

Overview of U.S. Legislation and Regulations Affecting Offshore Natural Gas and Oil Activity

This article presents a summary of the legislative and regulatory regime that affects natural gas and oil exploration and production in offshore regions of the United States. It discusses the role and importance of these areas as well as the competing interests surrounding ownership, production, exploration and conservation. Questions or comments should be directed to Erin Mastrangelo at erin.mastrangelo@eia.doe.gov or (202) 586-6201.

Legislation and regulations regarding natural gas and oil exploration, development, and production from U.S. offshore lands developed over many decades in response to a variety of concerns and disputes that were most often engendered by competing priorities. This article discusses the evolution of offshore developments and the major legislation and regulations that have affected the natural gas and oil industry in the past 50 years. The most common early disputes revolved around ownership of coastal waters. Eventually, as offshore activities became more abundant, more complicated issues arose over the need to ensure that operations are accompanied by safety, equity, and the protection of marine and coastal environments.

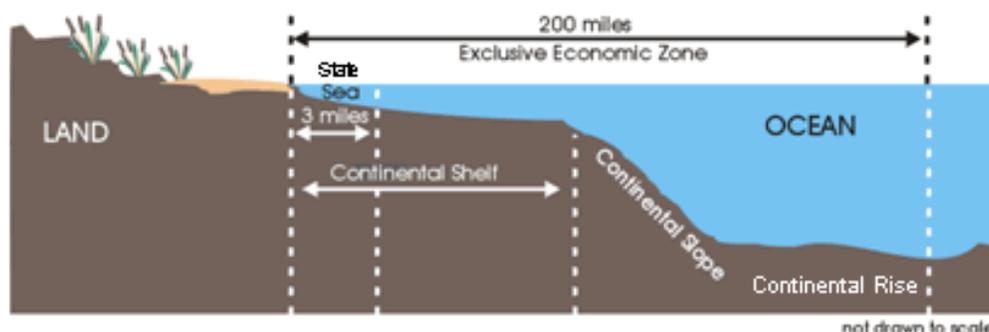
The Federal government did not largely regulate natural gas and oil exploration and development activities in the offshore regions of the United States from the 1880s, when offshore oil production first began, through the mid-1900s. During this time technological advances and increasing demand for natural gas and oil provided incentives for offshore exploration and the development of offshore natural gas and oil production infrastructure. By 1949 eleven offshore fields had been found and 49 production wells were operating in the Gulf of Mexico. By the 1950s the U.S. government began responding to increased concerns regarding offshore jurisdiction, environmental impacts of offshore activities, economic factors, and safety. Key legislative and regulatory initiatives were thereafter enacted that sought to balance the need for a reliable, safe energy supply with minimization of environmental impacts, at a fair price to all parties.

Offshore natural gas and oil exploration, drilling, production, and transportation have all been affected. Legislative action has ranged from imposition of a wide range of requirements on operations in the offshore to complete removal of access to offshore resources. Today natural gas and oil drilling is prohibited in all offshore regions along the North Atlantic coast, most of the Pacific coast, parts of the Alaska coast, and most of the eastern Gulf of Mexico. The central and western portions of the Gulf of Mexico therefore account for almost all current domestic offshore natural gas and oil production.

What Is The Offshore and Why Is It Important?

The continental margins, the geographic region contiguous to and lying seaward of a coastline, have become increasingly important to the natural gas and oil industry over the past century. The continental margins consist of three portions: (1) the continental shelf which has shallow water depths rarely deeper than 200 meters (656 feet) and extends seaward from the shoreline to distances ranging from 20 kilometers (12.3 statute miles) to 400 kilometers (249 statute miles), (2) the continental slope where the bottom drops off to depths of up to 5 kilometers (3.1 statute miles), and (3) the continental rise which dips very shallowly seaward from the base of the continental slope and is in part composed of down-washed sediments deposited at the base of the slope (Figure 1).

Figure 1: Continental Shelf and Slope



Source: Energy Information Administration.

The continental margins are of great importance for many reasons, not least of which is that they are presently the source of increasing amounts of the world's, and the United States', natural gas and oil supplies. H.L. Williams drilled the first offshore well in 1887 from a wooden wharf that extended 300 feet onto the continental shelf off Summerland, California. Early wells were limited to drilling in very shallow water since they were constrained to these shore-bound wharfs. The emergence of free-standing and floating platforms in the 1940s allowed drilling rigs to be moved ever-farther away from shore into deeper water. Today, there are around 4,000 platforms producing in Federal waters up to roughly 7,500 feet deep and up to 200 miles from shore. Furthermore, technological advances in recent years have offered the opportunity for greater exploration, higher production levels, and lower costs. Thus, the percentage of oil and dry natural gas production from water depths greater than 200 meters has steadily increased in the Federal Gulf of Mexico over the past decade (Table 1).

**Table 1: Share of Gulf of Mexico Federal Outer Continental Shelf
Natural Gas and Oil Production from Depths Greater than 200 Meters, 1995 – 2003**

Year	Federal Gulf Of Mexico Production Share from Depths Greater than 200 meters (Percent)	
	Natural Gas	Crude Oil
1995	7.8	26.4
1996	10.9	29.7
1997	11.0	36.0
1998	14.6	46.0
1999	22.5	54.2
2000	24.4	55.8
2001	27.4	62.2
2002	30.0	63.9
2003	35.1	69.3

Source: Energy Information Administration.

The offshore has accounted for about one-quarter of total U.S. natural gas production over the past two decades and almost 30 percent of total U.S. oil production in recent years (Table 2). Although production has declined slightly in the past few years, the Mineral Management Service (MMS) reported that natural gas production in Federal offshore waters was 4.042 trillion cubic feet (Tcf) in 2004. This was about 21 percent of the total natural gas produced in the United States that year. MMS reported that Federal offshore oil production also slightly declined in recent years with 565 million barrels produced in 2004, which is 29 percent of the total oil produced in the United States that year. Furthermore, in 2003, MMS estimated that there was 406.1 Tcf of remaining undiscovered technically recoverable natural gas and 76 billion barrels of oil in U.S. offshore regions. These estimates represent the potential hydrocarbons of an area that can be produced using current technology, without any consideration to economic feasibility. Of these amounts, an estimated 232.5 Tcf of natural gas and 36.9 billion barrels of oil are located in the Gulf of Mexico.

Table 2: Federal Outer Continental Shelf Natural Gas and Oil Production as a Percentage of U.S. Production, 1990 – 2004

Year	Federal OCS Share of U.S. Total Production (Percent)	
	Natural Gas	Crude Oil
1990	27.0	11.3
1991	25.9	12.0
1992	25.4	13.3
1993	25.0	14.4
1994	25.0	15.3
1995	25.0	17.4
1996	26.1	18.6
1997	26.0	20.1
1998	25.5	21.8
1999	25.8	25.2
2000	24.8	26.7
2001	24.8	28.3
2002	23.1	29.1
2003	22.4	28.9
2004	20.5	28.9

Sources: **U.S. Total:** Energy Information Administration, *Monthly Energy Review* (May 2005). **Federal Outer Continental Shelf production:** Minerals Management Service, Royalty Management Program.

Who Has Jurisdiction Over Offshore Regions?

As interest in the commercial development of natural gas and oil increased in the 1940s, control over these resources became a major issue, especially in the offshore regions. The most prominent dispute was between the United States and the State of Texas over 2.5 million acres of submerged land in the Gulf of Mexico (Sidebar 1). Congress eventually resolved this Texas tidelands dispute in 1953 by passing the Submerged Lands Act (SLA), which established the Federal Government's title to and ownership of submerged lands located on a majority of the continental margin. States were given jurisdiction over any natural resources within 3 nautical miles (3.45 miles or 5.6 kilometers) of the coastline excepting Texas and the west coast of Florida where the SLA extends the States' Gulf of Mexico jurisdiction to 9 nautical miles (10.35 statute miles or 16.7 kilometers).

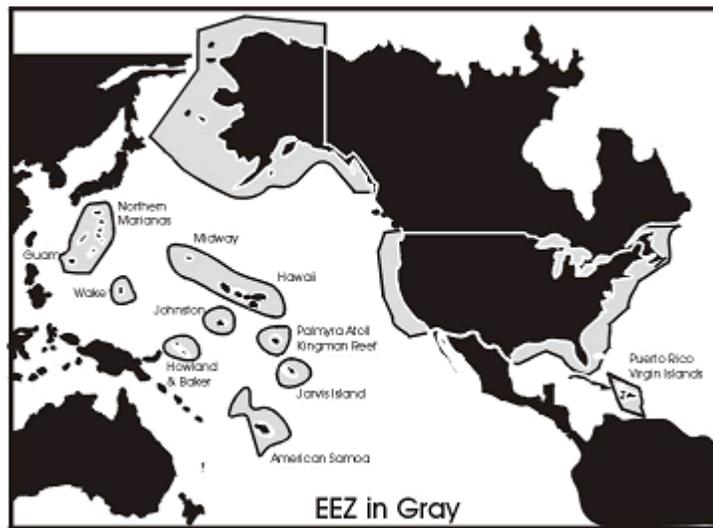
Sidebar 1: The Tidelands Controversy

Controversy over title to lands beneath the States' navigable water emerged in the late 1940s when the oil and natural gas industries were beginning to expand into offshore regions. Federal officials and applicants for mineral leases began to assert Federal ownership over these lands in order to lower the costs of development. One of the greatest controversies of this nature involved title to submerged lands located off the coast of Texas up to 3 leagues (10.35 miles) from shore into the Gulf of Mexico, also referred as the tidelands. Texas first acquired this land when it established itself as an independent nation in 1836, and the United States recognized this maritime boundary when Texas entered the Union in 1845. Through the 1940s, even when the Supreme Court sided against California and other coastal States' ownership rights, many Federal officials asserted that Texas was a separate issue since it came into the Union voluntarily as an independent country under terms that it would hold title to submerged lands up to 3 leagues from shore. Shortly after the 1948 election, however, President Truman filed suit against Texas and won a Supreme Court ruling that national sovereignty carried with it the transfer of offshore lands to the United States. Congress twice (1946 and 1952) passed bills restoring to the States the title to all submerged lands within their respective boundaries, but President Truman vetoed the bills. The matter became one of the foremost issues in the 1952 presidential campaign when Dwight Eisenhower declared in favor of State ownership, and said he would sign a bill enacted by Congress, which he then did on May 22, 1953. One last argument arose in 1957 when the U.S. Attorney General filed suit against Texas arguing that its legal boundary and ownership extended only 3 miles into the sea as opposed to 3 leagues. Texas won this suit in the Supreme Court in 1960 and therefore has a 3-league Gulfward boundary.

Passage of the SLA prepared the way for passage of the Outer Continental Shelf Lands Act (OCSLA), also in 1953. The OCSLA defined the Outer Continental Shelf (OCS), separate from geologic definitions, as any submerged land outside State jurisdiction and reaffirmed Federal jurisdiction over these waters and all resources they contain. Moreover, the OCSLA outlined Federal responsibilities for managing and maintaining offshore lands subject to environmental constraints and safety concerns. It authorizes the Department of the Interior (DOI) to lease the defined areas for development and to formulate regulations pertaining thereto as necessary. Between 1978 and 1998 the OCSLA was amended six times to account for changing issues. It remains the cornerstone of offshore legislation to this day (see next section).

International boundaries were not formally established until 1983 when President Reagan declared the U.S. Exclusive Economic Zone (EEZ) in Proclamation Number 5030 which claimed rights for the United States to all waters up to 200 nautical miles (230 statute miles or 370 kilometers) from the U.S. coastline (Figure 2). About 15 percent of the U.S. EEZ lies on the continental shelf in shallow waters less than 200 meters (656 feet) deep and another 10 to 15 percent lies in water depths of 200 to 2,000 meters (656 to 6,560 feet). The remaining 70 to 75 percent of the EEZ reaches water depths of up to 5,000 meters (16,404 feet).

Figure 2: U.S. Exclusive Economic Zone

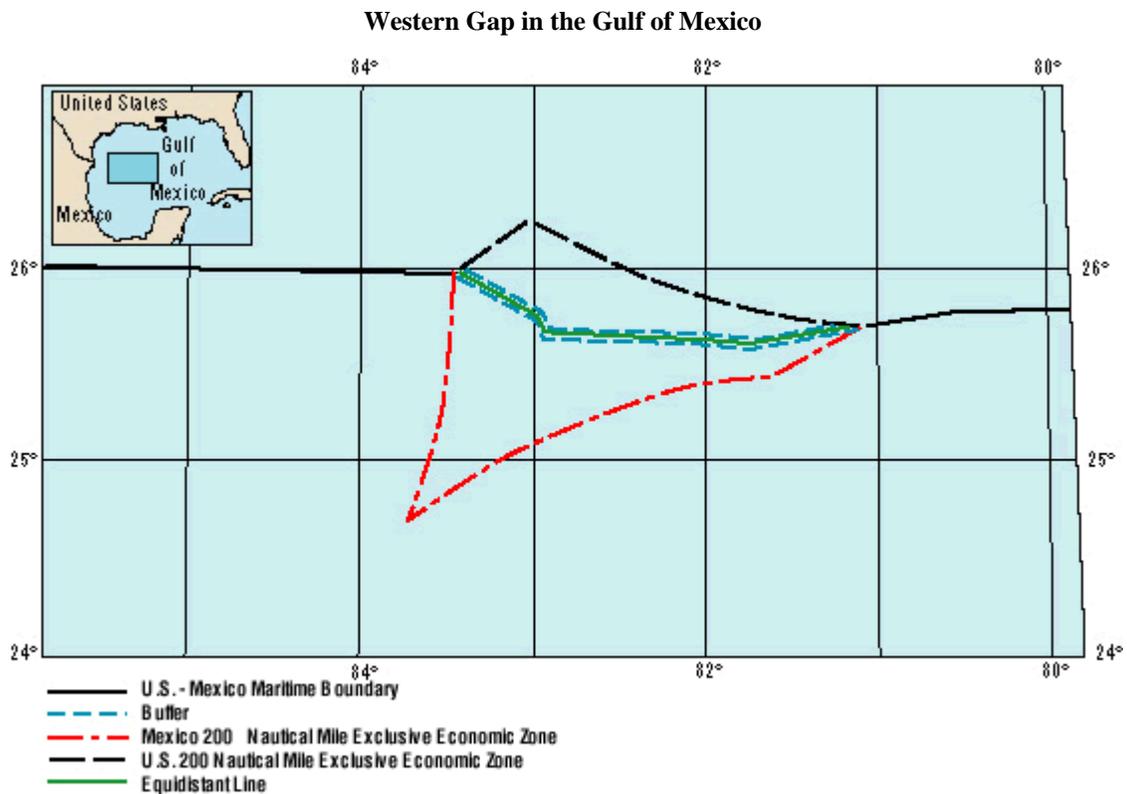


Source: Energy Information Administration.

In 1994 the International Law of the Sea granted the same 200 nautical miles to all countries. Prior to this, countries had claimed jurisdiction to offshore areas in bilateral agreement with neighboring countries. For example, since 1978 the United States and Mexico have signed two treaties in order to fully define jurisdictional boundaries in the Gulf of Mexico (Sidebar 2). In some instances the International Law of the Sea provides that jurisdiction over natural resources extends beyond the 200-mile boundary to the edge of the geological continental margin based on geological factors such as sediment thickness and water depth. For this reason the boundaries associated with Alaska, parts of the East Coast and the Gulf of Mexico extend beyond 200 miles, but the Pacific coast has the standard EEZ boundary limits.

Sidebar 2: U.S. and Mexico Boundary in the Gulf of Mexico

The United States and Mexico signed the Treaty on Maritime Boundaries in 1978 after a potential conflict arose over oceanic jurisdiction in the Gulf of Mexico. Prior to the treaty, both nations had extended their oceanic jurisdictional claims to 200 nautical miles from shore, creating an overlap of jurisdiction where the distance between the two nations' shores was not enough to accommodate both countries. This treaty defined the maritime boundaries for the overlapping area in the Gulf of Mexico, but also left a triangular area, termed the western gap, where the respective boundaries did not meet (Figure below). Mexico ratified the treaty in 1979, but the United States failed to ratify it until 1997. Exploration and leasing activity increased in deepwater areas in the mid-1990s owing to new technology, new discoveries, and the 1995 Deepwater Royalty Relief Act. As the natural gas and oil industry moved further into deeper water, which extended into the jurisdictional gap, concerns grew over the uncertainty regarding boundary lines in the western gap. The United States ratified the 1978 treaty in 1997 in order to begin negotiating with Mexico on the western gap. In June 2000 the United States and Mexico signed a second treaty which defines the continental shelf boundary for the western gap area. Of the approximately 5,092 square nautical miles in the gap area, 38 percent went to the United States and 62 percent went to Mexico. The treaty also established a 1.4-nautical-mile buffer zone on each side of the new boundary to account for the possibility that an oil or natural gas reservoir might cross the boundary. The United States and Mexico also agreed to a 10-year drilling moratorium on the buffer zone in order to allow time to determine the geology and characteristics of the area.



Source: Minerals Management Service.

The Basis of Offshore Legislation and Regulations

The Outer Continental Shelf Lands Act

As noted previously, the OCSLA is the primary governing legislation regarding U.S. offshore regions. When first passed in 1953 it required DOI to perform specific responsibilities in managing the OCS. An integral part of the OCSLA is the requirement that DOI manage an offshore leasing program for mineral development. In doing so DOI must ensure that the U.S. government receives fair market value for acreage made available for leasing, and it must enact regulations that guarantee resource conservation, environmental protection, and operational safety for anyone involved in the activities. Natural gas and oil lease sales are currently held annually on an area-wide basis for areas located in the western and central Gulf of Mexico. Lease sales for tracts located in the eastern Gulf of Mexico and offshore Alaska are less frequently held. Congress enacted the first amendments to the OCSLA in 1978. They provided guidelines for implementing the offshore natural gas and oil exploration and development program. The amendments required development of a 5-year leasing program that schedules all proposed lease sales during that 5-year period. According to Section 18 of the OCSLA, the decision to lease areas in the OCS is based on several factors. First, adequate information regarding the environmental, social, and economic effects of natural gas and oil activity on OCS resources must be considered. No new leasing should take place if this information is not available. Also, the timing and location of leasing must be based on geographic, geologic, and ecological characteristics of the region as well as location-specific risks, energy needs, laws, and stakeholder interests. The OCSLA also stipulates that the decision makers must seek balance between potential damage to the environment and coastal areas and potential energy supply. Areas with the greatest resource potential should have greater priority for development, particularly in areas where earlier development has proven a rich resource base. For every 5-year leasing program, MMS publishes a comprehensive document detailing the information and reasoning behind the leasing decisions. If a lease block is not included in the 5-year program, it may not be leased during the program.

The first 5-year leasing program was launched in 1980, revised in 1982, and concluded in 1985. The current 5-year program covers the years 2002 to 2007 and includes 20 natural gas and oil lease sales. It will expire on June 30, 2007, and the next proposed 5-year plan would extend until 2012.

The Federal Oil and Gas Royalty Management Act

In 1982 Congress passed the Federal Oil and Gas Royalty Management Act to ensure that all Federal lands in the offshore have proper accounting and enforcement mechanisms. This included a comprehensive system for determining, collecting and auditing all fees and payments for offshore leases in addition to conducting inspections and enforcing penalties. The increased responsibilities led the Secretary of the Interior to create the MMS within the Department to administer all responsibilities relating to natural gas and oil production on the OCS. They range from the scheduling of sales and the leasing of

OCS tracts to approval and oversight of offshore operations and the conduct of environmental studies. Today the MMS collects and disperses billions of dollars in revenue from the sale of mineral leases. Offshore leases brought in revenues of \$5.2 billion in 2000. This represents 73.1 percent of the \$7.1 billion in revenues collected from all Federal and American Indian mineral leases that year.

Legislation and Regulations Related to Environmental Issues

A variety of environmental risks are associated with offshore natural gas and oil exploration and production, among them such things as discharges or spills of toxic materials whether intentional or accidental, interference with marine life, damage to coastal habitats owing to construction and operations of producing infrastructure, and effects on the economic base of coastal communities. During the 1960s increasing environmental awareness set the stage for the development of numerous environmental laws, regulations, and executive orders that have affected natural gas and oil activities on Federal offshore areas. All natural gas and oil activities must now pass through a large number of environmental reviews by Federal, State and local agencies. Federal agencies that play a role in regulating and coordinating environmental laws include the DOI, the Environmental Protection Agency (EPA), the Department of Commerce's National Oceanic and Atmospheric Administration (NOAA), and the U.S. Fish and Wildlife Service (FWS). The following section describes the major Federal environmental legislation that has been enacted in the past several decades to safeguard the environment and protect coastal and marine communities.

National Environmental Policy Act of 1969

The National Environmental Policy Act, passed in 1969, requires the Federal Government to consider the environmental impacts of any proposed actions as well as reasonable alternatives to those actions. Through tools such as Environmental Assessments, Environmental Impact Statements (EIS), and Categorical Exclusion Reviews, parties who propose an offshore project can better understand and make decisions on how to manage for environmental consequences. An EIS is prepared for every lease sale held by the MMS.

Clean Air Act

All air pollutants resulting from industrial activities were first regulated at the Federal level by the Clean Air Act (CAA) passed by Congress in 1970. Proposed and existing natural gas and oil facilities must prepare, as part of their development plans and reporting procedures, detailed emissions data to prove compliance with the CAA. The amendments added in 1977 and 1990 set new attainment goals for ambient air quality and updated the Act to account for issues such as acid rain and ozone. The 1990 amendments established jurisdiction of offshore regions regarding regulation of air quality. The MMS

regulates the OCS in the Western and Central Gulf of Mexico, and the EPA regulates the remaining OCS areas.

Coastal Zone Management Act of 1972

The Coastal Zone Management Act was passed in 1972 based on the perceived need to preserve, protect, develop, and restore or enhance the resources of U.S. coastal zones. This Act encourages coastal States to complete an individual Coastal Zone Management Plan for their coastal areas and requires State review of Federal actions that affect land and water use in these coastal areas. The consistency clause of this Act gives States the power to object to any Federal action that they deem not consistent with their approved Coastal Zone Management Plan. The Department of Commerce is the lead Federal Department responsible for assisting States with their coastal zone management plans, reviewing and approving the plans, and conducting continuous monitoring for compliance. NOAA, within the Department of Commerce, carries out these responsibilities but the Secretary of Commerce must grant final approval to all coastal zone management plans before implementation. NOAA reported 34 of 35 coastal States and U.S. territories were participating in the program in 2003 and that 99 percent of the U.S. shoreline was covered by approved plans.

Endangered Species Act of 1973

The Endangered Species Act (ESA), enacted in 1973, protects and promotes the conservation of all species listed as endangered by restricting Federal actions that are likely to harm, harass, or pursue them. Under the ESA plant and animal species can be listed as facing potential extinction after a detailed legal process. The list includes marine and coastal species that could be affected by natural gas and oil operations in the offshore. In 1995 the Supreme Court ruled that significant habitat modification was a reasonable interpretation of the term “harm.” The ESA can therefore affect natural gas and oil operations in all areas near or where habitat considered critical to listed marine species exists.

Clean Water Act of 1977

The Clean Water Act (CWA) of 1977 is the primary law governing the discharge of pollutants into all U.S. surface waters. Under this law, the EPA requires that a National Pollutant Discharge Elimination System (NPDES) permit be obtained before any pollutant is released. The CWA holds certain industries, including natural gas and oil production, to strict standards regarding direct pollution discharges into waterways. These standards are outlined in the NPDES permits and may be based on the age of a facility. For example, new facilities may be subject to more strict standards than existing facilities. Since the permits are issued on a 5-year basis, natural gas and oil companies must renew their NPDES permits every 5 years or face EPA penalties.

National Fishing Enhancement Act of 1984

The National Fishing Enhancement Act (NFEA) allows States that have obtained permission from the Secretary of Transportation to sink obsolete ships for use as artificial reefs. The practice contributes to marine conservation and enhances fishery resources by creating habitat for many plant and fish species. The passage of the NFEA also opened the opportunity for MMS to enact its rigs-to-reefs policy which allows the conversion of decommissioned natural gas and oil platforms to artificial reefs.

Leasing Moratoria on OCS Lands

For the past 24 years leasing of specific portions of the Federal OCS has been prohibited via the annual Congressional appropriations process, i.e., the funds needed to conduct leasing for the specified OCS areas are not provided to the MMS. Proponents of these so-called leasing moratoria argue that leasing in what they consider to be environmentally sensitive offshore areas might lead to activities that could cause economic or environmental damage despite the host of laws and regulations governing operations in offshore areas.

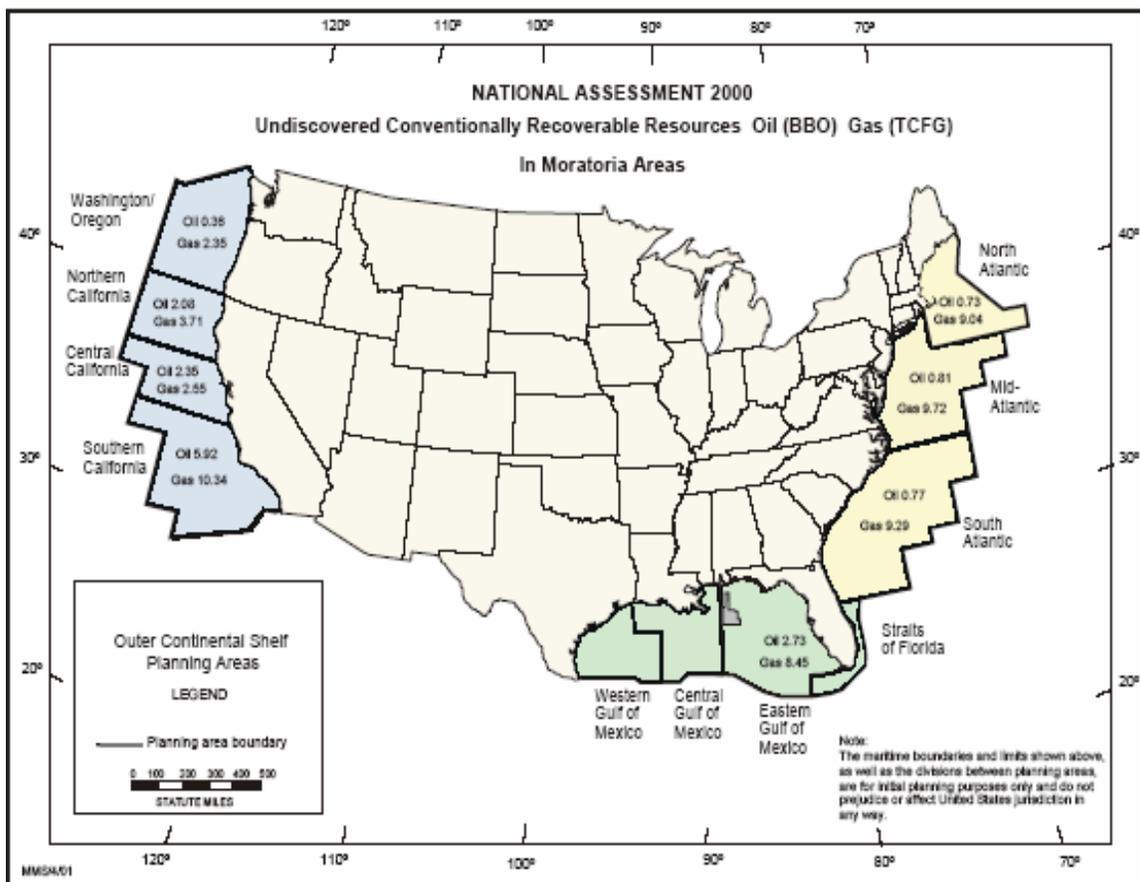
The first OCS moratorium was enacted as part of the fiscal year 1982 Interior Appropriations Bill. It covered 736,000 acres off the coast of California. From 1982 to 1992, Congress supported annual moratoria on six other areas through the Interior Appropriations Bill. The annual moratoria, which only cover the year in which they are passed, were as follows:

- 35 million acres were withdrawn in 1983 in Central and Northern California and the mid-Atlantic,
- 54 million acres were withdrawn in 1984 in California planning areas, the North Atlantic, and the Eastern Gulf of Mexico,
- 45 million acres were withdrawn in 1985 in California planning areas and the North Atlantic,
- 8 million acres in the North Atlantic were withdrawn from 1986 to 1988,
- 33 million acres were withdrawn in 1989 in Northern California, the North Atlantic, and the Eastern Gulf, and
- 84 million acres were withdrawn in 1990 in California planning areas, the North and Mid-Atlantic, the Eastern Gulf, and all of the North Aleutian Basin.

President Bush issued a Presidential Directive in 1990 that enacted a blanket moratorium until 2000 on all unleased areas offshore Northern and Central California, Southern California except for 87 tracts, Washington, Oregon, the North Atlantic coast, and the Eastern Gulf of Mexico coast. Separate from the annual moratoria in appropriations legislation, this directive meant that no leasing or pre-leasing activities were allowed to occur in these areas during the entire period. In 1998 President Clinton extended the moratorium through 2012.

The issue of the availability of OCS lease areas has sparked controversy over the years. On one side are those who argue that the United States needs to open restricted areas to natural gas and oil production in order to meet future energy needs or other policy objectives such as reduced dependence on foreign oil. In 2000, the MMS's mean estimate of the undiscovered conventionally recoverable resources resident in the Lower 48 States moratoria areas was 55.5 Tcf of natural gas and 15.7 billion barrels of oil (Figure 3)¹. MMS estimated another 6.79 Tcf of natural gas and 0.23 billion barrels of oil in Alaska moratoria areas. On the other side of the conflict are parties with stated goals that include protecting the ocean and coastal environments from further pollution or avoiding potential negative consequences on fishing or tourism. These supporters of the moratoria argue that the negative impacts of exploration and development needed to extract the natural gas and oil likely outweigh the benefits.

Figure 3: Conventionally Recoverable Oil and Natural Gas in Moratoria Areas, Lower 48 States



Source: MMS National Assessment, 2000.

¹ MMS revised its estimates in 2003. The volume of Lower 48 undiscovered conventionally recoverable resources in the Federal OCS under moratoria is 72 Tcf of natural gas and 18 billion barrels of oil. These volumes were obtained through communication between the Energy Information Administration and MMS.

Two examples of leasing disputes in recent years are the suspended leased tracts off the coast of California and Lease Sale 181 in the Eastern Gulf of Mexico. Both amply demonstrate how regulatory decisions impact the competing public needs.

In California, debate has ensued over 36 existing offshore leases along the central coast that companies have been unable to develop because of subsequently imposed drilling bans. The leases, which were issued to companies between 1968 and 1984, were set to expire by 1990, but MMS has succeeded in extending the leases since then, through suspensions, to allow more time to prove consistency with State Coastal Zone Management Plans. On August 12, 2005, a Federal judge in California ruled that the MMS could not extend the suspended natural gas and oil leases until an extensive environmental risk assessment is conducted. The decision appears favorable for California officials who feel MMS has failed to show consistency with the State's Coastal Zone Management Plan. The Federal Government, however, feels that natural gas and oil development in offshore California is important for the nation's energy security.

Lease sale 181, conducted in 2001, originally included an area of some controversy consisting of 5.9 million acres in the Eastern Gulf of Mexico. Although the area was not under a moratorium, no leasing activity had taken place there since 1988 because there was a concern that it was too close to the Florida shore and that natural gas and oil activity could impact the environment and the coastal communities that rely on tourism for income. The originally proposed leasing area, estimated to contain nearly 8 trillion cubic feet of natural gas and 396 million barrels of oil, was reduced from the original 5.9 million acres to 1.47 million acres. MMS also decided that the blocks excluded from the sale would not be included in the subsequent 2002 to 2007 5-year leasing plan.

Economic Considerations

MMS collects about \$6 billion dollars on average in revenue each year from the individuals and companies that lease offshore lands for natural gas and oil development. When awarded a lease through a competitive bidding process, the lease holder pays the bid bonus and then rents the right to develop the resources in that area. In addition, lease holders pay royalties to the MMS based on the value of any natural gas and oil actually produced. MMS, in turn, is responsible for the disbursement of any revenue acquired through the leasing activities to the appropriate Federal or State agencies.

Congress has passed economic legislation to deal with these amounts and the way MMS collects and manages funds derived from the sale and operation of offshore leases. The rules have had a substantial impact on natural gas and oil production in the OCS. They aim to promote production in areas where it may otherwise be prohibitively expensive to drill and to help ensure that the distribution of revenue is fair and equitable.

Outer Continental Shelf Deepwater Royalty Relief Act of 1995

The Deepwater Royalty Relief Act (DWRRA), signed into law by President Clinton in 1995, is intended to encourage natural gas and oil development in the Gulf of Mexico in waters at least 200 meters (656 feet) deep by offering royalty relief on qualifying natural gas and oil lease sales. MMS determines which leases are eligible for the relief based on location (the lease must be in the Gulf of Mexico, west of the Florida/Alabama boundary) and economic viability of the resource field associated with the lease (the field would not be explored or drilled without the relief). Originally, the Act provided guidelines that used water depth to specify the minimum volume of production that is exempt from royalty charges for all eligible leases (see Table 3). After these conditions expired in November 2000, however, the MMS adopted a program which determines royalty relief on a lease-specific basis. Under the revised method, leases located in the same water depth may have different volumes exempt from royalty charges if the economic conditions vary. For example, if one natural gas field is more expensive to access, then it may potentially receive more royalty relief than a field in the same water depth with lower costs to access.

The number of active leases in deepwater areas in the Gulf of Mexico has increased since passage of the Act, but it is unclear whether or not production level increases are associated with the increase in lease sales. Proponents of the DWRRA say that without the royalty incentive, technologies necessary for pursuing deepwater natural gas and oil would be economically unattractive. On the other hand, some argue that technology has advanced enough so that deepwater reserves are economically attractive without the DWRRA incentives. Other factors, notably current and expected natural gas and oil prices, are clearly important to the economics of deepwater resource development.

Table 3: Royalty Suspension Volumes, Expired in November 2000

Depth	Minimum Relief Volume (natural gas equivalent)	Minimum Relief Volume (barrels of oil)
200-400 meters (656-1,312 feet)	98.5 billion cubic feet	17.5 million
400-800 meters (1,312-2,625 feet)	295.6 billion cubic feet	52.5 million
>800 meters (>2,526 feet)	492.6 billion cubic feet	87.5 million

Note: Natural gas equivalence volumes calculated from petroleum volumes based on assumed heat content of 1,030 Btu per cubic foot of natural gas and 5.8 million Btu per barrel of oil.

Source: Energy Information Administration.

Similar royalty relief incentives have been offered since 2001 to encourage production from wells drilled for deep natural gas (greater than 15,000 feet total depth or 4,572 meters total depth) on new leases located in shallow waters (less than 200 meters). Since

most of the shallow water areas have already been developed to depths less than that, the incentives offer an opportunity to extend the reach of existing infrastructure to deeper, albeit more costly, potential producing horizons. More recently, in January 2004, DOI issued a final rule to offer similar incentives for existing leases, and on August 8, 2005, President Bush signed into law the Energy Policy Act of 2005 which includes a provision to increase incentives further on production of deep natural gas in the shallow waters of the Gulf of Mexico. The MMS estimates that upwards of 55 trillion cubic feet of undiscovered conventionally recoverable natural gas resources could exist in these areas.

Distribution of OCS Revenues

In 2000, MMS collected more than \$5.2 billion in royalty, rent, and bonus revenues from offshore mineral leases (see Table 4). For revenues derived from natural gas and oil operations located on Federal OCS lands the money is divided among the U.S. Land and Water Conservation Fund, which helps States develop and purchase Federal parks and recreation land, the National Historic Preservation Fund, which provides grants for historic sites, and the U.S. Treasury.

Table 4: Revenues from Federal Offshore Lands, Fiscal Year 2000

Royalties	
Natural Gas	\$ 2,451,875,964
Oil	1,642,700,114
Other Royalties	141,221,225
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	\$ 4,235,797,303
Rents	\$ 207,828,582
Bonuses	\$ 441,798,474
Other Revenues	\$ 324,238,283
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Total	\$ 5,209,662,642

Source: Minerals Management Service, Minerals Revenue.

Under Section 8(g) of the OCSLA, coastal States are entitled to 27 percent of the revenue from offshore leases in Federal waters that are located within 3 miles of the State's seaward jurisdictional boundary. This decision followed debate over the terms of the original OCSLA in 1978, which provided for a "fair and equitable" share of revenue to go to States that are affected by offshore operations in adjacent Federal waters. The 1985 amendments to the OCSLA determined that the figure of 27 percent was appropriate to

compensate States for any damage to, or drainage of, State jurisdiction natural gas and oil resources that operations on adjacent Federal leases might cause. Between 1986 and 2003, coastal States received over \$3.1 billion in Section 8(g) revenue (Table 5). They have used this money to support local programs and improvement projects.

Table 5: Federal Offshore Revenue Received by States Under Section 8(g) of the OCSLA, FY 1986-2003

Alabama	\$ 198,963,900
Alaska	523,816,155
California	678,204,136
Florida	2,416,063
Louisiana	969,267,130
Mississippi	21,449,651
Texas	751,596,694
Total	\$ 3,145,713,709

Source: Minerals Management Service, Minerals Revenue.

Current Issues

The Energy Policy Act of 2005

On Monday, August 8, 2005, President Bush signed into law the Energy Policy Act of 2005. This legislation, which is the first comprehensive national energy plan for the United States in 13 years, has several provisions that affect natural gas and oil development in offshore areas. The following bullets are highlights of these provisions and should not be considered comprehensive of the entire law.

- The Act requires the MMS to conduct a comprehensive inventory and analysis of the estimated natural gas and oil resources on the OCS. The inventory includes moratoria areas which are currently closed to natural gas and oil leasing. The Act stipulates that MMS must use any available technology except drilling to conduct the inventory including 3-D seismic surveys and an initial report to Congress will be submitted within 6 months. Since the timeframe for this report is limited, the law authorizes MMS to acquire existing seismic data from industry sources.
- A new coastal impact assistance program will provide \$250 million from OCS revenues per year for fiscal years 2007 to 2010 to six energy-producing coastal States: Alabama, Alaska, California, Louisiana, Mississippi, and Texas. The

allocation to each State will be based on the ratio of OCS revenue generated off a State's coast to the total OCS revenue in Federal waters. Under this formula, Louisiana is predicted to receive about 54 percent of the assistance money. The money received by the States will be used for coastal restoration, conservation, and other uses.

- The Act contains a clarification of the Federal Energy and Regulatory Commission's (FERC) exclusive jurisdiction under the Natural Gas Act² for siting, construction, expansion, and operation of any facility that imports or exports liquefied natural gas (LNG). FERC, however, must consult with affected States' governments regarding safety issues.
- A provision in the Act establishes a deadline for decisions on appeals of the consistency determination under the Coastal Zone Management Act³. If a State appeals the consistency decision made by the Secretary of Commerce, the Energy Policy Act of 2005 requires the Secretary to close the administrative record for the appeal within 160 days. An extension up to 60 days may be granted under certain conditions. The Act also establishes a 60-day deadline for the Secretary to determine the outcome of the appeal.
- Several provisions in the Act provide increased incentives for natural gas and oil development in offshore areas in order to maintain or stimulate production. The incentives include royalty relief for natural gas production from deep wells in shallow waters of the Gulf of Mexico and for natural gas and oil production in deep waters of the Gulf of Mexico. The Secretary of the Interior has discretion in granting the relief based on the market price of the resource.
- One provision in the new legislation expands the Outer Continental Shelf Lands Act to include the Planning Areas offshore Alaska for royalty suspension at the Secretary of the Interior's discretion.
- The Energy Policy Act of 2005 grants authority to MMS to manage and oversee alternative-energy related projects on the OCS. Prior to this provision, there was a gap in the law with respect to alternative-energy projects. This provision provides 27 percent sharing of any revenue generated from these types of projects in distances up to 3 miles seaward of State waters.

² The Natural Gas Act of 1938 was the first Federal law to regulate the natural gas industry. Section 3 of the Act requires Federal approval by the Department of Energy for the import and export of natural gas, including liquefied natural gas (LNG), and approval by FERC for the siting, construction, and operation of onshore LNG import and export facilities.

³ As discussed earlier in this article, the Coastal Zone Management Act of 1972 gives the Secretary of Commerce authority to determine consistency between Federal actions in offshore areas and State coastal management plans.

States' Rights

Attention has been given in recent years to the amount of authority States have over their coastal waters. Under the Coastal Zone Management Act a State can review any Federal action off its coastline and require consistency with the approved State plan. Responding to increasing concern over Federal moratoria decisions, the Secretary of the Interior announced in December 2001 that it would be up to the States to request a study of the potential natural gas and oil resources off their shores. In addition, it would be the States' responsibility to reconsider the leasing moratoria off their shores.

For the first few years after the Secretary's announcement no State expressed interest in lifting the moratoria. Early in 2005, however, a bill was introduced to give States more control over their coastal zones. The proposed State Enhanced Authority for Coastal and Offshore Resources Act of 2005 (SEACOR) would expand the rights of States to approve or prohibit drilling activity up to 12 nautical miles from shore, as opposed to the 3-nautical mile limit that most coastal States now control. The bill would also allow States to veto oil drilling up to 100 miles offshore and drilling for natural gas up to 40 miles offshore, whereas under current law there is no distinction drawn between offshore oil and natural gas drilling. Some Mid-Atlantic States have expressed interest in the proposal. In late February 2005, Virginia's General Assembly passed a bill advocating passage of SEACOR, which would potentially open the State's coastal waters to natural gas and oil exploration and production activities. However, Virginia Governor Mark Warner vetoed the bill on March 29, 2005.

Liquefied Natural Gas

As its energy needs grow, the United States has several options for meeting increased demand for natural gas. One way is to increase imports of LNG. In 2003 LNG supplied only about 2 percent of U.S. natural gas supplies, but by 2010 it may supply upwards of 10 percent. The United States currently has four LNG importing terminals located in coastal ports of the Lower 48 States, plus one terminal located in the Gulf of Mexico offshore.⁴ There are, in addition, up to three dozen approved or proposed new LNG importing facilities, and several more potential sites have been identified by project sponsors. Congress amended the Federal Deepwater Port Act (DPA) in 2002 to expand the definition of a deepwater port to include facilities used to receive and transport natural gas, usually in the form of LNG. With the change in definition, the DPA authorizes the siting, construction, and operation of LNG terminals on the Federal lands of the OCS subject to strict requirements, guidelines and approval by Federal and coastal State authorities. Under the DPA, the Secretary of Transportation must issue a license for any facility and the Secretary is also required to obtain approval from the governors of each State with coastal waters adjacent to the proposed facility. Of the dozens of planned facilities and potential sites about 10 are located in the offshore. Several of them face controversy at the local, State and Federal levels owing to the concern of nearby

⁴ An LNG receiving terminal also was constructed in 2001 in Puerto Rico, which is a territory of the United States.

communities about potential impacts on the environment and the homeland security risks posed by LNG terminals.

U.S. Commission on Ocean Policy

The Oceans Act of 2000 established the U.S. Commission on Ocean Policy, a bipartisan panel appointed by the President to examine current U.S. ocean policies and offer findings and recommendations for the future. The commission fulfilled its charge in September 2004 with a comprehensive report that included 212 recommendations addressing all aspects of ocean and coastal policy. Although it is far too early to discern the possible impacts of these recommendations, a few of them could have significant effects on offshore natural gas and oil exploration and production. For example, the recommendations related to offshore natural gas and oil activities include changing the structure of leasing revenue distribution so that coastal States invest in renewable ocean and coastal resources, expanding the environmental studies program operated by the MMS, and studying in more detail the appropriateness and feasibility of gas hydrate exploration and production. Throughout the report the commission emphasizes the importance of habitat protection and restoration, greater use of conservation activities, and the need to reverse trends in biodiversity reduction.

Summary

As technological advances have increasingly allowed the natural gas and oil industry to explore and produce in deeper water and from farther beneath the ocean floor over the past half-century, developments in the management of these submerged lands have aimed to balance the conflicting interests and needs associated with these activities.

The earliest laws and regulations established Federal, State, and international jurisdiction over offshore areas. In 1953, the SLA and the OCSLA defined these regions and maintained that coastal States hold the rights to any natural resources within 3 nautical miles of their coastline. The Federal Government holds jurisdiction outside of this boundary. International boundaries were established in 1983 under Proclamation Number 5030 which set the U.S. EEZ. This claimed rights for the United States to all waters up to 200 nautical miles from the coastline.

The OCSLA also set the base of how to manage these lands for natural gas and oil activities. It recognized the need to balance the potential for damage to the environment and coastal areas with the potential for energy supply. An integral component of the act is the requirement of DOI to lease offshore areas for mineral development and enact regulations to ensure resource conservation, environmental protection, operational safety, and equitable distribution of revenue. In 1982, the Secretary of the Interior created the MMS as part of the Federal Gas and Oil Royalty Management Act to administer and manage all responsibilities related to natural gas and oil production in offshore areas.

Environmental laws and regulations have also had a large impact on the natural gas and oil industry. Concerns over impacts on the environmental and coastal communities led to withdrawals of leasing land in the OCS through Presidential moratoria in effect until 2012, annual moratoria enacted by Congress, and coastal States using their veto power under the Coastal Zone Management Act. Other environmental laws may limit natural gas and oil activities by imposing additional requirements enforced by various Federal departments and agencies. These include: The National Environmental Policy Act, the Clean Air Act, the Endangered Species Act, the Clean Water Act, and the National Fishing Enhancement Act.

Another set of regulations has been established in the past few decades to manage revenue received from individuals and companies who lease offshore lands for natural gas and oil development. Regulations such as the DWRRA offer incentives to pursue natural gas and oil in areas where it may be economically infeasible to drill otherwise. There are also rules that ensure the equitable distribution of the revenue. Depending on the location of the lease area, revenue is divided among affected coastal States, the U.S. Land and Water Conservation Fund, the National Historic Preservation Fund, and the U.S. Treasury.

This article has demonstrated the progression of developments affecting the U.S. offshore regions in the last 50 years including several conflicts and competing priorities. Although many parties have differing opinions on how current and proposed legislation affects the natural gas and oil industry, offshore regions in the United States will continue to be a valuable resource to the United States as the Nation faces new energy challenges.