

2 ALTERNATIVES INCLUDING THE PROPOSED ACTION

The Notice of Intent (NOI) for this programmatic environmental impact statement (PEIS), which was published on April 2, 2010 (75 CFR Part 63: 16828–16829), identified eight Outer Continental Shelf (OCS) planning areas for possible inclusion in the 2012-2017 OCS Oil and Gas Leasing Program (the Program), but identified no specific lease sale alternatives. The eight planning areas identified in that NOI were as follows:

- The Beaufort Sea, Chukchi Sea, and Cook Inlet Planning Areas in Alaska.
- The Western, Central, and Eastern Gulf of Mexico (GOM) Planning Areas, with the latter focusing on a small area along the western boundary of this planning area.
- The South and Mid-Atlantic Planning Areas.

Subsequently, on December 1, 2010, the Secretary of the Interior announced an updated oil and gas leasing strategy for the OCS (FR Notice; FR Doc. 2010–33149). Consistent with the Secretary’s direction to proceed with caution and focus leasing in areas with currently active leases, the area in the Eastern GOM Planning Area, which remains under a Congressional moratorium except for the area not restricted from leasing and development per the Gulf of Mexico Energy Security Act of 2006, and the South and Mid-Atlantic Planning Areas were dropped from consideration for potential sales and development through 2017, and thus are no longer under consideration in this PEIS.

The following six OCS planning areas are considered in this PEIS:

- The Beaufort Sea, Chukchi Sea, and Cook Inlet Planning Areas in Alaska.
- The Western, Central, and Eastern GOM Planning Areas, with the latter focusing only on a small area along the western boundary of this planning area.

This PEIS analyzes eight alternatives for the leasing of Federal offshore lands by the U.S. Department of the Interior (USDOJ), Bureau of Ocean Energy Management (BOEM), under the Program.

The PEIS analyses assume the implementation of all mitigation and other protective measures required by statute, regulation, or standard lease stipulations. All BOEM sale proposals must account for rules and regulations prescribing environmental controls applicable to lease operators. Lease stipulations, OCS regulations, and other measures provide a regulatory base for implementing environmental protection on leases issued as a result of a sale. The BOEM Environmental Studies Program and the analyses and monitoring of activities in a sale area provide information used in formulating the Agency’s regulatory control over the activities that occur during the life of the leases. This PEIS also assumes that the Bureau of Safety and

Environmental Enforcement (BSEE, formerly part of BOEMRE (see Chapter 1), will continue to use its broad permitting, monitoring, and enforcement authority to ensure safe operations and environmental protection, including use of the best available and safest technologies and requiring existing mitigations. The PEIS assumes that BSEE will continue to monitor operations after drilling has begun and will carry out periodic inspections of facilities (in certain instances, in conjunction with other Federal Agencies such as the U.S. Environmental Protection Agency [USEPA]) to ensure safe and clean operations over the life of the leases. The seven action alternatives (Alternatives 1 through 7) listed below are not mutually exclusive, and the Secretary has the discretion to combine alternatives or elements of different alternatives (43 CFR 46.420(c)). These alternatives include the following:

- Alternative 1 – Proposed Action

Under the proposed action, there would be as many as 15 lease sales distributed among the six OCS planning areas (Figure 2-1), including 12 sales in the GOM and three sales in Alaska. The GOM sales include five annual sales in each of the Central and Western Planning Areas and up to two sales in a small area of the Eastern GOM Planning Area that includes 83 lease blocks being considered for this Program (Figure 2-2). The Alaska sales would occur late in the Program and include one sale in each of the Beaufort Sea and Chukchi Sea Planning Areas (Figure 2-3) and one sale in the Cook Inlet Planning Area (Figure 2-4).

Neither the proposed action nor any alternative to the proposed action includes consideration of leasing in the Pacific or Atlantic OCS regions. The OCS Planning Areas included in the proposed action are shown in Figure 2-1. All the other action alternatives, i.e., Alternatives 2 through 7, are the same as the proposed action, except as specified below. Any of these action alternatives, or elements thereof, can be combined at the Secretary's discretion.

- Alternative 2 – Exclude the Eastern GOM Planning Area for the duration of the Program
- Alternative 3 – Exclude the Western GOM Planning Area for the duration of the Program
- Alternative 4 – Exclude the Central GOM Planning Area for the duration of the Program
- Alternative 5 – Exclude the Beaufort Sea Planning Area for the duration of the Program
- Alternative 6 – Exclude the Chukchi Sea Planning Area for the duration of the Program
- Alternative 7 – Exclude the Cook Inlet Planning Area for the duration of the Program

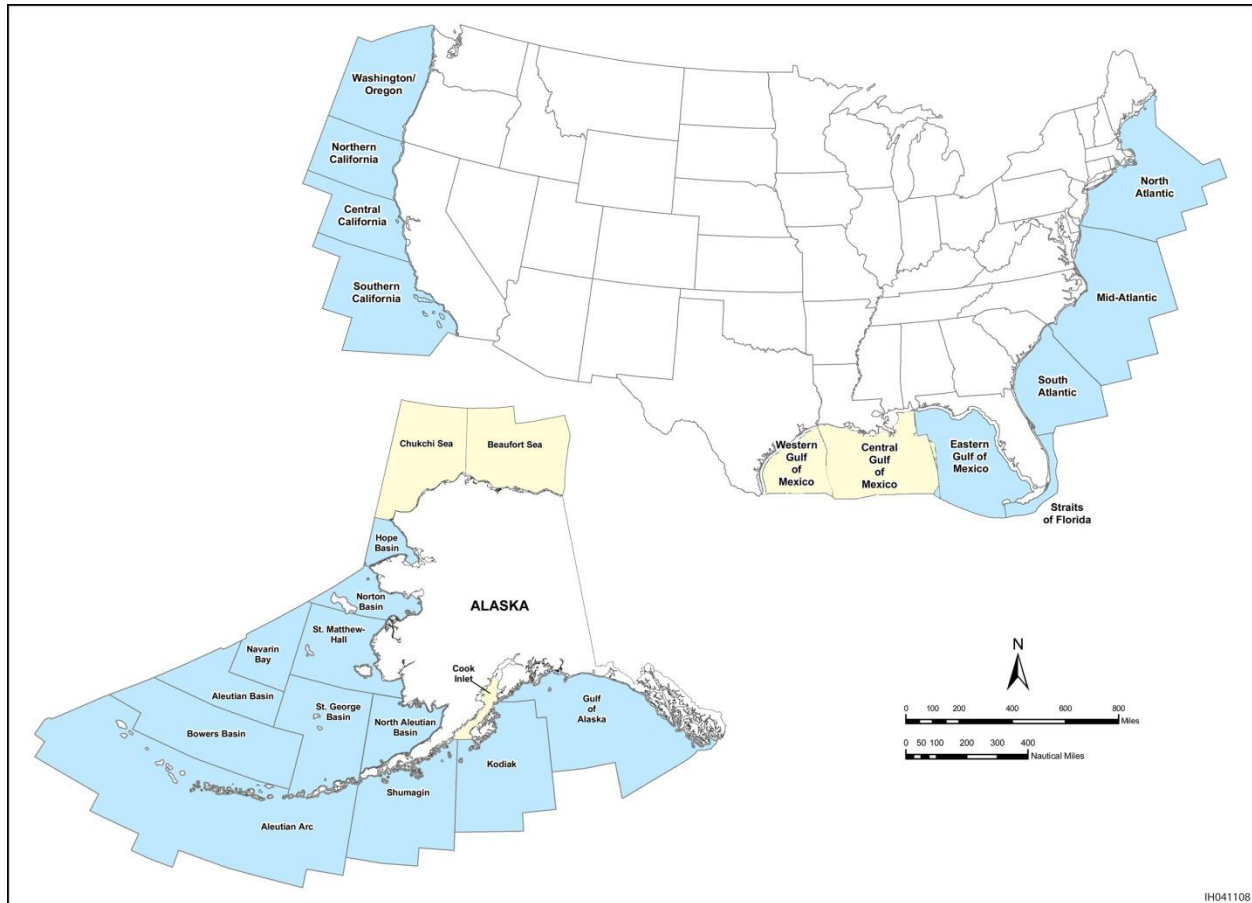


FIGURE 2-1 OCS Planning Areas — Planning Areas in Yellow Are under Consideration for Inclusion in the 2012-2017 OCS Oil and Gas Leasing Program¹

- Alternative 8 – No Action

This chapter describes each alternative and summarizes the potential environmental impacts of the alternatives in comparative form. The summary describes the primary impacts based on the detailed analysis of all potential impacts presented in Chapter 4, Environmental Consequences. The impact analyses presented in this PEIS were generated from exploration, development, transportation, and oil spill scenarios developed specifically for analytical purposes. See Sections 4.4.1, 4.4.2, and 4.6.1 for more information on the analytical scenarios used in this PEIS.

¹ The two whaling deferrals in the Beaufort Sea and the 40-km (25-mile) coastal deferral in the Chukchi Sea Planning Areas that are included in the 2012-2017 Arctic program area are not visible at this map scale. These deferral areas are shown in Figure 2-3.



FIGURE 2-2 Gulf of Mexico Planning Areas Where Leasing for Oil and Gas Development May Occur under the 2012-2017 OCS Leasing Program

2.1 ALTERNATIVE 1 – PROPOSED ACTION

The four OCS regions are divided into 26 OCS Planning Areas (Figure 2-1), and under the proposed action, leasing is considered in two of the four BOEM OCS regions: GOM and Alaska. Within the GOM OCS region, leasing is being considered in the Central and Western GOM Planning Areas, and in a small extreme western portion of the Eastern GOM Planning Area (Figure 2-2). Because of the small portion of the Eastern GOM Planning Area under consideration for the program, which contains only 83 of the nearly 11,000 lease blocks in the Eastern GOM Planning Area, and because of the relatively small amount of production that might occur in these blocks, the exploration and development and the oil spill scenarios identified for both one and two sales in the Eastern GOM are analytically identical. Therefore, the impact analysis for a proposed action that includes two eastern GOM sales would also apply to a proposed action that included only a single sale. In addition, the USDOJ is considering leasing in three of the 15 Alaska OCS planning areas: the Beaufort Sea and Chukchi Sea Planning Areas (Figure 2-3), and the Cook Inlet Planning Area (Figure 2-4). The later scheduling of the potential sales in the Beaufort Sea, Chukchi Sea, and Cook Inlet Planning Areas represents a strategic approach to leasing in Alaska and is structured to allow time for further work in critical areas such as further scientific study and environmental assessment, further information collection on the geologic conditions and resource potential in the area through exploration under existing leases, and further development of oil spill response preparedness and infrastructure capabilities. During Program implementation, this will also

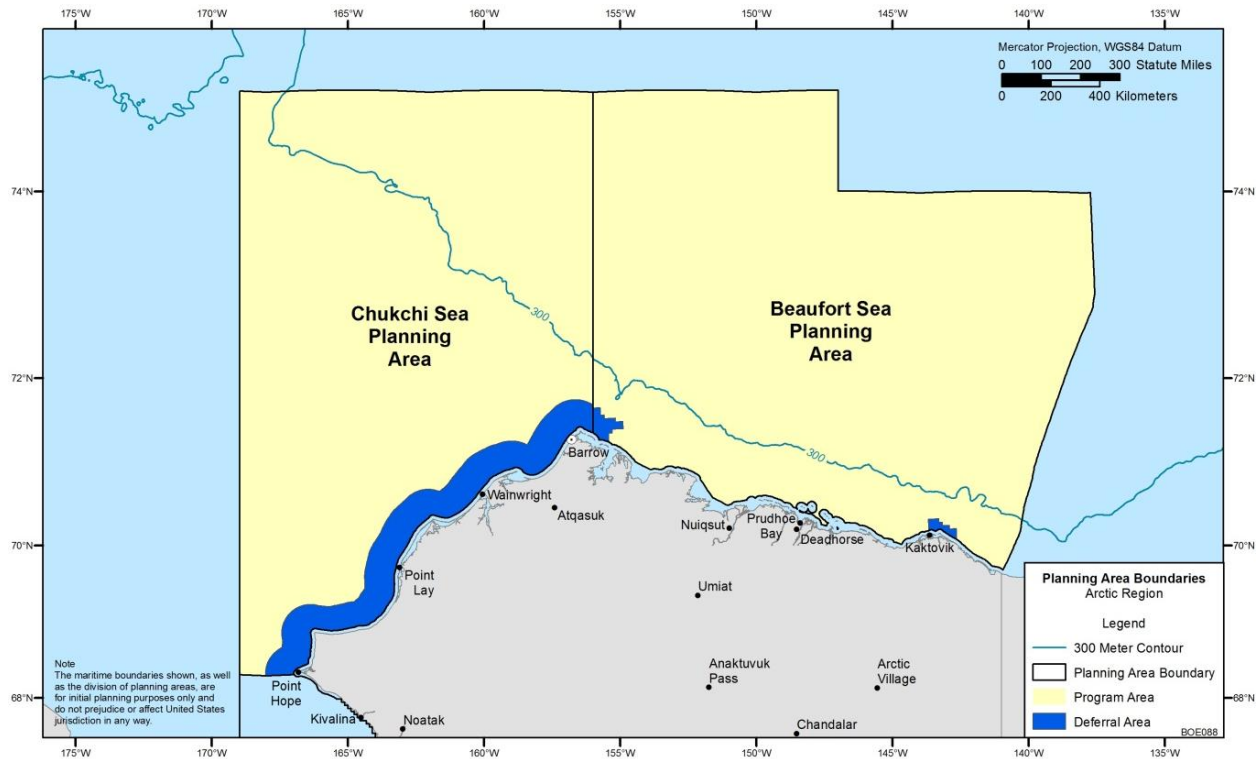


FIGURE 2-3 Arctic Region Beaufort Sea and Chukchi Sea Planning Areas Where Leasing for Oil and Gas Development May Occur under the 2012-2017 OCS Leasing Program

allow the Secretary of the Interior to develop a more focused vision for leasing in the Arctic. No other OCS Planning Areas are analyzed in this PEIS because the USDOJ is not considering those areas for leasing under the Program. The proposed action is the USDOJ’s preferred alternative.

Specifically, the proposed action calls for 15 lease sales under the Program:

- Western Gulf of Mexico Planning Area — five area-wide lease sales; one sale annually beginning in 2012.
- Central Gulf of Mexico Planning Area — five area-wide lease sales; one sale annually beginning in 2013.
- Eastern Gulf of Mexico Planning Area — one to two lease sales in the extreme western portion of the planning area; one sale in 2014 and one sale in 2016.

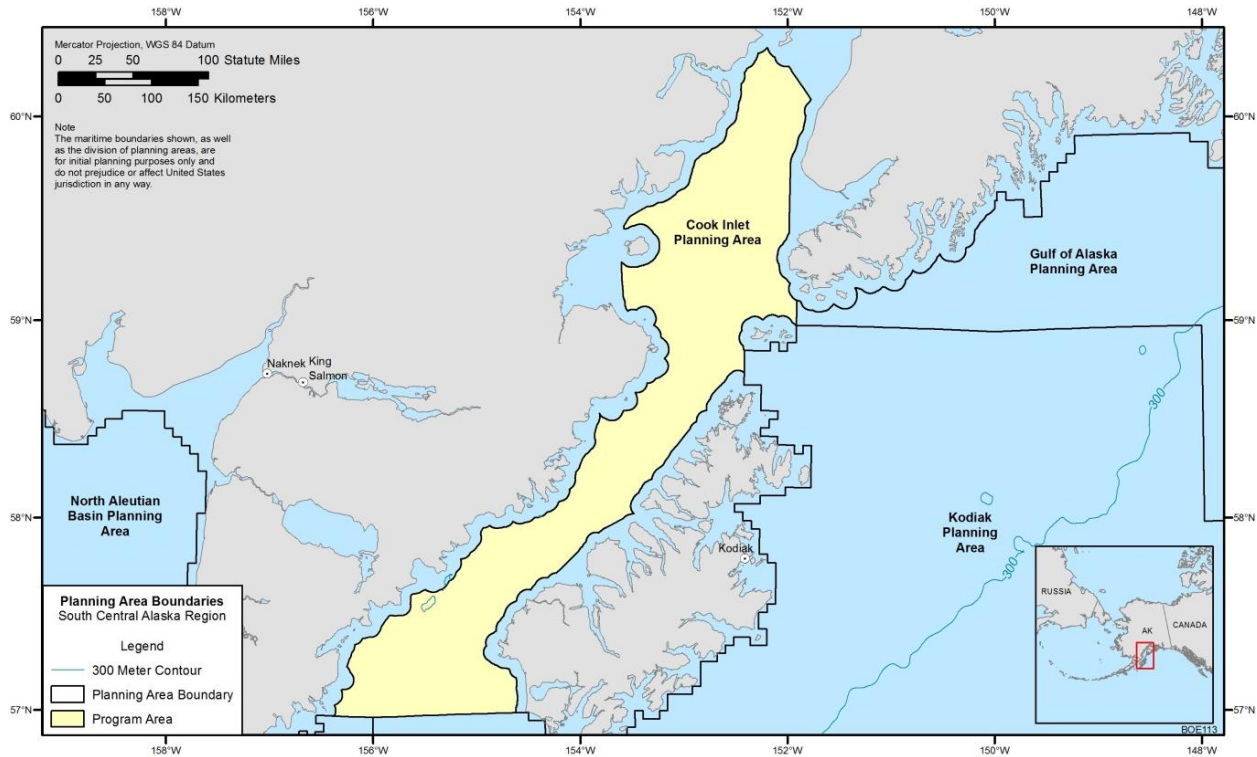


FIGURE 2-4 Cook Inlet Planning Area Where Leasing for Oil and Gas Development May Occur under the 2012-2017 OCS Leasing Program

- Cook Inlet Planning Area — one sale in 2016.²
- Beaufort Sea Planning Area — one sale in 2017 that excludes two bowhead whaling areas (Figure 2-3):
 - The excluded Barrow Subsistence Whaling area is 49 whole or partial blocks located at the western border of the planning area
 - The excluded Kaktovik Subsistence Whaling area is 28 whole or partial blocks located offshore of Kaktovik.
- Chukchi Sea Planning Area — one sale in 2016 with a 40 km (25 mi) coastal buffer exclusion (Figure 2-3).

² The Cook Inlet Planning Area is included in the Proposed Final Program as a special interest sale. On March 27, 2012, BOEM issued a request for interest in the *Federal Register* (77 FR 18260) to determine the level of industry interest in a possible Sale 244 in 2013 in the Cook Inlet Planning Area, whether focused on a few blocks or prospects, or on a larger portion of the Program area. The comment period closed on May 12, 2012. BOEM has considered the level of industry interest and other issues and concerns reflected in comments and has decided to proceed with the pre-sale process to consider initially the entire planning area. The sale date has been moved to 2016 to allow time to conduct all the steps necessary to hold a sale, meeting the various requirements under the Act, NEPA, and other appropriate statutes.

Activities that could occur as a result of the 15 lease sales under the proposed action may extend over a period of 40–50 years. The impact-producing factors associated with these activities include the placement, use, and decommissioning of offshore infrastructure such as rigs, platforms, and pipelines, and the expansion or construction of, and use of onshore facilities such as support bases and processing plants, and these impacting factors apply to activities in any of the planning areas that are part of the proposed action and alternatives considered in this PEIS.

Chapter 4, Environmental Consequences (Sections 4.4.1, 4.4.2, and 4.6.1), presents the basic assumptions about anticipated production, exploration, development, transportation, and accidental oil spills used to prepare the PEIS. The scenarios help define the location, timing, and scope of possible exploration and development that are expected to result from the suite of lease sales proposed. For example, potential exploration and development is expected to occur on the shallow shelf (within the 300-m [984-ft] depth contour) in the vicinity of historical leasing interest and not in relatively deep waters of the Arctic (Figure 2-3). The specific estimates of offshore infrastructure required to support exploration and development of the hydrocarbon resources (scenarios) associated with Alternative 1 (the proposed action) are provided in Tables 4.4.1-1, 4.4.1-3, and 4.4.1-4 in Section 4.4.1 of this PEIS. Impacting factors and activity-specific impacts are discussed in additional detail in Section 4.1, and in the resource-specific impact discussions presented elsewhere in Chapter 4 of this PEIS.

Transportation for most oil and gas from the GOM planning areas would be accomplished by extending and expanding the existing offshore pipeline systems. Some of the oil in deepwater areas and a small amount of the oil from the nearshore areas of the GOM Planning Areas would be transported by barge or shuttle tanker.

In the Alaska OCS region, the temporary lifting of the export ban on Alaskan crude oil has led to infrequent and limited shipments to East Asia. However, the vast majority of oil transported via the Trans-Alaska Pipeline System (TAPS) has been sent to the U.S. West Coast. Oil from the Beaufort Sea and Chukchi Sea Planning Areas would be transported by new subsea and overland pipelines to the TAPS and delivered to the marine terminal facilities in Valdez, where it would be loaded on tankers and shipped primarily to West Coast ports. Natural gas development and production is not expected to begin for at least a decade in the Arctic. A new gas export system (likely to be a large diameter overland pipe) would need to be built and installed before gas production could begin. Gas would be transported by new subsea and overland pipelines that would be constructed through the same corridor as the new oil pipelines. The offshore pipelines would be trenched into the seafloor as a protective measure against damage by submerged ice ridges (ice keels). A second new pipeline would be required to transport gas from shore to a main transportation hub near Prudhoe Bay. Oil and gas from the Cook Inlet Planning Area would be transported to shore using new subsea pipelines, with new onshore common-carrier pipeline systems delivering the oil to existing refineries in Nikiski and gas to transmission facilities in the Kenai area.

2.2 ALTERNATIVE 2 – EXCLUDE THE EASTERN GOM PLANNING AREA FOR THE DURATION OF THE PROGRAM

Under Alternative 2, the Program would not include new leasing in the Eastern GOM Planning Area. This alternative includes 13 lease sales, with the same number of sales in other planning areas and the same exploration and development and oil spill scenarios as identified for the proposed action. The potentially available resources in the Eastern GOM Planning Area available for leasing are estimated to include no more than 0.1 billion barrels (Bbbl) of oil and 0.2 trillion cubic feet (Tcf) of natural gas.

2.3 ALTERNATIVE 3 – EXCLUDE THE WESTERN GOM PLANNING AREA FOR THE DURATION OF THE PROGRAM

Alternative 3 has no lease sales occurring in the Western GOM Planning Area, with the resultant Program having 10 lease sales. The potentially available resources in the Western GOM Planning Area include up to 1.0 Bbbl of oil and 4.6 Tcf of natural gas.

2.4 ALTERNATIVE 4 – EXCLUDE THE CENTRAL GOM PLANNING AREA FOR THE DURATION OF THE PROGRAM

Under this alternative, there would be no lease sales in the Central GOM Planning Area, and only 10 lease sales under the Program. The potentially available resources in the Central GOM Planning Area include as much as 4.3 Bbbl of oil and 19.1 Tcf of natural gas.

2.5 ALTERNATIVE 5 – EXCLUDE THE BEAUFORT SEA PLANNING AREA FOR THE DURATION OF THE PROGRAM

Alternative 5 includes a total of 14 lease sales in all OCS Planning Areas identified for the proposed action except for the Beaufort Sea Planning Area. Under this alternative, OCS oil and gas leasing under the Program and any subsequent exploration and development in the Arctic region would occur only in the Chukchi Sea Planning Area (except in the deferred area). The potentially available resources in the Beaufort Sea Planning Area that would not be made available under this alternative include as much as 0.4 Bbbl of oil and as much as 2.2 Tcf of natural gas.

2.6 ALTERNATIVE 6 – EXCLUDE THE CHUKCHI SEA PLANNING AREA FOR THE DURATION OF THE PROGRAM

Under Alternative 6, there would be a total of 14 lease sales held under the Program in all OCS Planning Areas included in the proposed action except for the Chukchi Sea Planning Area. Under this alternative, OCS oil and gas leasing under the Program and any subsequent exploration and development in the Arctic region would occur only in the Beaufort Sea Planning

Area (except in the deferred areas). The potentially available resources in the Chukchi Sea Planning Area that would not be made available under this alternative include as much as 2.1 Bbbl of oil and as much as 8.0 Tcf of natural gas.

2.7 ALTERNATIVE 7 – EXCLUDE THE COOK INLET PLANNING AREA FOR THE DURATION OF THE 2012-2017 PROGRAM

Under Alternative 7, no sales would be held in the Cook Inlet Planning Area, resulting in 14 sales in the Program. Under this alternative, OCS oil and gas leasing under the Program and any subsequent exploration and development in the Alaska region would occur only in the Beaufort Sea and Chukchi Sea Planning Areas, except in the deferred areas. The potentially available resources in the Cook Inlet Planning Area that would not be made available under this alternative include as much as 0.1–0.2 Bbbl of oil and as much as 0.7 Tcf of natural gas.

2.8 ALTERNATIVE 8 – NO ACTION

Alternative 8 is the No Action Alternative. Under this alternative, there would be no lease sales conducted under the Program in any OCS Planning Areas. As much as 8.2 Bbbl of oil and 35 Tcf of natural gas would not be available under this alternative. Energy substitutes are discussed in Section 4.5.7.

2.9 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER PROGRAMMATIC EVALUATION

Pursuant to the National Environmental Policy Act (NEPA), BOEM conducted two public scoping periods (one extending from April 2, 2010, through June 30, 2010, and another from January 6, 2011, through March 31, 2011) and a Draft PEIS public comment period (extending from November 10, 2011, through January 9, 2012) to solicit comments for the purpose of developing and finalizing this PEIS (see Chapter 1). Comments received through these commenting opportunities were used to identify issues to be addressed and to provide input into the development of the alternatives considered in this PEIS. Additional alternatives suggested through the public commenting opportunities that differ from Alternatives 1–8 above include:

- Expand the oil and gas leasing program to include more or all OCS Planning Areas beyond those identified in the NOI.
- Hold multiple sales in some OCS Planning Areas.
- Delay sales until further data regarding oil spill response, drilling safety, and baseline conditions are collected and analyzed for the Arctic and GOM areas.

- Develop alternative/renewable energy sources as a complete or partial substitute for oil and gas leasing on the OCS.
- Add spatial exclusions and temporal deferrals, such as no leasing in parts of planning areas and seasonally limiting activity in other parts of planning areas.
- Reduce the lease sale sizes to smaller than area-wide (less than full planning areas).
- Defer deepwater leasing in the GOM planning areas.

These alternatives were considered but eliminated from further evaluation in this PEIS for a variety of reasons, and each alternative is discussed separately below. As discussed in Section 4.3.2, many suggested alternatives are more appropriate for consideration at later phases of 5-year Program implementation, such as the lease sale phase. Section 4.3.2 identifies the range of alternatives, deferrals, and mitigations suggested during the NEPA process and discusses how these suggestions will get carried through to later phases of the Program and addressed in subsequent NEPA documents.

2.9.1 Expand the Oil and Gas Leasing Program to Include More or All OCS Planning Areas

Under discretionary authority conferred by Section 18 of OCSLA, the Secretary of the Interior hosted regional public meetings in Atlantic City, NJ, New Orleans, LA, Anchorage, AK, and San Francisco, CA, in April 2009 to gather information and public comment to help build a comprehensive energy strategy for the OCS. Invited to each of these meetings were regional governors, elected Federal officials, private citizens, interested organizations, energy producers, advocacy groups, and local governments. Using the information that was collected from these meetings, and from the extended comment period, the Secretary decided which planning areas to include.

The alternatives considered in this PEIS (excluding the No Action Alternative) include oil and gas leasing in as many as 6 of the 26 OCS Planning Areas (Figure 2-1). Alternatives that include more OCS Planning Areas (either adding selected individual areas such as the Atlantic Planning Areas, or including all 26 OCS Planning Areas) were not considered in this PEIS for several reasons.

Most of the Eastern GOM Planning Area, as well as areas of the Central GOM Planning Area within 161 km (100 mi) of the Florida coast, are restricted from leasing and development until 2022 as a result of the Gulf of Mexico Energy Security Act of 2006. In Alaska, Bristol Bay in the North Aleutian Basin Planning Area was withdrawn, by the President, on March 31, 2010, from leasing consideration through June 30, 2017, pursuant to Section 12 of OCSLA. As a matter of caution, in the aftermath of the Deepwater Horizon (DWH) event, in April 2010, the Secretary of the Interior announced, on December 1, 2010, a narrowing of the scope of the PEIS by removing the South and Mid-Atlantic Planning Areas from consideration for potential sales

and development through 2017. Because of these moratoria and removals, expansion of the Program to all planning areas is not possible, and expanding it to planning areas other than those considered in this PEIS is not feasible without further postponement of the Program. Also, inclusion of all OCS Planning Areas would have been inconsistent with the December 1, 2010, direction of the Secretary of the Interior to focus the scope of the PEIS on leasing in areas with current active leases. Many of the 26 OCS Planning Areas do not currently have active leases or substantial interest from industry, and were thus not considered for inclusion in the Program, or for evaluation in this PEIS.

2.9.2 Hold Multiple Lease Sales in Some OCS Planning Areas

The proposed action identifies 15 lease sales in six planning areas: five sales each in the Western and Central GOM Planning Areas, two sales in the Eastern GOM Planning Area, and one each in the Cook Inlet, Beaufort Sea, and Chukchi Sea Planning Areas. Alternatives with additional sales, such as having more than two sales in the Eastern GOM Planning Area or more than one sale in each of the Alaska Planning Areas, would be inconsistent with the Secretary of the Interior's Program announced on December 1, 2010, of an updated oil and gas leasing strategy for the OCS that would focus on leasing in areas with currently active leases and an existing knowledge base and proceed with caution. The Secretary decided on this strategy after consideration of various Section 18 factors (as outlined in the Proposed Final Program document that is being published concurrently with this PEIS), such as laws, goals, and policies of adjacent states; the level of knowledge or lack thereof concerning the potential for recoverable oil and gas resources, and the environmental and other relevant information needed to make informed decisions. Holding one sale in each planning area is more consistent with a cautionary approach in the Arctic.

2.9.3 Delay Sales until Further Evaluation of Oil Spill Response, Drilling Safety Reform, and Baseline Environmental Conditions Is Complete

Following the DWH event, there has been considerable activity by not only BOEM but also other Federal and State agencies with regard to the adequacy of past oil spill response plans and drilling safety, as well as the development of new approaches for spill response and increasing drilling safety. USDOJ has raised standards for offshore drilling safety and environmental protection in order to reduce the risk of another loss of well control in our oceans and improve our collective ability to respond to a blowout and spill. USDOJ and other agencies across the Federal Government remain focused on these issues and are expected to maintain this focus throughout the duration of the Program and in the future. Moreover, BOEM continues to closely analyze environmental conditions in the GOM in light of the DWH event, and will continue to update analysis as new information becomes available. BOEM will continue to integrate new information — including analysis of the effects of changes in regulation, notices to lessees, or other policy changes — as it becomes available, and as the agency conducts additional analysis at subsequent stages of the leasing process, including analysis in preparation for specific lease sales. Waiting until further evaluation is completed would delay the Program beyond the 5-year revision requirement specified in Section 18 of OCSLA.

It has been suggested that BOEM could delay GOM sales several years while more scientific information is gathered regarding the DWH event. These suggestions to delay lease sales have been incorporated into the programmatic discussion of deferrals and mitigation in Section 4.3.2. OCSLA mandates that the Secretary prepare a schedule of proposed lease sales every five years that balances the timing and location of leasing with the potential for environmental harm. While approval of a Program establishes a schedule for potential lease sales, BOEM undertakes robust planning and analysis, including NEPA review, before reaching a final decision about whether to hold each individual lease sale scheduled in the Program. The consequences of approving the proposed program would be to establish a schedule for one or more lease sales within the areas included in the program, but that does not require that any particular sale will occur; a scheduled lease sale can be canceled if deemed necessary in the future. Should the Program be approved, before a lease sale can occur, an additional NEPA document, which would consider a no action or no-sale alternative, would need to be prepared for each of the OCS lease sale areas included in the Program. These subsequent NEPA documents would also focus in greater detail on local conditions in the lease sale area. At the time of the lease sale itself, decisions as to subarea deferrals specific to that particular sale would be made. Therefore, the concept and possibility of delaying lease sales is implicit in the alternatives presented in this PEIS and in the phased OCSLA process. In view of the increasing focus and specificity of NEPA documents that would be prepared if the Program is approved and progresses to further stages, the Bureau believes that the level of analyses in this PEIS are appropriate at this preliminary planning stage of the Program.

In addition, in the GOM, where annual lease sales are the norm, holding fewer or delaying lease sales does not necessarily equate to significantly less cumulative OCS activity in the short-term. Under a fewer or delayed GOM lease sales scenario, BOEM still expects that most of the OCS activity that could occur over the next few years will occur under existing 5-year Programs, existing and imminent lease sales, already approved or imminently approved plans, new geophysical and geological permit applications, etc. These activities will occur in the absence of a new 2012-2017 Program. With continuing environmental studies and technical research, additional information will become available to the decision maker at later stages of the Program when specific activities are proposed and evaluated.

2.9.4 Develop Alternate/Renewable Energy Sources as a Complete or Partial Substitute for Oil and Gas Leasing on the OCS

Energy use in the United States is expected to continue to increase from present levels through 2035 and beyond (EIA 2011). For example, the U.S. Energy Information Administration (EIA) has projected that U.S. consumption of crude oil and petroleum products will increase from about 18.8 million bbl per day in 2009 to about 21.9 million bbl per day in 2035 (EIA 2011). Oil and gas reserves in the OCS (and especially the GOM) represent significant sources that currently help meet U.S. energy demands, and are expected to continue to do so in the future. Although BOEM recognizes recent advances in renewable energy technology, renewable energy-friendly Federal and State energy policy changes (e.g., Department of Energy and tax subsidies, State renewable energy portfolio standards), and increases in U.S. market demand and supply, renewable energy, under the present set of policy

assumptions, is not a major partial substitute in the immediate future. Investments and policy changes required to achieve such a significant shift in reliance on such sources are not reasonable or economically practicable within the 2012-2017 framework. This fact supports a less-searching treatment of alternative energy as a reasonable alternative to some oil and gas OCS development. A more detailed discussion of alternate fuels and other energy substitutes for oil and gas appears in Section 4.5.7, which considers the environmental effects of the No Action Alternative. Also, consistent with judicial guidance on the 5-year Program, BOEM has incorporated by reference and summarized the Energy Alternatives and Environment report (BOEM 2012) within the framework of the No Action Alternative to address the potential for substitution toward renewable energy sources.

The OCSLA, in conjunction with other statutes, extends broad powers to the President and designated Federal Agencies (such as BOEM) over leasing activities on the OCS. Section 18 of the OCSLA specifically directs the Secretary of the Interior to prepare and periodically revise an oil and gas leasing program to implement the policies of OCSLA, and BOEM conducts oil and gas lease sales and executes leases under the OCSLA. Renewable energy projects on the OCS are also managed in conjunction with other Federal and State authorities. Under the OCSLA, Federal planning does not specifically integrate oil and gas leasing with renewable energy leasing. BOEM has issued a final rule specific to the establishment of a program to grant leases, easements, and rights-of-way for renewable energy projects on the OCS (30 CFR Parts 250, 285, and 290).

2.9.5 Add Areal and Temporal Exclusion and Restriction Zones around Sensitive Areas and Resources

BOEM indicated in its April 2010 NOI that other areal or temporal exclusions within planning areas may be considered. BOEM received comments requesting that the PEIS include alternatives that exclude portions of program areas from leasing during the Program or that seasonally exclude or restrict drilling in some Arctic areas when ice is present. Specific examples include creating more exclusion areas in the Arctic, particularly in the Hanna Shoal and Camden Bay areas, protecting the bowhead whale migration corridors, and temporal exclusion or restriction of drilling in the Arctic when ice is present. Other comments suggested exclusion of sensitive areas in the GOM to avoid or minimize contact from a DWH-like discharge event. Specific examples include excluding areas of the GOM OCS in which the Loop Current could transport oil from a large discharge event over great distances, avoiding important ecological areas and features, and developing buffer zones around areas as appropriate, such as coastal migratory corridors, population centers, and critical habitat of listed species.

The Proposed Action excludes areas in the Arctic that were excluded in the 2007-2012 Program. The PEIS does not analyze additional deferrals at this time. Detailed analyses of the large number of proposed exclusions in different planning areas, which vary widely in spatial definition and the completeness of supporting scientific information, can be more meaningfully accomplished at the lease sale stage. As the implementation of the Program continues, the Secretary may carve out additional deferral areas. The determination of other areal and temporal exclusions and restrictions will depend on the location of specific lease sale areas and whether

exploration and further analysis of resource potential, environmental concerns, and potential effects on other uses such as subsistence and fishing. New scientific information may become available or public input may be provided later in the Program in advance of actual lease sales that help inform such exclusion decision-making. The exclusion of specific areas or blocks within a planning area is generally considered at the lease sale stage of the Program or when specific OCS projects are being evaluated.

The PEIS is a planning disclosure document that informs “big-picture” decisions about the overall size of the Program, the planning areas included in the Program, and the number of lease sales that could occur during the Program. The ecoregional scale used in the PEIS to identify areas where OCS effects and vulnerable environmental resources are likely to intersect and where mitigations may need to be developed during the Program to reduce potential impacts does not provide the fine scale and detailed information needed to develop protected areas on a block-by-block basis. Furthermore, the lease sale process is a phased process, and additional site-specific studies, consultations, and analyses may be required before effective mitigations and exclusions can be developed. By including most of the areal extent of the included six planning areas in the Program, the USDOJ is attempting to maintain flexibility in fulfilling its mandate to provide for both U.S. energy needs and to protect the marine and coastal environment. However, BOEM recognizes the importance of considering temporal and spatial deferrals and mitigation at the appropriate OCSLA phase to avoid and minimize environmental effects, and has expanded this PEIS in Section 4.3.2 to outline measures that BOEM will use to enhance the transparency of the process for the consideration of such deferrals and mitigation throughout the tiered phases of Program implementation.

2.9.6 Reduce the Lease Sale Sizes to Smaller Than Area-Wide (less than full planning areas)

At the programmatic stage, considering the full planning area provides for the broadest and most extensive analysis in order to support the balancing of different considerations — including social, economic, and environmental issues. While significant domestic energy resources are assumed to be located on the OCS, the precise locations and quantities are unknown because not all promising areas and reservoirs have been fully explored and delineated. One way to optimize discovery of significant oil and gas deposits is to encourage companies to pursue unique and diverse exploration and development strategies based on differing views as to resource location, availability, and extractability. The area-wide process allows lessees to concentrate efforts on tracts they consider most promising as opposed to those pre-identified by the government, unless those areas have been already excluded through pre-lease sale planning and environmental review. The Secretary can reduce the area offered for leasing within a planning area at the lease sale stage of the Program based on more information about the location and value of recoverable resources, the potential vulnerability of environmental resources, or other Section 18 concerns. Section 2.10 below and Section 4.3.2 discuss BOEM’s commitment to enhance transparency of the tiering process, which includes considering other leasing strategies as Program implementation takes place. Leasing strategies other than area-wide leasing are described in the Proposed Final Program.

2.9.7 Defer Oil and Gas Leasing in Deepwater Areas of the Central and Western GOM Planning Areas

During the scoping and Draft PEIS comment periods, several commenters expressed opposition to drilling in deepwater areas. The comments expressed general concerns about deepwater drilling in the GOM after the DWH event that occurred on April 20, 2010, and resulted in a discharge estimated to be 4.9 million barrels of oil (although about 17% of that is estimated to have been contained). The comments did not specify a definition of deep water to apply to an alternative that excludes certain areas from leasing to reduce the risk of occurrence of a catastrophic discharge event, nor did the comments identify specific risk factors associated with drilling in “deep” water compared to drilling at other water depths. The Secretary defined deepwater in the context of areas of the GOM with potential for increased drilling risk as water depths of 152 m (500 ft) and deeper when he directed BOEM on May 28, 2010, to exercise its authority under the OCSLA to suspend certain drilling activities for a period of up to 6 months in those water depths. The Secretary later clarified the suspension to cover deepwater operations that involved the use of certain deepwater technology. On October 12, 2011, BOEM lifted the May 28, 2011, drilling suspension on the basis that major issues pertaining to deepwater drilling risk had been addressed through multiple venues in the intervening 5 months.

The PEIS acknowledges the importance of understanding catastrophic discharge event risk for planning, leasing, and regulatory decisions during the Program. To further this understanding, the PEIS includes in Section 4.3, Assessment of Issues of Programmatic Concern, a discussion of the current knowledge of the relative importance of catastrophic discharge event risk factors, and a synthesis of this information to identify catastrophic event risk in different program areas. This section identifies water depth as one of many risk factors that should be considered with other factors when making specific leasing decisions. True vertical depth is a better exposure variable for considering downhole well integrity risk, which applies to both continental shelf and slope OCS activities. True vertical depth is the vertical distance from the current drilling depth or final well depth to the drilling rig floor. True vertical depth, in part, determines bottomhole pressure conditions. Similarly, while there may be greater logistical difficulties to containing a catastrophic discharge event in deep water, the risk to environmental resources from shallow water drilling could be greater, because of the proximity to and greater likelihood of oil contact to many of those resources. Therefore, excluding deepwater areas from the Program does not necessarily equate to avoiding adverse environmental impacts. Section 4.3.4 also describes recent and ongoing regulatory and industry reforms targeting improvements in drilling safety and reducing the risk of the occurrence of catastrophic discharge events.

Furthermore, to exclude all deepwater areas in the GOM from potential oil and gas exploration and development would not be reasonable in light of the purpose and need for the oil and gas leasing program, which is to help meet the Nation’s energy needs by developing oil and gas resources in a manner consistent with environmental protection and the laws and policies of affected States. According to the analytical scenario used in this PEIS, based on recent lease sale and industry exploration and development activity, without deepwater activity in the GOM, 93% of the expected oil production in the GOM would be unavailable, essentially removing it from the program (see Table 4.4.1-2 for related scenario information). Over the last approximately

20 years, leasing, drilling, and production have moved steadily into deeper waters. As of 2009, there were approximately 7,310 active leases in the U.S. GOM, 58% of which were in deep water. Likewise, deepwater oil production rose about 786% and deepwater gas production increased about 1,067% from 1992 to 2007 (Nixon and Shepard 2009). The leasing schedule must ensure a proper balance between oil and gas production and possible environmental impacts, while also considering relative environmental sensitivity among OCS regions and competing uses of the OCS. Portions of planning areas, such as deepwater areas, can potentially be deferred from leasing during the program at the lease sale stage if there is, for example, a demonstrated and significant relative risk of a spill or blowout associated with certain deepwater areas, the presence of sensitive environmental resources, space use conflicts, or other reasons.

2.10 MEASURES TO ENHANCE TRANSPARENCY IN TIERING PROCESS

The USDOJ's procedures for implementing NEPA provide for adaptive strategies that allow for the adjustment of an action during implementation where appropriate (43 CFR 46.415). BOEM's process for implementing the Program through the OCSLA phases represents an opportunity for adaptive management. The Secretary's decision to include a schedule of potential lease sales in a 5-year Program is the initial step in a long, complex process; the actual Program is then materialized through numerous subsequent decisions on lease sales, geological and geophysical permits, exploration and development plans, and ultimately, decommissioning plans.

As discussed in more detail in Section 4.3.2, BOEM is committing to several process enhancements to ensure transparency during the phased OCSLA and tiered NEPA processes of this Program. Although specific approaches to implementation may be tailored to the different needs of the Regions and their stakeholders, BOEM is determined to improve the effectiveness of the tiering process by:

- Committing to implementing an **alternative and mitigation tracking table** to track the receipt and treatment of alternative and mitigation suggestions starting with the 5-year Program.
- Committing to **strengthening the pre-lease sale process** by taking a number of steps to enhance opportunities for members of the public to comment and provide new information in the pre-lease sale planning process.
- Committing to preparing an **annual progress report** of the 5-year Program voluntarily, expanding the requirement of Section 18(e) of the OCSLA.
- Committing to **systematic planning** opportunities that foster improved governmental coordination, communication, and information sharing.

2.11 SUMMARY OF IMPACTS ANTICIPATED FROM THE PROPOSED ACTION AND ALTERNATIVES

In general, oil and gas development follows a four-phase process, beginning with (1) exploration to locate viable deposits, (2) development of the production well and support infrastructure, (3) operation (oil or gas production), and (4) decommissioning of the offshore facility once it is no longer productive or profitable. Under the proposed action, or Alternatives 2 through 7, routine operations associated with each of these phases will have the same or similar impact-producing factors associated with them (Table 2.11-1), and these have “typical” types of impacts, regardless of location. The magnitude and importance of those impacts on the sensitive environmental resources, however, will be site- and project-specific. For example, pipeline trenching, regardless of location, will result in disturbance of the sea floor and associated biota and habitats, and generate suspended sediments that will affect local water quality. The importance of such impacts will depend on the types of biota and habitats present (seagrass beds vs. mud bottom; endangered species) and ambient water quality conditions. The types of impacts identified for the proposed action are therefore the same as those expected under each of the alternatives except the No Action Alternative. Table 2.11-2 presents a summary comparison of impacts of all the alternatives, including the No Action Alternative. The difference in potential impacts among the action alternatives will largely be in where those impacts may be incurred. Each of the alternatives to the proposed action excludes one of the six planning areas included in the proposed action from the 2012-2017 OCS leasing program, and most resources in the excluded planning area would not be expected to be affected by routine operations in the other planning areas. Because routine operations include some impacting factors (such as seismic survey noise and support vessel traffic) that may extend beyond planning area boundaries, resources in deferred planning areas may be affected by routine operations associated with development in adjacent planning areas.

One potential impact-producing factor of oil and gas development under each of the seven action alternatives is an accidental oil spill. The types of effects such accidental spills may have on specific resources will be similar between the proposed action and the other action alternatives, although the duration and magnitude of the impacts will depend on the location, size, timing, and duration of the spill; the effectiveness of spill containment and cleanup operations, and the biological and cultural resources affected by the spill.

The evaluation of a No Action Alternative is required by the regulations implementing NEPA (40 CFR 1502.14(d)). If the Secretary were to adopt this alternative, it would halt OCS pre-sale planning, sales, and new leasing from 2012 to 2017. However, exploration, development, and production stemming from past sales would continue.

This alternative would shut down the OCS leasing program from mid-2012 through mid-2017. The amounts of OCS natural gas (up to 35 trillion cubic feet) and oil (up to 8.1 billion barrels of oil) that could help meet national energy needs would be forgone. That amount of energy would have to be replaced by a combination of imports, alternative energy sources, and conservation.

TABLE 2.11-1 Impact-Producing Factors Associated with OCS Oil and Gas Development

Impact-Producing Factor	Development Phase				
	Exploration		Development	Operation	Decommissioning
	Seismic Survey	Exploration Well			
<i>Noise</i>	X	X	X	X	X
Seismic noise	X	X			
Ship noise	X	X	X	X	X
Aircraft noise		X	X	X	X
Drilling noise		X	X		
Trenching noise			X		
Production noise				X	
Offshore construction			X		
Onshore construction			X		
Platform removal					X
<i>Traffic</i>	X	X	X	X	X
Aircraft traffic		X	X	X	X
Ship traffic	X	X	X	X	X
<i>Drilling Mud/Debris</i>		X	X		
<i>Bottom/Land Disturbance</i>		X	X		
Coring and drilling		X	X		
Pipeline trenching			X		
Onshore construction			X		
<i>Air Emissions</i>	X	X	X	X	X
Offshore	X	X	X	X	X
Onshore			X	X	X
<i>Explosives</i>					X
Platform removal					X
<i>Lighting</i>	X	X	X	X	
Offshore	X	X	X	X	
Onshore			X	X	
<i>Visible Infrastructure</i>		X	X	X	
Offshore		X	X	X	
Onshore			X	X	
<i>Space Use Conflicts</i>	X	X	X	X	
Offshore facilities	X	X	X	X	
Onshore facilities			X	X	
<i>Accidental Spills</i>	X	X	X	X	X

Market forces are expected to be the most important determinant of the substitute mix for OCS oil and gas. Key market substitutes for forgone OCS oil production would be imported oil, conservation, switching to gas, and onshore production. For OCS natural gas, the principal substitutes would be switching to oil, onshore production, imports, and conservation.

In addition to market-based substitutes, the Nation or individual States might choose to encourage or even impose programs designed to deal with the energy shortfall. To replace oil, these programs might favor alternative vehicle fuels such as ethanol or methanol, vehicles with greater fuel efficiency, or alternate transportation methods such as mass transit.

As a partial replacement for the forgone natural gas, governments might mandate increased reliance on coal, nuclear, hydroelectric, solar, or wind-generated electric power. In addition, governments might give more emphasis to programs encouraging more efficient electricity transmission and more efficient use of gas and electricity in factories, offices, and homes.

2.12 COST-BENEFIT ANALYSIS OF ALTERNATIVES

As a complement to the impact conclusions presented in Section 2.13 below, BOEM presents here the conclusions of its cost-benefit analysis. Per OCSLA Section 18 requirements, BOEM prepares a cost-benefit analysis (CBA) in support of each 5-year Program. That analysis, presented in full as the Net Benefits analysis in the Proposed Final Program, quantifies social benefits from the production of oil and natural gas, as well as the environmental and social costs associated with the anticipated exploration, development, and production under the activities of the 2012-2017 Program (Table 2.12-1; Figure 2.12-1). The CBA incorporates the environmental and social costs associated with substituted energy sources that become necessary if no sales are held in a given program area (no new sales are held in any program area under the No Action Alternative). The analytical methodology is also summarized in the Proposed Final Program and detailed information on the methodology and economic assumptions can be found in the *Economic Analysis Methodology for the Five Year OCS Oil and Gas Leasing Program for 2012-2017* (BOEM 2012). Although the PEIS and the Proposed Final Program are companion documents provided to the decision-maker, the cost-benefit analysis is incorporated by reference and summarized here since it is relevant to a choice among environmentally different alternatives. In addition, unquantified environmental effects, values, and amenities are also discussed per Section 102(2)(B) of NEPA.

Figure 2.12-1 summarizes the components of the BOEM Net Benefits analysis. The cost-benefit analysis includes impacts from economic activities, as well as impacts associated with economic value. The Net Economic Value (NEV) analysis looks at changes in economic activity measured as commercial revenues, tax receipts, and other government revenues. The environmental and social costs, as well as the consumer surplus calculations, measure economic value. Economic value is measured as consumers' willingness to pay, both for natural resources and for goods they want to consume. Another perspective on economic impact involves comparison of the benefits of incremental employment, labor income, and other such factors

Anticipated Production of the Planning Area	X	Assumed Price Level	=	Gross Revenue
Gross Revenue	-	Private Costs	=	Net Economic Value (NEV)
Net Economic Value	-	Environmental and Social Costs of Program Proposal - Environmental and Social Costs of Energy Alternatives (resulting from the No Action Alternative)	=	Net Social Value (NSV) (Net Supply-Side Benefits)
Net Social Value	+	Consumer Surplus Benefits - Lost Domestic Producer Surplus Benefits	=	Net Benefits

FIGURE 2.12-1 Principal Elements of Cost-Benefit Analysis

when considering impacts from the local or regional perspective. These impacts are considered in Section 4.4.9 of the PEIS.

The net benefits analysis includes the social and environmental costs of reasonably foreseeable oil spills, but the results do not directly include the costs of a catastrophic discharge event, which is not expected to occur as a result of the proposed action. An analysis of the potential costs of such an unexpected event is presented in BOEM (2012).

2.12.1 Gross Revenue

In the first stage of the cost-benefit analysis, BOEM estimates the gross revenue from the production anticipated from the 5-year Program (Table 2.12-1). Gross revenue is the anticipated production of each resource multiplied by the assumed price level. Leasing under the 2012-2017 Program is expected to contribute to exploration, development, and production activity for approximately 40 to 50 years, during which time oil and natural gas prices are expected to fluctuate. To account for this likelihood, BOEM derives three level-price-scenarios where the inflation-adjusted, or “real,” prices for oil and natural gas are assumed to remain constant. The cost-benefit analysis includes resource development, cost, and benefit estimates for three different price scenarios: low (\$60/bbl oil; \$4.27/mcf natural gas); mid (\$110/bbl oil; \$7.83/mcf natural gas); and high (\$160/bbl oil; \$11.39/mcf natural gas). A real discount rate of 3% is used in the proposed program analysis.

Oil and natural gas resource estimates are derived for each Planning Area from the 2011 National Assessment of Undiscovered Technically and Economically Recoverable Oil and Gas Resources on the OCS (accessible at <http://www.boem.gov/Oil-and-Gas-Energy->

Program/Resource-Evaluation/Resource-Assessment/Index.aspx). The National Assessment considers recent geophysical, geological, technological, and economic information and utilizes a probabilistic, geologic play-based approach to estimate the undiscovered technically recoverable resources (UERR) of oil and natural gas for individual plays.

Estimates of UERR expected to be available for leasing as part of the new 5-year Program account for recent leasing activity in each planning areas and OCS lease sales scheduled in the interim. Estimated oil and gas likely produced under the Program is a subset of the total resource potential (see Section 4.4.1 for scenario assumptions). Anticipated production differs from undiscovered technically and economically recoverable resource estimates in that anticipated production only includes oil and natural gas resources that are expected to be leased, discovered, developed, and produced as a result of a series of lease offerings. In the GOM, the anticipated production expected to result from the 12 lease sales proposed is based on historical sale-specific field discovery volumes, production and drilling activity, leasing trends, and BOEM's most recently published 10-year GOM production forecast.

In the Arctic, oil is the priority commodity of interest due to its higher market value and the existing TransAlaska Pipeline System (TAPS) infrastructure. Accordingly, the scenarios in the Beaufort and Chukchi Seas assume that large oil fields will be developed first. Natural gas is of secondary interest and is assumed to be commercially viable if a new large-volume transportation system pipeline is built and oil production provides funding for much of the infrastructure. Natural gas is likely to be reinjected to assist in oil production; therefore, commercial natural gas production is likely to be delayed until oil pools are depleted and transportation infrastructure is available. In comparison, the Cook Inlet has established infrastructure in State waters and a nearby market for oil and natural gas production. With access to existing infrastructure and a local market, smaller oil or natural gas pools could become commercial projects, and natural gas could be produced more quickly.

2.12.2 Net Economic Value

The second stage in the cost-benefit analysis is to estimate the NEV, or the discounted gross revenue from the produced oil and natural gas less the discounted costs of exploring, developing, producing, and transporting the oil and natural gas to the market, or the costs required to realize the economic value of the resources. The NEV estimates are calculated for each program area using the same scenario assumptions of exploration, development, and production activities that are used in this PEIS (Table 2.12-1). The Federal Government, as lessor, collects a portion of the NEV as transfer payments in the form of cash bonuses, rentals, royalties, and taxes. The lessees, as private firms, retain the remainder of NEV as economic profits that may be distributed to shareholders around the country or reinvested in exploration and development projects. The NEV can be equated to the sum of the present values of royalties, rents, bonuses, taxes, and after-tax profits. Based on the calculated government share and general estimates of foreign shareholder proportions in U.S. companies, only 95% of the NEV is used to measure the domestic piece of NEV derived from a program area.

2.12.3 Net Social Value

The third stage in the cost-benefit analysis is estimation of net social value (NSV). The NSV is the NEV less the present value of net environmental and social costs of the 5-year Program (Table 2.12-1). The environmental and social costs, calculated by program area, result from actual and potential effects on the environment and social systems during the exploration, development, production, and transportation of OCS oil and natural gas resources. In order to calculate the *net* environmental and social costs, the costs incurred if leasing did not occur in one or all of the program areas (under Alternatives 2 through 8) must also be subtracted from Program costs. Under the No Action Alternative, no new leasing would take place in those areas for at least five years and domestic oil and natural gas supply at some point in the future would be reduced by the amount of foregone production. This reduction in production would cause only a small price increase which would lead to a small decrease in demand for oil and natural gas (see Section 4.5.7). The increase in price would lead to increases in imports and domestic onshore production, as well as fuel switching to other energy sources, including renewable energy sources. The increased production and fuel switching would be necessary to meet the continuing domestic demand for oil and natural gas resources (see Section 4.5.7).

BOEM uses its Market Simulation (MarketSim) Model to estimate the substitutions for offshore oil and natural gas development if one or more program areas are excluded from the program. Detailed information on the Market Simulation Model can be found in Industrial Economics et al. (2012). The Offshore Environmental Cost Model (OECM) is used to estimate both the environmental and social costs that would result from OCS activities and the costs that would result from selecting the No Sale Option in each program area. Detailed information on the OECM can be found in Industrial Economics (2012). The OECM uses the levels of OCS activity from the exploration and development scenarios, as well as the energy market substitutions from the MarketSim to calculate environmental and social costs. Impacts on recreation, air quality, property values, subsistence harvests, commercial fishing, and ecosystem services from routine impacting factors and accidental spills are quantified.

OECM takes into consideration the environmental costs of energy substitutes that would be required to fulfill U.S. demand in the absence of new OCS production under the No Action Alternative. Because additional energy imports, onshore production, and fuel switching would have to take place under the No Action Alternative, OECM calculates the environmental and social costs of these energy market substitutions. In order to get an accurate value of the net environmental and social costs of the 5-year Program, the no sale costs are subtracted from the environmental and social costs resulting from program activity in each program area. In the event that no sale(s) is (are) held in a particular program area, the environmental and social costs of the no sale option are attributed to the area in which the sale(s) is (are) not held. In the event of the No Action Alternative, the environmental and social costs of the No Action Alternative are distributed to the six program areas based on the relative amount of production expected from each area. However, since natural gas, mostly substituted with increased onshore production, is more costly to replace than oil, which would be replaced primarily by increased imports, natural gas-prone program areas would have higher costs than would more oil-prone areas under the No Action Alternative.

Environmental costs under the No Action Alternative principally result from the added risk of oil spills and additional air emissions from increased tanker imports, as well as from additional air emissions resulting from increased onshore production of oil, natural gas, and other energy sources, such as coal, closer to domestic population centers. In each planning area considered, the costs of relying on the substitute sources of energy are equal to or greater than the environmental and social costs from producing program area resources under the proposal. Environmental and social costs resulting from foreign oil production for export to the United States and from transportation of that oil to U.S. waters or borders are excluded from the model because the cost-benefit analysis only addresses a national perspective.

2.12.4 Net Benefits

To estimate net benefits, BOEM adds the NSV supply-side benefits (NEV minus net environmental and social costs) to the demand-side benefits (the difference between domestic consumer surplus and lost producer surplus). Consumer surplus is the difference between the price actually charged for a service or product and the maximum price consumers would be willing to pay for the same service or product. Producer surplus is the difference between the actual price that producers receive and the minimum price they would be willing to accept. In general, new OCS oil and natural gas production increases the domestic supply of oil and natural gas, which in turn lowers the price consumers pay and the price producers receive. For a given energy source, changes in consumer surplus occur as a result of changes in both price and quantity relative to baseline conditions. In the OCS case, the consumer surplus gains come almost entirely from the price reduction or pecuniary effects of increasing OCS oil and gas production. BOEM uses MarketSim to calculate the price changes in the international oil market and the domestic natural gas market as a result of new OCS production to estimate the change in consumer surplus.

The equilibrium change in the consumer surplus of the oil, gas, coal, and electricity markets overstates the national change in social welfare. Most of this surplus is not a net gain to society as a whole, but only a transfer from producer surplus. As OCS production increases, consumers pay a slightly lower price on each unit of consumption, which means that producers also receive a slightly lower price. As a result, for domestic production, the net consumer surplus gain is only the relatively small difference between consumer and producer surplus. However, when substituting for OCS oil, the resulting lower world oil price leads to a lower annual cost of imported oil, resulting in a gain for the domestic consumer. MarketSim computes and compiles the net consumer surplus associated with all of the non-U.S. supplied quantities of oil and gas so as to exclude these non-domestic producer surplus losses from the domestic consumer surplus gains attributed to the Program.

Table 2.12.4-1 summarizes the net benefits analysis for the proposed action by planning area. Considering those benefits and costs amenable to monetization, leasing any of the program areas is expected to result in net economic and societal benefits, with the exception of the Eastern GOM in the low-price case. An important component of the benefits is the environmental and social costs avoided by producing from the OCS, rather than from the energy substitutes. These societal costs of *not* approving one or more proposed lease sales are largely

TABLE 2.12.4-1 Summary of Net Benefits Analysis for the Proposed Action (Alternative 1, BOEM’s Preferred Alternative)

Program Area		Discounted Billions of 2012 Dollars									
		Oil (BBO) ^a	Gas (Tcf)	BBOE ^a	NEV ^a	Environmental and Social Costs				Net Domestic Consumer Surplus	Net Benefits
						Program	Energy Alternatives	Net	NSV ^a		
Central GOM	Low	2.24	9.47	3.92	36.66	3.47	10.08	-6.61	43.27	19.37	62.64
	Mid	3.77	16.41	6.69	153.59	5.94	17.43	-11.49	165.08	35.14	200.23
	High	4.34	19.07	7.73	287.16	6.94	20.26	-13.32	300.48	44.52	344.99
Western GOM	Low	0.56	2.63	1.03	10.31	1.27	2.73	-1.45	11.77	5.08	16.85
	Mid	0.86	4.07	1.58	38.73	1.89	4.42	-2.53	41.26	8.32	49.59
	High	0.97	4.59	1.79	69.56	2.13	4.76	-2.63	72.19	10.28	82.47
Eastern GOM	Low	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mid	0.05	0.11	0.07	2.30	0.06	0.11	-0.05	2.35	0.37	2.73
	High	0.07	0.16	0.10	5.32	0.07	0.17	-0.10	5.42	0.58	6.00
Chukchi Sea	Low	0.50	0.00	0.50	5.02	0.04	0.24	-0.20	5.22	2.66	7.88
	Mid	1.00	2.50	1.44	31.06	0.08	0.43	-0.36	31.41	7.54	38.95
	High	2.15	8.00	3.57	135.37	0.15	1.03	-0.89	136.25	25.00	161.26
Beaufort Sea	Low	0.20	0.00	0.20	0.14	0.02	0.05	-0.03	0.18	1.03	1.20
	Mid	0.20	0.50	0.29	3.68	0.02	0.58	-0.56	4.25	1.51	5.75
	High	0.40	2.20	0.79	16.57	0.03	2.30	-2.27	18.84	5.54	24.38
Cook Inlet	Low	0.10	0.00	0.10	1.56	0.01	0.03	-0.02	1.58	0.57	2.15
	Mid	0.10	0.04	0.11	3.71	0.01	0.07	-0.07	3.77	0.59	4.37
	High	0.20	0.68	0.32	12.30	0.02	0.10	-0.09	12.39	1.39	13.78

^a BBO = billion barrels of oil; BBOE = billion barrels of oil equivalent; NEV = Net Economic Value; NSV = Net Social Value.

due to the environmental and social costs of the most likely substitutes for the OCS production including increased oil imports and onshore oil and gas production, which result in additional air emissions in port or onshore (often in Clean Air Act nonattainment areas), and the risk of oil spills from tankers.

2.12.5 Benefits and Costs of EIS Alternatives

Figure 2.12.5-1 compares the estimated average net benefits for the action alternatives (relative to no sale) analyzed in this PEIS. The proposed action’s net benefit is the sum of each individual planning area’s net benefit. As shown in Figure 2.12.5-2, the Central GOM Planning Area is estimated to have the highest net benefit contribution, followed by the Chukchi Sea Program Area and then the Western GOM.

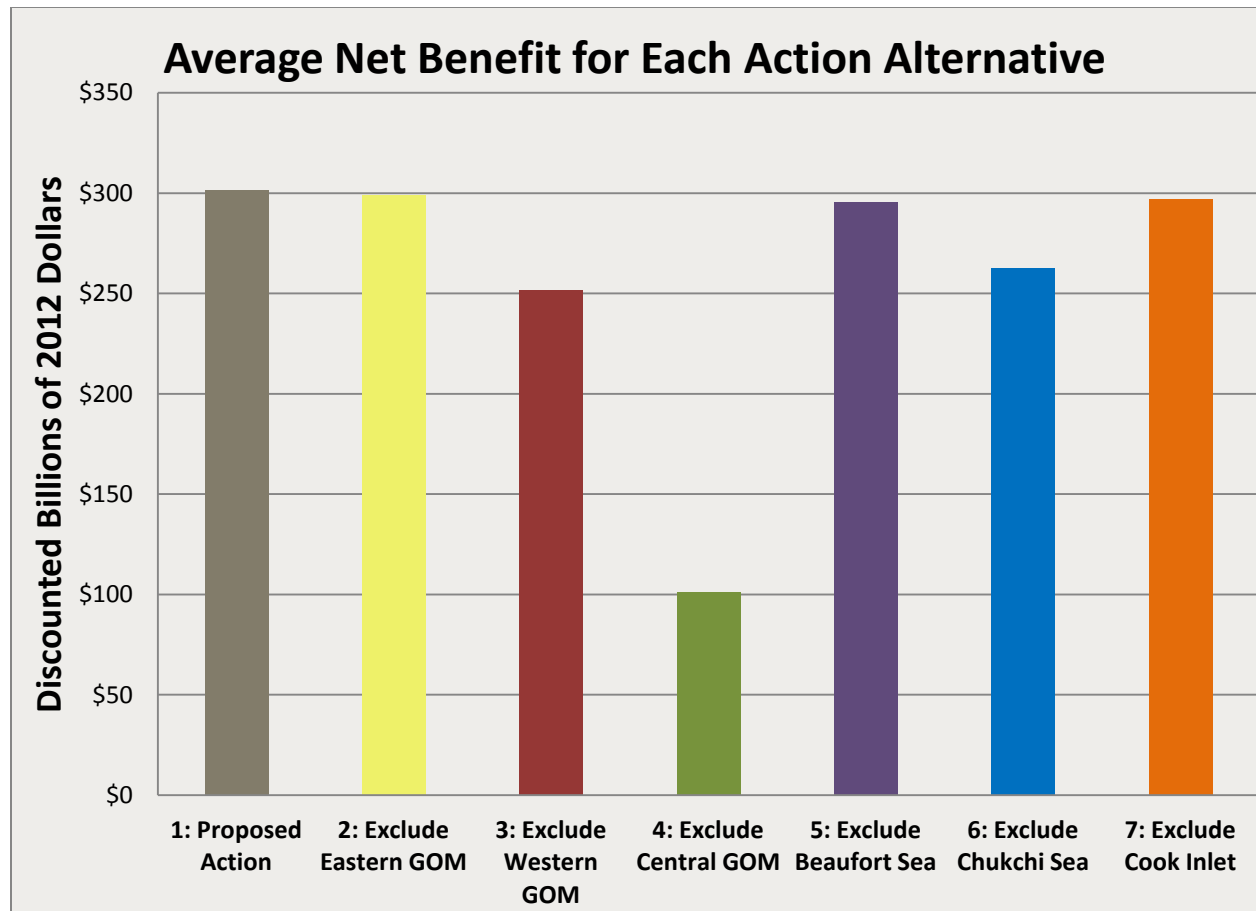


FIGURE 2.12.5-1 Comparison of Net Benefits for All Action Alternatives

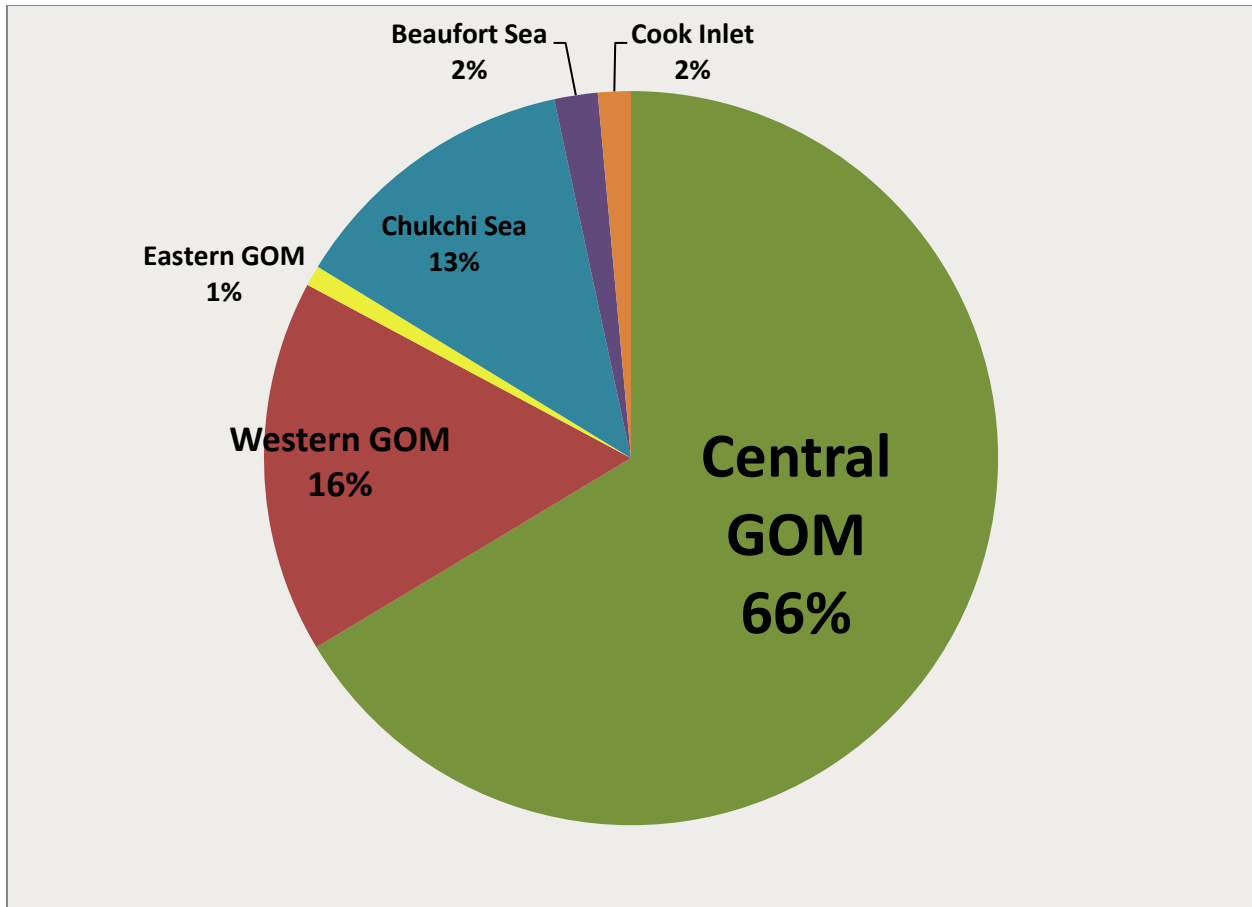


FIGURE 2.12.5-2 Alternative 1 (Proposed Action) Net Benefit Contribution by Program Area

2.12.6 Unquantified Environmental Effects, Values, and Amenities

When incorporating a cost-benefit analysis by reference, Council on Environmental Quality (CEQ) regulations require that the EIS discuss the relationship between that analysis and unquantified impacts, values, and amenities discussed in the EIS or other supporting analyses (40 CFR 1502.23). Although the 5-year Program cost-benefit analysis and the PEIS impact analysis presented in Chapter 4 are based on the same activity scenarios and assumptions, the NEPA assessment of impacts is done qualitatively, whereas comparable impacts in the cost-benefit analysis are compartmentalized, parameterized, and treated quantitatively. Although specific assumptions about the pathways, context, and/or trigger of impacts may not be identical, the analyses are complementary and serve to inform the decision-maker. While the cost-benefit analysis includes and monetizes many of the most important potential effects considered in the PEIS effects analysis, the PEIS also discusses other potential impacts on the human environment, untreated in the cost-benefit analysis, which may represent important considerations for the decision-maker, such as impacts on cultural resources or water quality; multiple use conflicts resulting from competing use of the same area; indirect, cascading impacts realized through impacts on keystone species in food webs; etc. As previously indicated, the cost benefit analysis does not incorporate the cost of an unexpected catastrophic discharge event. Limited historical

data makes it difficult to provide reliable estimates of the environmental and social costs likely to result from a discharge of a given amount, not to mention even the probability that such an event might occur. However, if a catastrophic discharge event were to occur, it could completely change the net benefits whether resulting from OCS production or from the transportation of imported oil because of a decision not to lease.

The costs and benefits of environmental resources, cultural systems, and ecosystem services can also be difficult to quantify, or perhaps, cannot be or should not be monetized. This can be true for both adverse effects that could occur under the proposed action or under the No Action Alternative, as well as “effects avoided,” or beneficial effects, that result from pursuing any of the eight alternatives over the others. In avoiding or minimizing adverse environmental impacts, the flow of services from the environment to or from people, in terms of active use and passive non-use, may contribute to changes in the long-term sustainability or productivity of some resource or human system. For example, if the Secretary of the Interior were to foreclose leasing in the Arctic, certain potential environmental effects on sensitive biological resources (such as bowhead whales, or in doing so, native cultural practices) in the Arctic could be lessened or potentially avoided. However, different environmental effects associated with the development of substituted energy sources would occur elsewhere in the world, and they could be worse for different environmental resources or human systems, but to different stakeholders with different values. Therefore, spatial and temporal allocation of the environmental and social costs that may occur elsewhere or between alternatives is a challenging problem, especially since energy substitutions away from regional production may not reasonably be expected to be made up in totality in that same region.

While the cost-benefit analysis captures much of the stream of economic value, it does not quantify all of it. For example, the cost-benefit analysis quantifies the costs of animal mortality, lost habitat, and decreased ecosystem services from an oil spill through habitat equivalency analysis, where costs are estimated in terms of the anticipated expense to restore or recreate habitat. Welfare economics suggests net benefits could include other benefits and costs stemming from the similar changes in the level of resources consumed, exhausted, extirpated, or saved, and with those changes, some flow of cost/benefit is accruing to someone.

The net benefits analysis does not quantify the costs of animal mortality, lost habitat, and decreased ecosystem services as a result of the increased number of new oil and gas platforms, pipeline installations, and other infrastructure expected throughout the program. However, the net benefits analysis similarly does not consider the impacts of infrastructure development from the incremental onshore production that would be necessary to replace OCS production in the No Action Alternative.

Within the PEIS and cost-benefit analysis, certain passive-use values, such as bequest value, option value, existence value, and altruistic value are not quantitatively or qualitatively captured, but can be very important to certain stakeholders that stand to be affected by the proposed action. However, these values exist from both the program and from energy substitutes under the No Action Alternative.

2.13 REFERENCES

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TABLE 2.11-2 Summary of Potential Impacts of the Proposed Action and Alternatives for a 2012-2017 OCS Oil and Gas Leasing Program

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Alternative 1 – Water				
Routine Operations	Potential for minor to moderate , ^a localized, short-term impacts due to increased sedimentation and changes to water quality from structure and pipeline placement and removal; operational discharges; and sanitary and domestic wastes. Compliance with National Pollutant Discharge Elimination System (NPDES) permits and U.S. Coast Guard (USCG) regulations would reduce most impacts.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	Minor water quality impacts could also occur from fluids entrained in ice roads when they break up in the spring.
Expected Accidental Oil Spills ^b	Impacts are expected to be minor to major , depending on the location, timing, and magnitude of the event. Small spills would result in short-term, localized, minor impacts. A large spill in coastal waters could result in longer-term impacts.	No additional area-specific impacts expected.	Winter conditions (i.e., temperature and ice cover) may result in longer-term impacts.	Winter conditions (i.e., temperature and ice cover) may result in longer-term impacts.
Unexpected Catastrophic Discharge Event (CDE)	Moderate to major impacts could occur, depending on spill location, timing, and magnitude. Effects may persist for an extended period of time if oil were deposited in wetland and beach sediments or low-energy environments because of potential remobilization.	No additional area-specific impacts expected.	Winter conditions (i.e., temperature and ice cover) may result in longer-term impacts.	Winter conditions (i.e., temperature and ice cover) may result in longer-term impacts.

^a See Section 4.1.4 for definitions of impact levels.

^b Small spills are <1,000 bbl (and most are <50 bbl); large spills are ≥1,000 bbl; see Section 4.4.2.2 for assumed CDE spill volumes.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a catastrophic discharge event (CDE) would be similar to those identified for Alternative 1, except none would be expected for the excluded planning areas. If a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, water quality could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			
Alternative 1 – Air Quality				
Routine Operations	Only minor impacts are expected. Sources of air pollutants include diesel and gas engines, turbines, and support vessels, and routine operations would not result in exceedance of air quality standards or impact visibility.	Increases of ozone, if they occur, would be about 2% of total concentrations.	No additional area-specific impacts expected.	No additional area-specific impacts expected.
Expected Accidental Oil Spills	Small accidental spills could have localized, temporary minor impacts, primarily from volatile organic carbon (VOC) emissions, while large spills and any associated <i>in situ</i> burning, if used, would have moderate impacts. An accidental release of H ₂ S could present a serious hazard to platform workers and persons close to the platform, and result in minor to moderate impacts.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Unexpected CDE	Impacts from a CDE, including any associated <i>in situ</i> burning, would be moderate . Greatest impacts would occur during the initial explosion of gas and oil and during the spill response and cleanup. Moderate impacts could continue for days during the initial event and minor impacts could continue for months during the spill response and cleanup.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, and spill response activities (such as <i>in situ</i> burning) carried out, air quality could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Alternative 1 – Acoustic Environment				
Routine Operations	Impacts expected to range from minor to moderate . Ambient noise levels could be affected by seismic surveys, drilling, ship and aircraft traffic, onshore and offshore construction, operational activities, and decommissioning. Effects from seismic surveys would be short-term and detectable over a fairly wide area. Ship and aircraft noise would be transient and along flight routes. Construction noise would tend to be limited to the vicinity of the activity, except for drilling, dredging, and pile driving, which can be detected over fairly wide areas. Operational noises would be low-level and localized and continue over the lifetime of the activity.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.
Expected Accidental Oil Spills	Changes in ambient noise levels would occur during spill response activities, and are expected to be minor . Support vessels and aircraft would be the primary noise sources, and changes in ambient noise levels would persist for the duration of the response activities, then return to pre-spill levels. Noise from responses to small spills would be short-term and localized, but more long-term and widespread for response activities to large spills.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Unexpected CDE	Noise impacts from response activities for a CDE are expected to be minor to moderate . Support vessels and aircraft would be the primary noise sources, and changes in ambient noise levels could continue for months during spill response and cleanup, after which they would return to pre-spill levels.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that few impacts would be expected in the excluded planning areas. Noise generated in one planning area during seismic surveys and drilling could affect ambient noise levels in an adjacent excluded planning area. In such a case, impacts would be similar to those identified for the planning area under Alternative 1. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, and spill response activities were conducted, ambient noise levels could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			
Alternative 1 – Coastal and Estuarine Habitats				
Routine Operations	Minor to moderate localized impacts could occur as a result of pipeline construction, maintenance dredging of inlets and channels, construction of onshore facilities, and support vessel traffic.	Construction of new landfalls, as well as expansion of existing ports, docks, and other infrastructure could affect coastal habitats.	Secondary impacts on wetlands could occur from water and air quality degradation.	Secondary impacts on wetlands could occur from water and air quality degradation, ice roads, fugitive dust, and altered drainage caused by pipelines and roads.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Expected Accidental Oil Spills	Impacts on coastal habitats could range from negligible to minor for most spills, and up to major for large spills. Effects may range from a short-term reduction in photosynthesis to extensive vegetation injury or mortality, as well as changes in community structure and direct loss of habitat. Cleanup operations could also affect wetlands. The effects of spills will depend on the specific habitat affected; the size, location, duration, and timing of the spill; and on the effectiveness of spill containment and cleanup activities. Small spills would likely result in short-term impacts while large spills could incur short- and long-term impacts depending on habitat type and location and effectiveness of cleanup activities.	Spills of oil or other materials could potentially affect both the surface and subsurface of beach and dune substrates in the GOM, and result in accelerated erosion.	Habitats along the western shoreline have the greatest likelihood of contact based on surface currents in the inlet. Winter temperatures and conditions (i.e., ice cover) would likely delay recovery of oiled habitats.	Freshwater wetlands on the Arctic coastal plain could be affected by spills from onshore pipelines. Winter temperatures and conditions (i.e., ice cover) would likely delay recovery of oiled habitats.
Unexpected CDE	Impacts could range from moderate to major as a result of heavy oiling over extensive areas of shoreline, with heavy deposits in multiple locations. The effects would be similar to those identified for expected accidental oil spills, but would be more widespread and of longer duration.	No additional area-specific impacts expected.	Winter temperatures and conditions would likely delay recovery of oiled habitats.	Winter temperatures and conditions would likely delay recovery of oiled habitats.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large accidental spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, coastal and estuarine habitats could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			
Alternative 1 – Marine Benthic Habitats				
Routine Operations	Moderate impacts to marine benthic habitats may occur. Benthic habitat, primarily soft sediments, could be disturbed by platform and pipeline placement, dredging, and operational discharges (produced water and cuttings). Soft sediment habitats can recover within a few years from most disturbances. Existing mitigation and other protective measures should eliminate most direct impacts to sensitive and protected benthic habitats.	Existing regulations on the placement of oil and gas infrastructure would limit impacts to high-relief banks and coral reefs, but low-relief hard-bottom and high density deepwater communities could be affected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.
Expected Accidental Oil Spills	Impacts would range from negligible to minor for small spills and from minor to moderate for large spills. Small spills are not likely to result in the degradation of benthic marine habitat because they would be quickly diluted. Larger spills are likely to result in localized habitat degradation.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Unexpected CDE	Impacts could range minor to moderate , and could be long-term depending on the habitat affected the size, duration, timing, and location of the spill and the effectiveness of response activities.	Major impacts to coral reef habitats could occur if the Flower Gardens Banks are heavily oiled and high mortality occurs.	No additional area-specific impacts expected.	Major impacts to hard-bottom kelp habitat could occur if these areas were heavily oiled and high mortality occurs.
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, benthic habitats could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			
Alternative 1 – Marine Pelagic Habitats				
Routine Operations	Negligible to minor short- and long-term impacts to pelagic habitats, primarily from operational discharges and from turbidity generated during infrastructure placement.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.
Expected Accidental Oil Spills	Impacts would range from negligible to minor for small spills and from minor to moderate for large spills. Most accidental spills would be small and result in short-term, localized impacts. Large spills would temporarily reduce habitat quality over large areas of pelagic habitat.	Spills could contact <i>Sargassum</i> , but would generally not affect the resource as a whole.	Oil spills occurring near or under ice could be difficult to clean and may persist in the water column and continue to affect pelagic habitats for an extended period.	Oil spills occurring near or under ice could be difficult to clean and may persist in the water column and continue to affect pelagic habitats for an extended period.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Unexpected CDE	Minor to moderate impacts to pelagic habitats, depending on the location, size, duration, and timing of the spill; the habitats affected; and the effectiveness of spill containment and cleanup activities.	Spills could contact <i>Sargassum</i> , but would generally not affect the resource as a whole.	Oil spills occurring near or under ice could be difficult to clean and may persist in the water column and continue to affect pelagic habitats for an extended period.	Oil spills occurring near or under ice could be difficult to clean and may persist in the water column and continue to affect pelagic habitats for an extended period.
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for habitats in the excluded planning area. If a large accidental spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, pelagic habitats could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts identified for routine operations and accidental oil spills under Alternative 1 would occur.			
Alternative 1 – Essential Fish Habitat (EFH)				
Routine Operations	No more than moderate , short- and long-term impacts to EFH and managed species are expected. Most impacts would result from bottom disturbance and the creation of artificial reefs by production platforms. Managed species, particularly egg and larval stages, could be killed, injured, or displaced from disturbance areas, but no population-level impacts on managed species are expected. Existing mitigation and other protective measures should eliminate most direct impacts to the following EFH: deepwater corals, chemosynthetic communities, warm water corals and live\hard-bottom, and topographic features.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Expected Accidental Oil Spills	Impacts would range from negligible to minor for small spills and from minor to moderate for large spills. The severity of effects would depend on spill size and location, environmental factors, and the uniqueness of the affected EFH. While most would have relatively small impacts, large spills that reach coastal EFH could have more persistent impacts and could require remediation.	No additional area-specific impacts expected.	Oil spills occurring near or under ice could be difficult to clean and may persist in the water column and continue to affect EFH for an extended period.	Oil spills occurring near or under ice could be difficult to clean and may persist in the water column and continue to affect EFH for an extended period.
Unexpected CDE	Impacts from a CDE-level spill could range from moderate to major , depending on the size, duration, timing, and location of the spill; the habitats affected; and the effectiveness of spill containment and cleanup activities. Managed species that suffer large losses of early life stages could suffer population-level effects from a catastrophic oil spill. A CDE could cause long-term declines of managed species that rely on shallow coastal, intertidal, and freshwater areas.	No additional area-specific impacts expected.	Oil spills occurring near or under ice could be difficult to clean and may persist in the water column and continue to affect EFH for an extended period.	Oil spills occurring near or under ice could be difficult to clean and may persist in the water column and continue to affect EFH for an extended period.
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, EFH could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Alternative 1 – Mammals				
Routine Operations	Impacts to cetaceans could range from negligible to moderate , with species or stocks inhabiting continental shelf or shelf slope waters most likely to be affected. Marine mammals could be affected by noise from seismic surveys, ship and helicopter traffic, platform construction and operation, and explosive removal of platforms; potential collisions with ships; and exposure to discharges and wastes. Meeting the requirements of Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA) would reduce the likelihood and magnitude of adverse impacts to most species.	The West Indian manatee and rare or extralimital whale species are not likely to be affected. Meeting the requirements of the ESA and MMPA would reduce the likelihood and magnitude of adverse impacts from routine operations to most species. No impacts to endangered beach mice subspecies or the Florida salt marsh vole are expected.	Negligible to minor impacts on terrestrial mammals. Construction of onshore pipeline could result in some loss or modification of habitat for terrestrial mammals, and aircraft overflights could cause short-term disturbances to terrestrial mammals.	Negligible to minor impacts on terrestrial mammals. Construction of onshore pipeline could result in some loss or modification of habitat for terrestrial mammals, and aircraft overflights could cause short-term disturbances to terrestrial mammals.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Expected Accidental Oil Spills	<p>Small oil spills are expected to have negligible to minor impacts on marine mammals. Larger spills are expected to have minor to moderate impacts on marine mammals. Expected oil spill impacts on species that are extralimital or rare are expected to be negligible to minor, but could in unusual circumstances be moderate to major depending on the number of individuals contacted by a spill. Impacts on marine mammals from oil spill response activities are expected to be minor.</p>	<p>Oil spills are not expected to contact areas inhabited by the endangered rodent species. However, if their habitats are oiled, the potential impacts are expected to be minor for very small spills and minor to moderate for large spills. Protective measures required under the ESA should prevent any oil spill response and cleanup activities from having more than minor to moderate impacts on the endangered rodent species and their habitats.</p>	<p>Oil spills may expose terrestrial mammals to oil or its weathering products. Accidental spills and associated cleanup activities are expected to have negligible to minor impacts on terrestrial mammals. Oil spills occurring near or under ice could be difficult to clean and may persist in the water column and continue to affect marine mammals for an extended period.</p>	<p>Expected oil spill impacts on species that are extralimital or rare are expected to be negligible to minor, but could in unusual circumstances be moderate to major depending on the number of individuals contacted by a spill. Oil spills may expose terrestrial mammals to oil or its weathering products. Accidental spills and associated cleanup activities are expected to have negligible to minor impacts on terrestrial mammals. Oil spills occurring near or under ice could be difficult to clean and may persist in the water column and continue to affect marine mammals for an extended period.</p>
Unexpected CDE	<p>In the case of an unexpected, very low-probability CDE-level spill, there is a greater potential for more severe and population-level effects on marine mammals compared to a large oil spill, and impacts could be moderate to major on one or more species.</p>	<p>A CDE and associated cleanup activities could potentially result in oiling and physical destruction of habitats (including designated critical habitat) for one or more of the endangered rodent species, and result in minor to major to these species. A CDE would increase the threat of extinction for one or more of the beach mice subspecies and the Florida salt mouse vole.</p>	<p>Impacts to terrestrial mammals could be minor to major. Spills occurring near or under ice could be difficult to clean and may persist in the water column and continue to affect marine mammals for an extended period.</p>	<p>Impacts to terrestrial mammals could be minor to major. Spills occurring near or under ice could be difficult to clean and may persist in the water column and continue to affect marine mammals for an extended period.</p>

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, some mammals could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			
Alternative 1 – Marine and Coastal Birds				
Routine Operations	Overall impacts would range from negligible to moderate , would be primarily behavioral in nature and result from generally short-term disturbance during drilling and platform construction, pipeline trenching, vessel and helicopter traffic, and landfall construction.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Expected Accidental Oil Spills	<p>Small spills would only impact small areas of habitat and relatively few individuals and are expected to have no more than minor impacts. Impacts from a large spill are expected to be moderate to major. Impacts would be the result of direct oiling of birds and habitats as well as ingestion of toxic materials with lethal and sublethal effects, including reduced reproductive success. Large spills, especially those occurring during the fall or spring migrations, may expose large numbers of birds in both nearshore coastal waters and in coastal habitats. A shallow water spill in an offshore or nearshore area may impact a greater number of bird species than a deepwater spill, as spills reaching shoreline habitats have the potential to affect shorebirds, wading birds, wetland birds, and migratory birds.</p>	<p>The GOM acts as an important stopover site for many migratory bird species. Large spills can foul foraging areas and food resources along extensive areas of shoreline and directly oil large numbers of birds.</p>	<p>Large spills, especially those occurring under ice and those that reach important wintering habitats, may result in lethal and sublethal effects on large numbers of birds. A spill under incomplete ice cover could, because of cleanup difficulties, result in longer-term exposure and subsequent effects than a spill in ice-free conditions.</p>	<p>Large spills, especially those that enter coastal lagoons and delta areas may result in lethal and sublethal effects, including reduced reproductive success, on birds using those habitats for molting and staging. A spill under incomplete ice cover could, because of cleanup difficulties, result in longer-term exposure and subsequent effects than a spill in ice-free conditions.</p>

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Unexpected CDE	Moderate to major impacts may be incurred, depending on the location, timing, and duration of the event and the species, habitats, and numbers of birds exposed.	The GOM acts as an important stopover site for many migratory bird species. An unlikely CDE can foul foraging areas and food resources along extensive areas of shoreline and directly oil large numbers of birds.	The Cook Inlet contains important migratory staging areas for waterfowl and shorebirds. A CDE occurring in spring or winter months would be expected to have a higher impact on bird populations due to the rapid occurrence at those times of large numbers of migratory birds and the difficulties associated with spill cleanup in ice conditions.	The Beaufort Sea and Chukchi Sea Planning Areas provide important nesting, molting, and stopover habitat for many species of coastal and marine birds. A CDE in the Arctic has the potential to affect large numbers of birds that rely on coastal habitats for nesting and migratory activities.
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, marine and coastal birds could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			
Alternative 1 – Fish				
Routine Operations	Impacts to fish from routine operations include noise, bottom disturbance, discharge of drilling muds and produced water, and removal of platforms with explosives. Routine operations are expected to result in negligible to minor impacts to fish and negligible impacts to threatened or endangered fish species.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Expected Accidental Oil Spills	Impacts would range from negligible to minor for small spills and from minor to moderate for large spills. Exposure to oil could result in lethal or sublethal impacts to fish at various life stages, depending on the level of exposure and the species and life stages exposed.	Impacts to Gulf sturgeon from small spills would range from negligible to minor for small spills and from minor to moderate for large spills. Impacts to smalltooth sawfish are expected to range up to minor.	Impacts would be greatest if oil were to reach intertidal habitats, which could result in long-term impacts to fish. Spills occurring near or under ice could be difficult to clean and may persist in the water column and continue to affect fish for an extended period.	Impacts would be greatest if oil were to reach intertidal habitats, which could result in long-term impacts to fish. Spills occurring near or under ice could be difficult to clean and may persist in the water column and continue to affect fish for an extended period.
Unexpected CDE	Impacts could range up to moderate , but are not expected to result in population-level impacts except possibly for spills that greatly affect overfished species and their spawning grounds.	Impacts to Gulf sturgeon could range up to moderate , and up to minor for the smalltooth sawfish.	Impacts would be greatest if oil were to reach intertidal habitats, which could result in long-term impacts to fish. Spills occurring near or under ice could be difficult to clean and may persist in the water column and continue to affect fish for an extended period.	Impacts would be greatest if oil were to reach intertidal habitats, which could result in long-term impacts to fish. Spills occurring near or under ice could be difficult to clean and may persist in the water column and continue to affect fish for an extended period.
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, fish could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Alternative 1 – Reptiles				
Routine Operations	Species only occur in the GOM planning areas.	Minor to moderate localized, short-term impacts from seismic exploration, infrastructure construction, channel dredging, and vessel traffic. Noise may temporarily disturb some individuals. Explosive removal of platform, as well as collisions with support vessels, may injure or kill some turtles. Onshore construction may impact nest sites, while lighting of onshore facilities may disturb hatchling movements from nest sites. Sea turtles may also be exposed to waste material that could cause lethal and sublethal effects. Many of these impacts would be localized and of relatively short duration.	No species in Alaska.	No species in Alaska.
Expected Accidental Oil Spills	Species only occur in the GOM planning areas.	Impacts may range from negligible to moderate . An accidental spill may result in exposure of one or more life stages of reptiles to oil or its weathered products. Oil may reduce hatching and hatchling survival; and inhalation or ingestion of oil or oil vapors may incur lethal or sublethal effects.	No species in Alaska.	No species in Alaska.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Unexpected CDE	Species only occur in the GOM planning areas.	Impacts would be expected to be major and long-term if multiple individuals and their habitat (especially nest habitat) are exposed to large amounts of oil for long periods of time. The magnitude of effects would depend on the location, timing, and volume of the spills.	No species in Alaska.	No species in Alaska.
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each of the alternatives that exclude a GOM planning area, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large accidental spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, sea turtles could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			
Alternative 1 – Invertebrates and Lower Trophic Levels				
Routine Operations	Negligible to moderate impacts resulting primarily from habitat disturbance associated with infrastructure placement and from routine discharges. These activities would primarily affect benthic invertebrates and recovery would be short-term to long-term.	Negligible impacts to the ESA listed elkhorn coral.	No additional area-specific impacts expected.	No additional area-specific impacts expected.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Expected Accidental Oil Spills	Impacts would range from negligible to minor for small spills and from minor to moderate for large spills. Small spills would likely result in localized impacts, but larger spills would affect a wider area depending on factors such as the size of the spill and the habitats affected.	No additional area-specific impacts expected.	Spills occurring under ice would result in prolonged exposure of invertebrates and lower trophic level biota.	Spills occurring under ice would result in prolonged exposure of invertebrates and lower trophic level biota.
Unexpected CDE	Impacts could range up to moderate , and result in measurably depressed invertebrate populations, especially in intertidal areas and in sensitive coral habitat.	No additional area-specific impacts expected.	Spills occurring under ice would result in prolonged exposure of invertebrates and lower trophic level biota.	Spills occurring under ice would result in prolonged exposure of invertebrates and lower trophic level biota.
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, invertebrates and other lower trophic level biota could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			
Alternative 1 – Areas of Special Concern (AOC)				
Routine Operations	Impacts are expected to be negligible to moderate because of the existing protections and use restrictions applicable to these areas. Vessel traffic and construction activities could result in temporary and localized effects on wildlife and reduce the scenic value of affected AOCs.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Expected Accidental Oil Spills	Impacts would range from negligible to minor for small spills and from minor to moderate for large spills. Impacts would be primarily associated with adverse effects on fauna and habitats, subsistence use where allowed, commercial or recreational fisheries, recreation, and tourism.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.
Unexpected CDE	Impacts would be moderate at Areas of Special Concern (AOCs) affected by a CDE. Impacts would primarily be associated with adverse effects on fauna and habitats, subsistence use where allowed, commercial or recreational fisheries, recreation and tourism.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, AOCs if present could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			
Alternative 1 – Population, Employment, and Income				
Routine Operations	Impacts would result from increases in population, employment and income in each planning area over the duration of the leasing period.	Impacts would be negligible . Increases in population, employment, and income in each region over the duration of the leasing period would correspond to less than 1% of the baseline level in the GOM.	Impacts would be minor . Population, employment, and income levels would increase by less than 5% of baseline levels in Alaska.	Impacts would be minor . Population, employment, and income levels would increase by less than 5% of baseline levels in Alaska.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Expected Accidental Oil Spills	Small spills would have negligible to minor impacts, while large spills would have minor to moderate impacts. Localized impacts from a large spill could include the short-term loss of employment, income, and property value; increased traffic congestion; increased cost of public service provision; and possible shortages of commodities or services. Short-term, localized impacts could include cleanup expenditures and employment created in cleanup and remediation activities. Longer-term impacts could affect commercial fishing and/or tourism and recreation if these activities were to suffer due to the real or perceived impacts of the spill, and could include substantial changes to the energy industries in the region as a result of the spill.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Unexpected CDE	The impacts would range from minor to moderate . A CDE could result in the loss of employment, income, and possible shortages of commodities or services in both coastal and inland areas affected by the spill. Losses of property value could occur in coastal communities, with increased cost of local public service provision also possible. In the short term, impacts measured in terms of projected cleanup expenditures and the number of people employed in cleanup and remediation activities would be expected to be large. Longer-term impacts would likely be small, unless recreational activities and tourism suffered as a result of the real or perceived impacts of the CDE, or if there were substantial changes to energy production in the region as a result of the accidental spill.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, population, employment, and income could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur. In addition, none of the net benefits identified under the proposed action would occur.			

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Alternative 1 – Land Use and Infrastructure				
Routine Operations	Impacts would be associated with incompatibility with local land use/comprehensive planning patterns, incompatibility with existing/planned development, loss of use (intended or perceived) to existing landowners or users, and potential changes to the physical and/or infrastructural composition of the coast.	Negligible to minor impacts. Existing infrastructure generally would be sufficient to handle exploration and development associated with potential new leases.	Negligible to minor impacts. Impacts would vary in intensity dependent on specific location within Cook Inlet. The existing infrastructure would help to limit the intensity of the impacts.	Minor to moderate impacts. Existing land use and infrastructure likely would be able to accommodate new leases. In general, land use changes would be needed only in locations where new onshore pipeline routes would be constructed, and in areas requiring new transportation networks.
Expected Accidental Oil Spills	Accidental spills could have both direct and indirect effects on land use, development patterns, and existing infrastructure, depending on the type, size, location, and duration of the incident.	Impacts on land use and existing infrastructure typically would be minor and negligible for very small spills.	Impacts would be minor and associated with demands on local communities to support cleanup activities and with land use restrictions.	Impacts would be minor and associated with demands on local communities to support cleanup activities and with land use restrictions.
Unexpected CDE	A CDE could affect land use, development patterns, and the infrastructure composition of affected areas.	Minor to moderate impacts. Major impacts would not be expected, in part because existing infrastructure is in place in some locations to address this type of event, limiting the potential for much larger effects to occur.	Moderate impacts. Major impacts would not be expected, in part because existing infrastructure is in place in some locations to address this type of event, limiting the potential for much larger effects to occur.	Moderate to major impacts. There is limited existing infrastructure in place in the Arctic to address this type of event. Impacts would be greater in areas with little infrastructure in place to handle accidents and where a greater reliance is placed on coastal activities for subsistence.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, land use and infrastructure could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			
Alternative 1 – Commercial and Recreational Fisheries				
Routine Operations	Impacts are expected to be minor . Routine operations could cause temporary changes in the distribution or abundance of fishery resources, reduce the catchability of fish or shellfish, preclude fishers from accessing viable fishing areas, or cause loss of or damage to equipment or vessels.	No population-level effects or long-term loss of fishery resources are expected to result in the GOM.	No population-level effects or long-term loss of fishery resources are expected to result in Cook Inlet.	Commercial and recreational fisheries in the Beaufort Sea and Chukchi Sea Planning Areas are relatively small and localized. Impacts on these fisheries are unlikely.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Expected Accidental Oil Spills	Impacts from small spills would be negligible, while those for large spills could range up to moderate . A large spill would likely affect only a small proportion of a given fish population, and long term effects would not be expected. Large spills result in localized reduced catch, loss of gear, or loss of fishing opportunities during cleanup and recovery periods, and reduced recreational fishing due to fish tissue contamination, degradation of aesthetic values that attract fishers, and temporary closure of fishing areas. Oil from large spills could contact intertidal habitat and contaminate or reduce the abundance of commercial and recreational species that depend on such habitats. Impacts from a large spill could be long-term, but are not expected to result in the long-term loss of fishery resources.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.
Unexpected CDE	Impacts are expected to be moderate . Impacts to fisheries would be similar to those identified for expected accidental spills, but a larger proportion of a fish population could be affected, and impacts could be much more long-term in duration.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. However, if a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, commercial and recreational fisheries could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			
Alternative 1 – Tourism and Recreation				
Routine Operations	Routine operations would have minor , short-term negative effects on recreation and tourism, with potential adverse aesthetic impacts on sightseeing, boating, fishing, and hiking activities.	Routine operations could have minor , positive impacts on diving and recreational fishing in the GOM coast.	No additional area-specific impacts expected.	No additional area-specific impacts expected.
Expected Accidental Oil Spills	Small spills could have negligible to minor impacts, while large spills could have minor to moderate impacts. Temporary impacts could occur if a spill reaches a beach or other recreational- or subsistence-use areas.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Unexpected CDE	A CDE could result in minor to moderate impacts, and effects may include beach and coastal access restrictions; restrictions on visitation, fishing, or hunting while cleanup is being conducted; and aesthetic impacts associated with the event itself and with cleanup activities. These impacts are expected to be temporary. Longer-term impacts may be substantial if tourism were to suffer as a result of the real or perceived impacts of the CDE, or if there were substantial changes to tourism and recreation sectors in the region as a result of the event.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, tourism and recreation could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Alternative 1 – Sociocultural Systems				
Routine Operations	Routine operations may affect community structure and composition as well as subsistence patterns, and increase cultural and social stress. Impacts may include effects on resources that support subsistence, commercial and recreational fisheries, tourism, recreation, and elements of quality of life, and economic losses.	Routine operations may be expected to have minor impacts on the sociocultural systems of the region. Expansion of deepwater development could lead to longer offshore work shifts, which could increase stress to workers, families, and communities.	No more than minor impacts on sociocultural systems are expected. Any oil and gas development would be supported primarily by existing workforce infrastructure. Access restrictions to subsistence and commercial marine resources would be short-term and localized.	Potential impacts can range from minor to moderate . Noise from exploration and production activities may displace marine mammal subsistence resources, making them more difficult to harvest. Development could also result in the short-term disturbance of, or restriction of access to, fish and wildlife subsistence resources. An influx of oil and gas workers from outside the local area could result in social and cultural stress on local predominantly Alaska Native communities, depending on the proximity of new support facilities and infrastructure to existing communities.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Expected Accidental Oil Spills	Impacts may include effects on resources that support subsistence, commercial and recreational fisheries, tourism, recreation, and elements of quality of life, and economic losses.	Small offshore spills would result in minor impacts while small coastal spills could have moderate impacts on subsistence. The impact of a large spill would vary from moderate to major . Temporary access restrictions to fisheries could result in moderate impacts from short-term economic and social stress. Spills that affect the viability of some resources could result in major impacts associated with long-term economic and social stress.	Impacts would range from minor to major . Because portions of the planning area are relatively confined, releases are more likely to reach the shore and important intertidal and estuarine zones. Small spills are likely to have minor to moderate impacts. A large spill reaching areas with subsistence resources could render those resources unsuitable for harvest and result in moderate impacts. Long-term loss of resources would not be expected.	Small spills are likely to have temporary minor impacts on subsistence fish and wildlife resources. A large spill could disrupt marine mammal subsistence harvests, which would have major impacts to food security and cultural continuity. Impacts of a large spill would be major if intertidal zones, lagoons, and estuaries that support locally important subsistence resources (e.g., fish, waterfowl, mollusks) were oiled.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Unexpected CDE	Impacts would be similar in nature to those identified for expected accidental spills, but would be more widespread and of longer duration.	Local and regional economies may be disrupted, and long-term closures of fisheries may result in social and cultural stress, and possible social pathologies. Small communities along the coast that depend to some extent on subsistence harvesting would see moderate to locally major impacts from the loss of some measure of food security.	Impacts would be major and long-lasting. There would be unavoidable impacts on subsistence and commercial harvesting of marine resources. The influx of population as part of the cleanup workforce would place stress on local communities. Loss of income and prolonged litigation is likely to create community divisions and lead to sociopathic behavior. Loss of subsistence resources could threaten the continuation of traditional culture in Alaska Native communities.	Major impacts to sociocultural systems and subsistence would be expected, primarily associated with impacts to subsistence resources (especially marine mammals) and subsistence harvests. In general, the impacts would be major not only for the villages along the northern coast, but for all communities that depend on the sea mammals, fish, and birds that migrate to or through the Chukchi and Beaufort Seas and their shores. Subsequent cleanup activities could also displace some subsistence resources and hunters. The associated influx of cleanup workers is likely to overwhelm the resources of local communities and could result in cross-cultural conflicts.
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, sociocultural systems could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Alternative 1 – Environmental Justice				
Routine Operations	Environmental justice could be affected if any adverse health and environmental impacts are high and disproportionately affect minority and low-income populations.	Impacts to environmental justice are expected to be negligible . Anticipated new levels of infrastructure use and construction would be similar to those that have already occurred along the GOM coast during previous programs. Routine operations are not expected to expose residents to notably higher risks than currently occur. Air emissions from the proposed program are not expected to result in air quality impacts on minority or low-income populations, with emissions from the proposed program not being expected to exceed the National Ambient Air Quality Standards (NAAQS) in any affected area.	Impacts are expected to be minor . Much of the Alaska Native population in the Cook Inlet region resides in the coastal areas, and any new onshore and offshore infrastructure occurring under the Program could be located near these populations or near areas where subsistence hunting occurs. Any adverse environmental impacts on fish and mammal subsistence resources from Program infrastructure and routine operations could result in health or environmental justice impacts on Alaska Native populations.	Impacts are expected to be minor . Much of the Alaska Native population in the Arctic region resides in the coastal areas. Any new onshore and offshore infrastructure occurring under the Program could be located near these populations or near areas where subsistence hunting occurs. Any adverse environmental impacts on fish and mammal subsistence resources from new infrastructure and routine operations could result in health or environmental justice impacts on Alaska Native populations.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Expected Accidental Oil Spills	Accidental spills could disproportionately expose minority and low-income populations and result in adverse health and environmental impacts.	Small spills would have negligible to minor impacts, while large spills would have minor to moderate impacts. Impacts from accidental oil spills expected in the GOM would not raise additional environmental justice concerns because of the movement of oil and gas activities farther away from coastal areas and the demographic pattern of more affluent groups (and fewer low-income and minority populations) living in coastal areas.	Small spills would have negligible to minor impacts, while large spills that affect subsistence resources could have moderate to major impacts on the Alaska Native population, particularly if the subsistence resources were diminished or tainted as a result of the spill.	Small spills would have negligible to minor impacts, while large spills that affect subsistence resources could also have moderate to major impacts on the Alaska Native population, particularly if the subsistence resources were diminished or tainted as a result of the spill.
Unexpected CDE	A CDE could have moderate to major impacts on low-income and minority communities, although the magnitude of impacts of a CDE would partly depend on the location, size, and timing of the event.	The long-term impacts of a CDE on low-income and minority communities are unknown.	Long-term impacts to subsistence resources may be expected, and these may lead to longer and greater environmental justice impacts. Mitigation measures, cooperative agreements between Native and industry groups, and government-to-government consultations are designed to limit the effects from oil spills and routine operations.	Long-term impacts to subsistence resources may be expected, and these may lead to longer and greater environmental justice impacts. Mitigation measures, cooperative agreements between Native and industry groups, and government-to-government consultations are designed to limit the effects from oil spills and routine operations.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, there could be environmental justice concerns, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			
Alternative 1 – Archeological and Historic Resources				
Routine Operations	Impacts could range from negligible to major depending on the presence of significant archaeological or historic resources in the area of potential effect. Archaeological and historic resources (especially offshore resources) may be affected by platform and pipeline construction and by dredging, which could damage or destroy affected resources. Onshore impacts (resource damage or loss; visual impacts) are possible from pipeline landfall, onshore pipeline, and road construction. Anchor drags could affect seafloor resources such as shipwrecks. Most resources are expected to be avoided.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.

TABLE 2.11-2 (Cont.)

Alternatives and Resource	Program Impacts Common to All OCS Planning Areas	Additional Impacts Specific to the GOM Planning Areas	Additional Impacts Specific to the Cook Inlet Planning Area	Additional Impacts Specific to the Arctic Planning Areas
Expected Accidental Oil Spills	Accidental oil spills could result in minor to major impacts to archaeological and historic resources, depending on the number of resources affected and the significance and uniqueness of the resources damaged or lost. As spill sizes increase, the number and likelihood of sites that could be affected increases.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.
Unexpected CDE	Impacts could range from minor to major , depending on the location, size, and duration of the CDE; the effectiveness of cleanup activities; and the significance and uniqueness of the resources affected. Local funds for archaeological and historic resources projects could be diverted to cleanup activities for a CDE.	No additional area-specific impacts expected.	No additional area-specific impacts expected.	No additional area-specific impacts expected.
Alternatives 2-7 – Exclusion of Individual Planning Areas	Under each alternative, impacts of routine operations would be similar in nature and magnitude to the impacts identified under Alternative 1 except that no impacts would be expected in the excluded planning areas. Impacts from accidental oil spills and a CDE would be similar to those identified for Alternative 1, except none would be expected for the excluded planning area. If a large spill or a CDE were to occur in an adjacent planning area and reach the excluded planning area, archeological and historic resources could be affected, and impacts would be similar to those identified for the planning area under Alternative 1.			
Alternative 8 – No Action	None of the potential impacts associated with routine operations and accidental oil spills under Alternative 1 would occur.			