSV analysis, however, does not quantify the values above the restoration cost at which society could value the damaged resource (i.e., the OECM does not monetize the impacts on unique resources). Additional information is provided in both Volume 1 and 2 of the OECM documentation (2015).

Further, the model does not include ecological costs associated with the use of dispersants or the air quality costs associated with response vessel activity in the event of an oil spill. Those responding to an oil spill could apply chemical dispersants to affected waters to enhance natural dispersion of spilled oil by reducing surface tension at the oil/water interface, increasing the likelihood that wave motion will break the oil into small droplets that are more easily dissolved into water. The use of dispersants can often be controversial, because the dispersants could impact marine species and the environment, particularly in shallow waters (ITOPF 2011).

The impacts of dispersants and response vessel activity are not currently incorporated in the OECM. Adding such impacts to the model would require more detailed data on the likelihood of response activity in a given spill and an estimate of the likely impacts associated with dispersant use. While estimates of potential use could possibly be derived based on historical experience, detailed data relating dispersant use to specific impacts are not readily available.

1.5.1.5 *Additional Ecological Impacts*

The NSV analysis includes monetized impacts on ecological resources through oil spills, but does not monetize the impacts on these resources from general operations. For example, it does not capture costs to habitats or organisms from waste cuttings and drilling muds deposited on the ocean floor near OCS structures, auditory impacts and vessel strikes on marine mammals, or water quality impacts associated with produced water discharged from wells or non-oil discharges from platforms and vessels. BOEM continues to monitor research on these topics for incorporation in future analyses.

1.5.2 Non-monetized Benefits

The OECM does not monetize certain benefits from OCS oil and gas activities because a credible assessment of monetized impacts cannot be made, owing to a lack of available data and inability to associate any monetized impacts specifically with new OCS leasing and production. Several categories of these non-monetized benefits, including recreational fishing and diving, national energy security, and the U.S. trade deficit, can only be evaluated qualitatively and are discussed below.

1.5.2.1 Recreational Fishing and Diving

Obsolete OCS oil and gas platforms can be converted to artificial reefs to support marine habitat. In the GOM, where the seafloor consists mostly of soft mud and silt, artificial reefs and platforms can provide additional hard-substrate areas for a variety of species. The benefits of artificial reefs are well documented and could increase the density of fish species around platforms as compared to natural reef sites (BOEM 2012b).

Gulf coast states have recognized the potential importance of such aquatic structures to marine species and local activities. The artificial reef programs in these states, as part of the Rigs-to-Reefs program, have worked to facilitate the permitting, navigational requirements, and liability transfer for decommissioned and reefed rigs in Federal and state OCS waters. The reduction in pressure on natural surrounding reefs and the impact on local industries, and to a certain extent, the greater economy, illustrate the potential environmental and social benefits artificial reefs could provide. More information on the artificial reefs and the state programs are included in Appendix A-4 of the *Gulf of Mexico OCS Oil and Gas Lease Sales: 2012–2017 Final Environmental Impact Statement* (BOEM 2012b). The leasing from this National OCS Program is expected to increase the number of platforms in the GOM, providing increased gathering areas for commercial and recreational fishermen, and steering reefing activities towards artificial reef locations that tend to decrease navigational and commercial fishing burdens while increasing the attractiveness of sites for recreational and commercial use.

While these benefits exist in the GOM planning areas, the impact on, or other similar benefits to, other planning areas are yet to be determined.

1.5.2.2 National Energy Security

Over the past 50 years, U.S. oil and gas demand, supply, and prices have increasingly shaped U.S. national energy policy concerns and national security issues. Because crude oil is used as a source of energy for many goods, services, and economic activities throughout the U.S. economy, supply disruptions and increases in energy prices affect nearly all U.S. consumers.

Concerns over energy security stem from the importance of crude oil and natural gas within U.S. economic markets and the energy supply disruptions that can occur due to the characteristics and behavior of the global crude oil supply market. The externalities associated with oil supply disruptions—economic losses in GDP and economic activity—have been shown to be greater for imported oil than domestically produced oil. Increased domestic oil production can boost the share of stable supplies in the world market while increased oil imports, often from unstable regions, can have the opposite effect (Brown and Huntington 2010). Increased oil and gas production from the OCS can help mitigate the impact of supply

disruptions and spikes in oil prices on the U.S. economy, mitigating economic downturns as well as the amount of U.S. dollars sent overseas from purchases of crude oil imports.

1.5.2.3 U.S. Trade Deficit

Chapter 1 of the 2019–2024 DPP provides a discussion of energy’s importance in the balance of payments and trade, with an emphasis on the relationship to OCS production and imported oil. In particular, large expenditures on crude oil imports can stifle economic activity and slow down domestic economic growth, as well as impact the rate of U.S. inflation and reduce the real discretionary incomes of U.S. consumers (CRS 2010). Domestic production of oil from the OCS reduces the amount of oil that must be imported from abroad, thereby mitigating the effect that high domestic energy expenditures could have on the U.S. trade deficit.

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Chapter 2 Fair Market Value Analysis: WEB3 Methodology

As described in Section 10.1.2, at the National OCS Program stage, BOEM considers how the timing of offering planning areas for oil and gas leasing affects their value through the use of a hurdle price analysis. The hurdle price is the price below which delaying exploration for the largest potential undiscovered resource field in the sale area is more valuable than immediate exploration.⁷ BOEM uses the WEB3 (When Exploration Begins, Version 3) model to calculate the hurdle prices associated with each planning area. This appendix provides additional information on the methodology behind the hurdle price calculation.

BOEM's calculation of the hurdle price for the DPP is similar to that used in the 2017–2022 PFP. This approach is different from what was used in the 2017-2022 DPP analysis and incorporates the environmental and social costs of OCS activities in optimal timing of leasing decisions based on NSV. NSV is the NEV less the environmental and social costs. This will be described in more detail in this chapter.

2.1 WEB3 CALCULATIONS

BOEM uses the WEB3 model to calculate the social value of offering leases now versus waiting. WEB3 computes the social value of immediate leasing versus delays of 1 through 10 years. BOEM considers leasing in this 2019–2024 Program to be immediate leasing (2019), a one-year delay (2020) and up to a four-year delay (2023). Delays of 5 to 10 years are considered as leasing in 2024 through 2029, which are after the end of the 2019–2024 Program. If the social value of delaying leasing until the next National OCS Program (2024–2029) is higher than leasing at any time during this current period, then delaying the area until the next program could be optimal. This analysis is conducted for planning areas that have hydrocarbon resource potential and/or development potential above negligible.

WEB3 calculates the NEV as:

$$NEV = Q(P - V) - F$$

In this equation, Q is the quantity of resources, P is price, V is variable costs, and F is fixed costs. Both the quantity of resources and price inputs are random variables determined by the WEB3 model. BOEM then adjusts the NEV for the environmental and social costs associated with development to calculate the NSV.

⁷ All else being equal, the largest field tends 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. BOEM used the 95th percentile field size as the approximate largest field size available in each planning area.

$$NSV = NEV - ESC$$

In this equation, ESC is the estimate of environmental and social costs. BOEM then compares the expected value (denoted by the symbol E_{t+1}) of the NSV if an area is available for lease immediately with the expected value of the NSV if leasing is delayed. WEB3 calculates the expected social value in the next period (in time, $t + 1$) based on the choice to lease or wait in the first period (e.g., “What is the value tomorrow of my choice to explore today?”). The social value of leasing is calculated as:

$$SV_L = E_{t+1}[NSV(r_s)|lease\ in\ t]$$

The social value of waiting is calculated as:

$$SV_W = E_{t+1}[NSV(r_s)|wait\ in\ t]$$

In this equation, SV_L is the social value of leasing and SV_W is the social value of waiting. The calculation of social value under both the leasing and waiting scenarios are discounted at the social discount rate, r_s . This analysis uses a social discount rate of 3 percent.

To calculate the hurdle price, the WEB3 is run iteratively for various (higher) start prices until the first start price is found, at which leasing in 2019–2024 produces a higher NSV than leasing in 2024 or after. This price then becomes the hurdle price, the price below which waiting to lease is optimal when compared to leasing immediately.

2.2 HURDLE PRICE ASSUMPTIONS

To calculate the hurdle price, BOEM employs various assumptions to estimate the value of the resources and how this value might change with delay. This section outlines the assumptions for resources, prices, private costs, and social costs.

2.2.1 Resource Assumptions

The first step in calculating hurdle prices is to identify the resource assumptions in each planning area. WEB3 uses two separate resource assumptions in calculating the potential field size in a region: the probability that the lessee finds resources during exploration, and, if resources are found, the expected field sizes. BOEM assumes a 20 percent success rate for exploratory drilling. BOEM uses an approximation of the largest field size in each planning area as the expected field size. The largest field size, all else being equal, tends to have the highest net value per equivalent barrel of resources and thus would be the most profitable in a sale and provide the lowest hurdle price. The reason for focusing on just the largest field is that the decision criterion using the hurdle price is intended to be conservative, to avoid the risk of withholding, on economic grounds, an area that might have at least one field that ought to be developed immediately. This decision is appropriate at the programmatic level where the decision is simply made whether or not to include an area in the National OCS Program, not to make a final decision on holding the sale, its configuration, and its financial terms.

For the purposes of determining hurdle prices, BOEM analyzed the distribution of expected undiscovered field sizes associated with each planning area based on results from BOEM’s *Assessment of Undiscovered Technically Recoverable Oil and Gas Resources of the Nation’s Outer Continental Shelf, 2016*

(BOEM 2016; herein referred to as the 2016 National Assessment) estimates at the mean probability. In general, the 2016 National Assessment addresses undiscovered resources in a framework of field size and probability. The field size framework is provided by the United States Geological Survey (USGS) field size classes, which enables grouping fields. For example, there might be two fields in a range of 2 to 4 million BOE (MMBOE); three fields in the next class covering 4–6 MMBOE; and so on. The corresponding large field size from which hurdle prices are calculated were then associated with the 95th percentile of the field size distribution. The 95th percentile field size provides a practical estimate of a large field size by eliminating the tails of the resource distribution. Although the 95th percentile corresponds to a 1 in 5 chance of discovering a field that exceeds the largest field size shown, this percentile constitutes a reasonable assumption based on known discoveries and/or analog information in each planning area. BOEM reviewed discovered field sizes and determined that the 95th percentile field provides an appropriate estimation of a large field size for the hurdle price analysis.

2.2.2 Price Assumptions

The WEB3 model incorporates a specific type of price model that is appropriate for the analysis of real options for commodities like oil and gas. The price model in WEB3 represents the range of possible future prices generated by a specific algorithm that models a mean-reverting stochastic process. In this formulation, the change in price from one time to the next is random, and the probability of a step up or down reflects a tendency for movement toward the mean level. WEB3 calculates price as the following:

$$P_{t+1} = P_t \left[\frac{T_{t+1}}{P_t} \right]^\alpha \varepsilon_{t+1}$$

Where: P_t is the real price in time t ; T_{t+1} is the real mean trend price in time t ; α is the reversion rate; and ε_{t+1} is a random term. The three inputs to this price model are the trend price, the reversion rate, and the volatility that is incorporated in the random term. The mean trend gives the price level in each year that market prices tend to revert to after they have randomly moved off of trend. In other words, if the actual price in 2019 happens to be in the vicinity of \$50/boe and the trend price is specified as a flat \$90, then the model represents the 2020 price by combining an upward tendency—since the 2019 price is below the mean trend—and a random factor that might be upwards or downwards. The real price in time $t =$ year of lease sale is the “start price” of this process. In the application to the issue of the timing of lease sales, the WEB3 model is solved for the lowest “start price” price that provides a greater net social value from leasing in the current National OCS Program versus waiting until the future. That solution is what is called the hurdle price. If the market price at the time of leasing happens to be lower than the calculated hurdle price, then a delay of leasing is indicated.

For the hurdle price analysis, BOEM assumed that the trend price was the BOE price combining \$90 per barrel (bbl) of oil and \$4.80 per thousand cubic feet (mcf) of natural gas in 2019 dollars. Following the mean-reversion framework, we assumed that the starting price (which is equivalent to the hurdle price) will revert to the trend price at a rate of 12 percent of the difference per year. The volatility (that is, the annualized standard deviation) is assumed to be 32 percent. These parameters were estimated by BOEM by a regression analysis of historical oil and gas prices, where the regression model was the mean-reverting model.

An important aspect of WEB3 is that resource estimates and prices are input as BOE values. The gas-oil ratios in each planning area varies significantly, so market and mean trend prices per BOE in each area reflect that area's weighting of the gas and oil price based on the area-specific gas-oil ratio. See Chapter 10 in the DPP for hurdle price results for more detail.

2.2.3 Private Cost Assumptions

Once the largest field size is set (approximated by the 95th percentile field size), the WEB3 model requires estimates of the private exploration and development costs associated with that field. Development and production cost inputs for the WEB3 model are consistent with those used in the calculation of the NEV in Section 5.3. The costs used for both analyses are based on the commercial Questor cost modeling system, data collected by BOEM for the socioeconomic analysis of the National OCS Program (i.e., the economic impact model MAG-Plan), and cost estimates used in tract evaluations. BOEM identified an approximate level of infrastructure required for the size of the largest field in each planning area and calculated total costs based on the individual components. A lessee's decision to develop is determined in WEB3 by the net present value of the project. In calculating the net present value of a project for its developer, a real discount rate of 7 percent is used. Note that this is different from the social discount rate, 3 percent, that is used to calculate the net social value of revenues and social costs.

2.2.4 Environmental and Social Cost Assumptions

BOEM estimates the environmental and social costs of the exploration, development, production, transport, and decommissioning of the largest field size in each planning area using the OECM. The environmental and social costs include air emissions, oil spill risks, etc. These costs are subtracted because they are anticipated to be incurred from the traditional annual input measures of the NEV (e.g., gross revenues and private costs). By including environmental and social costs into the hurdle price analysis, the hurdle prices increase slightly over what they would be solely focusing on NEV. The increase is due to the fact that the inclusion of environmental and social costs changes the NEV into a lower NSV, thereby providing a larger proportional effect of higher prices on the underlying value of a given field size. The amount that the hurdle price changes owing to the inclusion of environmental and social costs in each planning area varies depending on the relative magnitude of these costs and the estimate of NEV in each area.

Of course, the hurdle price calculation does not include every facet of uncertainty and is not intended to accurately predict future price paths. However, the hurdle price analysis still provides a useful screening tool to consider areas for inclusion in the 2019–2024 Program.

Chapter 3 References

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