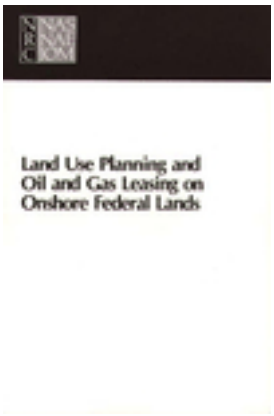

Land Use Planning and Oil and Gas Leasing on Onshore Federal Lands

Committee on Onshore Oil and Gas Leasing, National Research Council

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Land Use Planning and Oil and Gas Leasing on Onshore Federal Lands

Committee on Onshore Oil and Gas Leasing
Board on Earth Sciences and Resources
Commission on Physical Sciences, Mathematics, and Resources
National Research Council

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Preface

The Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Reform Act; 101 Stat. 1330-256) requires a study by the Comptroller General of the United States and the National Academy of Sciences of land use planning and the leasing and management of oil and gas on the federal lands. The study is to address "the manner in which oil and gas resources are considered in land use plans" prepared by the Bureau of Land Management (BLM) in the Department of the Interior and the Forest Service in the Department of Agriculture for lands under their jurisdiction. In particular, the Reform Act asks for recommendations on "any improvements that may be necessary to insure that (1) potential oil and gas resources are adequately addressed in planning documents; (2) the social, economic, and environmental consequences of exploration and development of oil and gas resources are determined; and (3) any stipulations to be applied to oil and gas leases are clearly identified."

The responsibilities of the two participants in this study—the General Accounting Office, the operating arm of the Comptroller General; and the National Research Council (NRC), the operating arm of the National Academy of Sciences—were determined in consultation between the two institutions and with the relevant congressional committees. The General Accounting Office and the NRC agreed that separate reports would be published embodying the study tasks assigned to each institution. Funding for the NRC's study was provided jointly by the BLM and the Forest Service. After agreement had been reached on the "statement of task" that would guide the NRC's study (Appendix A), a letter from the chairman

of the Senate Subcommittee on Public Lands, National Parks, and Forests and the chairman of the House Subcommittee on Mining and Natural Resources asked for additional information (see Appendix B), which the NRC readily agreed to add to its study responsibilities and provide.

The tasks assigned to the NRC included study of the following topics (see Appendix A):

- current BLM and Forest Service land use planning direction as it relates to oil and gas leasing;
- the interrelation between oil and gas leasing decisions and other resource planning decisions;
- the impacts of oil and gas exploration and development on wildlife and other resource values;
- the extent to which the consequences of oil and gas development can be analyzed or reasonably foreseen during the land use planning stage prior to actual lease issuance; and
- whether lease stipulations currently in use are largely successful in resolving potential resource value conflicts.

The Committee on Onshore Oil and Gas Leasing was established in November 1988 by the NRC for the purposes of collecting the necessary information to meet the requirements of the statement of task and preparing the report to the Congress. The committee was composed of 12 people with a range of relevant expertise.

The committee held two two-day meetings in Washington, D.C., in December 1988 and January 1989, where it heard from federal agency officials, representatives of the oil and gas industry and environmental organizations, staff of congressional committees, and other persons with a direct interest in the manner in which federal oil and gas leasing and management are related to the planning for surface uses of federal lands. Subsequent committee meetings were convened at monthly intervals, also for two-day periods, during the spring and early summer of 1989. Three of these meetings were held in places other than Washington to compare planning and leasing decisions with actual conditions in the affected areas. The February meeting was held in Arkansas to acquaint the committee with the effects of oil and gas activities in the humid forested areas of the southeastern United States. The March meeting focused on the varied conditions of the high Plains and the Overthrust Belt and included visits to BLM and Forest Service field offices in Wyoming. After a return to Washington, D.C., for the April meeting, the third trip in May took the committee to the Rocky Mountain Front in northern Montana to examine in greater detail a specific geographical area subject to controversy between advocates of surface values, particularly wildlife habitat and proposed wilderness designation, and proponents of oil and gas exploration and development.

Many agencies, organizations, and individuals assisted the committee by providing information, reports, and commentary. The BLM and the Forest Service were particularly helpful, but other federal, state, and local officials, as well as representatives of a wide range of interests, also provided insight and information of critical importance to the committee.

The report was written by the committee and submitted for NRC review in August 1989. The committee was ably assisted by staff of the NRC and by staff liaison from the federal agencies.

A minority statement drafted by one member of the committee appears at the end of the report. It represents the opinion of the member of the committee who does not agree with the committee consensus expressed in the report.

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Executive Summary

The Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Reform Act) requires a study by the Comptroller General of the United States and the National Academy of Sciences. The study is to address "the manner in which oil and gas resources are considered in land use plans" prepared by the Bureau of Land Management (BLM) in the Department of the Interior and the Forest Service in the Department of Agriculture for lands under their jurisdiction. In particular, the Reform Act requires that the study recommend "any improvements that may be necessary to insure that (1) potential oil and gas resources are adequately addressed in planning documents; (2) the social, economic, and environmental consequences of exploration and development of oil and gas resources are determined; and (3) any stipulations to be applied to oil and gas leases are clearly identified."

The General Accounting Office (the operating arm of the Comptroller General) and the National Research Council (NRC; the operating arm of the National Academy of Sciences) agreed that separate reports would be published embodying the study tasks assigned to each institution. Funding for the NRC's study was provided jointly by the BLM and the Forest Service. The Committee on Onshore Oil and Gas Leasing was established in November 1988 by the NRC to prepare a report to the Congress and to the funding agencies.

The committee's report focuses on the "multiple-use" lands managed by the Forest Service and the Bureau of Land Management. These lands, especially those in the five Rocky Mountain states of Colorado, Montana,

New Mexico, Utah, and Wyoming, have significant developable oil and gas resources. They also have important surface resources, which in some cases conflict with oil and gas exploration and development. By law, Congress has established land use planning as the process by which the two federal land management agencies are to seek resolution of such resource conflicts.

As the Forest Service and Bureau of Land Management planning processes have developed, they have proven adequate to deal with issues related to oil and gas exploration and development on most of the federal lands. There are, however, some highly controversial areas where there is intense interest in development by the oil and gas industry and also high surface resource values. Many of these areas are in parts of the Rocky Mountains where there has been little exploration, and therefore little site-specific information on potential oil and gas resources is available.

These controversies are casting doubt on the efficacy of the planning process and threatening to bring leasing to a halt in some areas. The committee recognizes that the planning process issues generated by these controversies must be resolved, which is the focus and intent of its recommendations.

This report identifies problems in land use planning that are caused by current leasing practices and the availability and reliability of information at the planning stage. This analysis is based on many hours of discussion with federal and state agency officials and representatives of germane interests; reviews of relevant laws, decisions, agency guidelines, plans, leasing documents, and literature; and field examinations of planning efforts and actual situations of oil and gas exploration and development.

There are three important limitations on the scope of this report. First, the committee did not specifically address oil and gas planning issues on federal lands in Alaska because statutes, regulations, data availability, planning approaches, and actual conditions in that state differ considerably from those in the lower 48. Second, the committee did not address Indian lands for many of the same reasons. Multiple-use federal agency planning is not required on Indian lands, and the federal trust responsibility in the area of Indian resource development has no direct counterpart outside the Indian context. Third, on nearly 50 million acres of land, the United States owns the oil and gas (often along with other minerals) but does not own the surface (BLM, 1989, Table 9). Planning for resource development where the surface is not owned or managed by the United States presents the agencies with somewhat different issues. The committee has not attempted to fashion special recommendations for this context, but most of the recommendations it does make are nevertheless applicable, in whole or in part, in this setting.

The committee makes four core recommendations that address the interrelation between oil and gas leasing decisions and the land use planning

process for the federal lands. These core recommendations are supplemented with five additional recommendations. The recommendations have to be read in the context of the entire report and, especially, the discussion of each recommendation in Chapter 8.

Adopting these recommendations would significantly improve land use planning and leasing decisions by better integrating oil and gas exploration and development with wildlife and other resource uses on federal land. This coordination should help to resolve uncertainties over the use and protection of federal land resources related to oil and gas exploration and development.

CORE RECOMMENDATIONS

- *The agencies should use their planning processes to forecast the reasonably foreseeable consequences of oil and gas exploration and development. Where those consequences are deemed acceptable, the agencies should make the lands available for leasing.* (Page 116)

  The committee believes that most federal lands that are available for leasing can continue to be made available, with the planning process used to identify stipulations that will be applied to leases under various conditions. Such stipulations must be employed effectively to meet site-specific conditions.
- *In areas where available information indicates the potential for high-value oil and gas resources, but where surface values are especially high and potential land use conflicts cannot be resolved during planning, lands should be made available for leasing with a right only to drill exploratory wells in defined locations. Information gained by that exploration should be used to make a subsequent analysis and agency decision on proceeding with development if discovery of petroleum makes development possible. If, after that analysis, further exploration and development is prohibited, the lessee should be reimbursed for its direct costs of obtaining and exploring the leasehold.* (Page 118)

  This recommendation recognizes the difficulties posed for the planning process where potential values of competing resources are judged to be nearly equal. In these relatively uncommon cases, gaining more information through carefully controlled exploratory drilling will improve the decision-making process. The committee recognizes the uncertainties this may cause for lessees, but believes this will be recognized in the bidding in competition for leases. Further, significant oil or gas discoveries during exploration will clearly weigh heavily in an agency decision in favor of development.

- *The agencies should use their planning processes to determine whether certain lands are currently unsuitable for oil and gas exploration and development when other potential uses of the land clearly outweigh potential values for oil and gas resources.* (Page 122)

  Unsuitability determinations should be used only in relatively limited and specific circumstances, spelled out in advance in national and local criteria.
- *All leases should include a standard stipulation that preserves the government's flexibility to control and, if necessary, to prohibit, activities on the leases that pose serious and unacceptable impacts on other values, but with the provision that a lessee would be reimbursed for its direct costs in acquiring and developing its lease if further exploration and development is prohibited.* (Page 127)

This proposed standard stipulation recognizes that new information may require changes in decisions made at the time of leasing, but that the cost of such changes should not be borne by the lessee. Including this stipulation in all leases will lead bidders to give more attention to the possibility of encountering unexpected environmental risks. The compensation provision of this recommendation, along with the likely discounting of bids to recognize these risks, provides for fair treatment for lessees, while assuring the public that leasing will not lead to unreasonable environmental damage.

SUPPLEMENTARY RECOMMENDATIONS

- *The agencies should make efforts, short of creating substantial moratoria on lease offerings, to control the configuration and timing of leases in a particular area to allow for better assessment of the cumulative impacts of leasehold activities in the area.* (Page 134)
- *Consideration ought to be given to shortening the term of noncompetitive leases.* (Page 136)

  Although it is difficult to predict the impact that a shortened noncompetitive lease term would have on the onshore oil and gas industry, a shortened noncompetitive lease term would limit the planning horizon and allow better forecasting of impacts and therefore deserves consideration.
- *The agencies should improve opportunities for public participation in their decisions to issue leases and to waive, suspend, or modify lease stipulations.* (Page 136)
- *Where the potential impacts of oil and gas activity would extend beyond the borders of the planning area, the federal land management agency should coordinate its planning analysis with planning efforts by the same agency in adjacent planning areas, and with other agencies that have jurisdiction over nearby lands and other surface values.* (Page 137)

- *To the extent feasible, the foregoing recommendations ought to be incorporated in the agencies' planning and leasing systems and applied to existing lessees.* (Page 138)

The committee has no firm basis for estimating the costs and agency staff needs that would be required to implement its recommendations. Only a portion of the cost of agency land use plans is related to oil and gas exploration and development. The committee's recommendations would place some additional burden on the planning process and add marginally to the cost of land use planning. In addition, they would add marginally to the already substantial costs to bidders and lessees of evaluating federal land areas for possible exploration and development.

To be weighed against the additional governmental and industry planning costs are the costs to the public of continued stalemates in oil and gas leasing on some federal lands. These, too, are costs for which the committee is unable to provide estimates. The committee believes that the most cost-effective and equitable way to resolve these issues is through strengthening the role of planning in the leasing process, and making some adjustments in the leasing process to make planning more effective.

REFERENCE

Bureau of Land Management, Department of the Interior. 1989. Public Land Statistics, 1988, Vol. 173.

1

Introduction

ORIGIN OF THIS REPORT

For much of the nation's history, the very size (Figure 1.1, Table 1.1) of our vast federal land estate fostered the impression that it could accommodate all manner of uses with minimum constraint or controversy. However, as our population and economy expanded and portions of the public domain were sold or granted into private ownership, conflicts over the uses of the remaining federal lands multiplied. Society's increasing demand for materials and energy resources to support economic growth has contributed to these conflicts. They have been sustained, as well, by a growing recognition of and desire to protect the noneconomic values of wildlife, outdoor recreation, and open space—values that are typically perceived to be greatest where development, including mineral extraction, is absent. These conflicts arise on the federal lands because large segments of these lands have remained relatively undeveloped and are dedicated by law to multiple-use management. Today, these lands constitute some 460 million acres administered by the Bureau of Land Management (BLM) in the Department of the Interior and the Forest Service in the Department of Agriculture, some 66.5 million acres of which was under lease for oil and gas exploration and development as of fiscal year 1988 (BLM, 1989a; Forest Service, 1989).

For many years, Congress enacted and the land management agencies implemented various discrete programs addressing individual uses of the federal lands. Early attention was paid to the commodity or economic

Figure 1.1
Distribution of onshore federal lands in the United States.
Source: U.S. Geological Survey and Bureau of Land Management (1981).

values of the land, from the General Mining Law of 1872 (30 USC 21-54) through the Taylor Grazing Act of 1934 (43 USC 315-315r). Congress, in the Mineral Leasing Act of 1920 (41 Stat. 437; 30 USC 181-287), chose to manage the energy resources of the federal lands—principally oil and gas, coal, oil shale, and tar sand—by leasing exploration and development rights. By the 1960s, public and congressional attention had shifted toward the federal lands' noneconomic values and their associated uses, as reflected in the Wilderness Act of 1964 (16 USC 1131-1136), the Wild and Scenic Rivers Act of 1968 (16 USC 1271-1287), the National Trails System Act of 1968 (16 USC 1241-1249), and the Endangered Species Act of 1973 (16 USC 1531-1543).

These statutes and the programs they established were dedicated to, and stimulated private industry and public interest in, specific uses and values. So focused, they did not discourage, and may have inadvertently encouraged, conflicts over how and where particular combinations of these uses and values would be accommodated on the federal lands.

By the 1970s, Congress and the land management agencies had recognized that resolution of increasingly frequent and intense land use conflicts had become a central issue in federal land management. The chosen instrument to resolve such conflicts was land use planning. Although the Bureau of Land Management and the Forest Service had initiated planning earlier, they received explicit congressional direction to conduct planning in two 1976 statutes—the Federal Land Policy and Management Act (FLPMA; 43 USC 1701-1782) and the National Forest Management Act (NFMA; 16 USC 1600-1604). The principal objective of such planning was to accommodate multiple uses, and "multiple use" was defined by Congress to include uses associated with both economic and noneconomic values.

During the same period, Congress began to revisit and revise the statutes governing the programs for specific uses. In the Federal Coal Leasing Amendments Act of 1976 (90 Stat. 1083-1090), the Surface Mining Control and Reclamation Act of 1977 (30 USC 1201-1328), and the Public Rangelands Improvement Act of 1978 (43 USC 1901-1908), the coal and grazing programs were reformed to ensure more thorough knowledge of the resource and more detailed guidance for its disposition; to increase the competition for and revenues from the resource; to provide for better analysis, management, and reclamation of the environmental impacts of the resource's use; and to encourage further integration of the resource disposition decisions and land use planning.

Congress's deliberations on the onshore oil and gas leasing program began in 1979 and concluded in 1987 with the passage of the Federal Onshore Oil and Gas Leasing Reform Act (101 Stat. 1330-256), as a title in the Budget Reconciliation Act. Here, too, Congress provided more detailed guidance on the decision to lease and established a leasing

TABLE 1.1 Percentage of Federal Lands Within States

State	Percentage Federal Lands
Alabama	3.3
Alaska	87.1
Arizona	43.1
Arkansas	9.9
California	46.4
Colorado	36.2
Connecticut	0.4
Delaware	2.4
District of Columbia	28.0
Florida	12.4
Georgia	5.4
Hawaii	16.4
Idaho	63.7
Illinois	1.4
Indiana	1.9
Iowa	0.4
Kansas	1.1
Kentucky	5.5
Louisiana	4.0
Maine	0.8
Maryland	3.1
Massachusetts	1.6
Michigan	10.0
Minnesota	6.8
Mississippi	5.5
Missouri	4.7
Montana	30.5
Nebraska	1.5
Nevada	85.1
New Hampshire	12.8
New Jersey	3.3
New Mexico	31.3
New York	5.1
North Carolina	7.0
North Dakota	4.4
Ohio	1.2
Oklahoma	1.9
Oregon	48.7
Pennsylvania	2.2
Rhode Island	0.7
South Carolina	6.0
South Dakota	5.6
Tennessee	7.0
Texas	1.9
Utah	63.6
Vermont	5.4
Virginia	9.7
Washington	29.2
West Virginia	7.6
Wisconsin	5.2
Wyoming	49.5

SOURCE: Bureau of Land Management (1989a).

procedure that required all leases to be offered for sale competitively. However, Congress could not agree as to whether the legislation should contain more detailed guidance on the integration of leasing, land use planning, and environmental analysis. The House-passed bill contained planning and environmental provisions (H.R. 2851, 100th Congress); the Senate-passed bill (S. 66, 100th Congress) did not.

During the House and Senate conference on the Budget Reconciliation Act, conferees for the oil and gas leasing title adopted the compromise that became law (section 5111 of P.L. 100-203): they substituted for the House planning and environmental provisions a direction to the Comptroller General of the United States and the National Academy of Sciences to "conduct a study of the manner in which oil and gas resources are considered in land use plans" prepared under FLPMA and NFMA. Reflecting the origin of the study provisions, the study's purpose was described by the chairmen of the two subcommittees of jurisdictions in a letter to the National Academy of Sciences and the General Accounting Office as providing "assistance to Congress in reaching a consensus regarding the question of whether there is a need for revisions in land use planning or leasing statutes" (March 2, 1988, letter to National Academy of Sciences and General Accounting Office, see Appendix B). With this direction, the responsibilities of the National Academy of Sciences were further clarified through discussions with the BLM and the Forest Service and with the congressional committee chairmen. The specific tasks assigned to the Academy are described in the Preface to this report.

THE PROBLEM

Oil and gas activities on the federal lands proceed through four stages of federal authorizations—land use planning, leasing, exploration (notices of intent or permits for seismic work through permits to drill exploration wells), and development (permits to drill production wells, pipeline rights-of-way, and facility use permits). By statutes and judicial decisions, and agency directives implementing the requirements of both, the BLM and Forest Service are asked to consider the activities and environmental impacts associated with the leasing, exploration, and development stages during the initial planning stage when all potential uses of the federal lands are addressed. Unlike most other uses that involve the consumption or enjoyment of readily discernible surface resources, however, oil and gas activities are concerned with subsurface resources about which available information may be minimal. Although the potential for oil and gas is recognized during land use planning, the volume, extent, and specific location of the resources, and the consequent surface impacts from their exploration and development, are commonly unknown.

This informational problem poses the question of whether the surface impacts of oil and gas exploration and development can be fairly and adequately identified during planning to ensure that those activities are afforded equitable consideration with other federal land uses and values—that those activities are neither prematurely excluded from, or indiscriminately included on, federal lands by inadequately informed planning decisions. To the extent that such impacts cannot be properly identified during planning, the question becomes how the congeries of values served by the public lands can be identified and protected when the relevant information becomes available during the subsequent leasing, exploration, and development stages, particularly in those circumstances where the information discloses that prospective oil and gas activities will have unacceptable impacts on other uses and values.

Originally through their own initiative, and now in response to statutory mandates, the BLM and the Forest Service prepare land use plans for the lands they manage. Under the multiple-use management requirements of the FLPMA and the NFMA, these plans address the full panoply of federal land uses, including both economic uses (e.g., mineral development, timber production, livestock grazing, and ski resorts and other recreational facilities) and noneconomic uses (e.g., hiking and camping). The plans contain the decisions of the agencies as to which uses can be accommodated where and at what times in the planned area.

Absent dramatic changes in conditions in the planned area, the life of a land use plan may span 15 years (the prescribed maximum period in NFMA (16 USC 1604(f)(5)), the projected standard period for BLM plans). Most of the surface uses authorized in a plan occur, and thus impact the environment, during the plan's term, and their levels of intensity and environmental impacts can be estimated with some degree of accuracy.

The effects of oil and gas exploration and development are not necessarily as contemporaneous or predictable. Oil and gas activities are likely to occur well after the plan's term as illustrated in Figure 1.2. The resources may not be leased until the last year of the plan: the fifteenth year. The great majority of leases that result in any activity have the first significant ground-disturbing action—the drilling of an exploratory well after the approval by the agencies of an Application for Permit to Drill (APD)—in the last year of the lease term: the fifth year for competitive leases and the tenth year for noncompetitive leases. If the well identifies oil or gas in commercial quantities, additional APDs for development wells are submitted, and the field is developed after other permits and rights-of-way are issued by the agency over another generally lengthy span of time: perhaps a decade. Therefore the most significant impacts—those associated with full field development—may occur 30 to 35 years or more after issuance of the land use plan, 15 to 20 years or more after the plan's expiration.

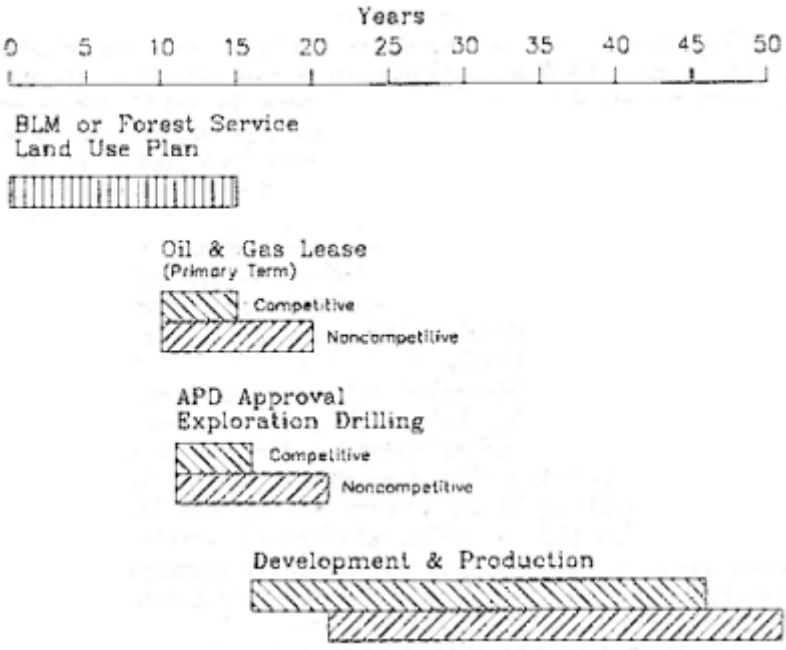

Figure 1.2
Duration and timing of various oil and gas planning, leasing, and management action.

An equally significant distinction between the planning for oil and gas exploration and development and the planning for most other federal land uses is the problem encountered in projecting the level of the use's activities and thus the magnitude of the use's impacts. Unlike most surface uses and even some mineral development such as coal mining, the volume and quality of the oil or gas resource are seldom known at the time land use planning is conducted, making projections of exploration and development activity levels and environmental impacts more difficult and less reliable. Even if all the land that might be identified for leasing in the planning process is leased during the plan's life, to attempt to identify during planning where on the leased land surface-impacting activities may occur is problematic.

Although statistics to make precise calculations are not available, the committee was generally informed by the federal agencies that, as a rough rule of thumb, approximately 10 percent of all oil and gas leases are ever subject to well drilling, and only about 10 percent of the leases upon which drilling occurs ultimately produce oil and gas in commercial quantities. The committee has not attempted independent verification of this 10/10

percent rule of thumb. While the committee suggests that most leases are never drilled, and few exploration wells result in discovery, it is important to note that a single tract of land may have been leased, and then released upon expiration of the old lease, several times since enactment of the Mineral Leasing Act of 1920. The rule of thumb does not, in other words, suggest that only 10 percent of the land that is leased is ever subject to exploratory drilling. Furthermore, approximately one-quarter of the total leases currently in effect (and one-fifth of the acreage currently under federal lease) are in a producing status (see Figure 2.3, p. 24).

Finally, even if the assumption is made that exploration and development will ensue, the type and level of impacts from production are not known when planning occurs. Producing fields vary wildly in size—from a few hundred acres and a handful of wells (e.g., North Pineview, Wyoming) to more than 75,000 acres and 21 wells (e.g., Riley Ridge, Wyoming). Within the field, impacts will correspond to such factors as whether the terrain is flat or hilly (whether drill pads and roads may be prepared with minimal earth disturbance or with excavation of cut and fill slopes), what the wellhead density and concomitant number of connecting service roads and gathering lines will be (oil wells typically are spaced every 40 acres, gas well every 640 acres, based on the wells' drainage capacity and the area's geology), and what additional facilities may be needed (e.g., dehydration plants, injection wells for disposal of produced water or reinjection for pressure maintenance, or preparation plants to remove hydrogen sulfide from sour gas).

The Forest Service and the BLM have undertaken significant additional planning and environmental analysis after completion of land use plans for some resources that, when developed, may have significant impacts on surface values. The planning and analysis are conducted at the resource disposal (leasing, sale, or rental) stage (e.g., regional coal lease sales, environmental impact statements, timber sale plans, and allotment management plans for livestock grazing permits), which permits analysis closer to the time the impacts will occur and when more detailed site-specific data are available. However, to attempt to duplicate such planning and analysis at the leasing stage for oil and gas presents a separate, and perhaps more difficult, set of problems.

The conditions that permit additional planning and analysis at the leasing, selling, or renting stage for other resources generally do not exist for the leasing of onshore oil and gas. In the case of coal leasing, for example, a sufficiently limited number of leases are offered at sufficiently lengthy intervals to permit site-specific analysis. Oil and gas lease sales, on the other hand, typically involve several times the number of lease tracts at much greater frequency than do regional coal lease sales. For example, the largest regional coal lease sale occurred in the Powder River Region

of Wyoming and Montana in 1982, where 13 lease tracts, totaling 23,000 acres, were offered. No Power River federal coal lease sale has been held or scheduled since 1982. By contrast, federal oil and gas lease sales in Wyoming recently have been held on a bimonthly basis under the Reform Act (which requires sales to be held at least quarterly) and have to date involved an average of 800 competitive lease tracts totaling approximately 300,000 acres in each sale (BLM, 1989b). The frequency of oil and gas lease sales and the large number of lease tracts in each sale diminish the land management agencies' ability to conduct adequate site-specific analysis at the leasing stage.

The additional planning conducted for timber sales and livestock grazing on federal lands also is infeasible under the present process for leasing oil and gas. Again, these decisions to sell timber and rent grazing rights are made on a less frequent basis than the decisions to offer oil and gas leases. More importantly, however, planning for timber sales and grazing management concerns specific geographical areas of relatively limited size, thus permitting meaningful data collection for, and analysis of, site-specific and cumulative impacts. In contrast, the lease tracts offered in the quarterly (or more frequent) federal oil and gas lease sales are scattered throughout each state. Additionally, the committee estimates that one-quarter of the federal land available for oil and gas leasing is already leased. Pre-Reform Act leases still outstanding were issued at monthly lease sales or upon request and thus have many different expiration dates. The BLM normally reoffers for lease expiring leases after their expiration dates. For all these reasons, the land management agencies do not assemble a number of tracts in a discrete geographical area, limit a prospective sale to those tracts, and then plan the leasing and mitigation of impacts in that area.

These differences in the timing, duration, extent, and impacts of oil and gas leasing and subsequent exploration and development, compared to other public land uses, have raised questions as to (1) how the land use plans of the BLM and the Forest Service should address the oil and gas leasing and management processes, and (2) when during those processes environmental impacts should be analyzed and environmental constraints, including prohibitions, placed on the various exploration and development activities. Stated more simply, the questions concern when and how the two land management agencies should be required to say yes—or lose the right to say no—to oil and gas exploration and development based on environmental concerns.

This report provides recommendations for how oil and gas exploration and development should be further integrated with the federal land use planning process and where in the subsequent leasing and management process further environmentally related analysis and decisions should be made. Although the debate that led to the congressional directive for

the study and the tasks identified for this report focuses on environmental concerns, the committee was highly cognizant of the economic and social importance of oil and gas exploration and development on federal lands—from maintaining national security to sustaining the local economy. Underlying the committee's deliberations was a firm belief that orderly leasing and management of federal onshore oil and gas resources must result from any recommendations the committee makes.

ORGANIZATION OF THIS REPORT

Chapter 2 addresses the federal lands where multiple use planning occurs and considers the role of the oil and gas industry in leasing, exploring, and developing those lands. Chapter 3 presents the legal framework for land use planning and for oil and gas leasing and management. The judicial and administrative controversies that have framed the issues addressed in this report are discussed in Chapter 4.

The planning process—its evolution, its present status, and its likely future—and the analytical requirements of the National Environmental Policy Act and Endangered Species Act are presented in Chapter 5. This chapter also describes how oil and gas exploration and development are addressed in existing plans and how the agencies have proposed to treat such activities in future planning. Chapter 6 provides similar discussions of the oil and gas leasing and management process and how it relates to the various stages of exploration and development.

Particular areas where conflicts between oil and gas exploration and development are most intense, and the reasons those areas are the source of such conflict, are the subject of Chapter 7. The final chapter, Chapter 8, presents the committee's conclusions and recommendations for changes in agency procedures and regulations, and statutory requirements, for both the planning process and the oil and gas leasing and management process.

There are three important limitations on the scope of this report. First, the committee did not specifically address oil and gas planning issues on federal lands in Alaska because statutes, regulations, data availability, planning approaches, and actual conditions in that state differ considerably from those in the lower 48. Second, the committee did not address Indian lands for many of the same reasons. Multiple-use federal agency planning is not required on Indian lands, and the federal trust responsibility in the area of Indian resource development has no direct counterpart outside the Indian context. Third, on nearly 50 million acres of land, the United States owns the oil and gas (often along with other minerals) but does not own the surface (BLM, 1989a, Table 9). Planning for resource development where the surface is not owned or managed by the United States presents

the agencies with somewhat different issues. The committee has not attempted to fashion special recommendations for this context, but most of the recommendations it does make are nevertheless applicable, in whole or in part, to this setting.

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2

Setting

The setting for the issues analyzed in this report is the federal lands and resources, including minerals, administered by the Bureau of Land Management of the Department of the Interior, and the Forest Service of the Department of Agriculture. This chapter describes those lands, their significance for oil and gas exploration and development, the impacts of federal land management on states and Indian tribes, and the relationship of federal lands to the oil and gas industry.

FEDERAL LANDS

Of the 2.3 billion acres of land in the United States, 1.8 billion acres was at one time held for the United States by the General Land Office, the predecessor of the BLM. The remainder comprised lands either in the 13 original states or in Texas. By 1988, 1.1 billion of those public domain lands had been distributed to states, homesteaders, veterans, railroad companies, miners, and other public and private parties to whom Congress directed or authorized land conveyances.

Portions of the public domain lands that were retained in federal ownership were set aside by acts of congress and executive orders for specific public purposes. These lands include Indian reservations, military reservations, national parks, and national wildlife refuges. The lands that remain open for various uses include lands in the first permanent federal land reservation system—the National Forests under the jurisdiction of the

Forest Service—and the remaining unreserved public domain under the jurisdiction of the BLM.

Today about one-third of the land area of the United States, 724 million acres, is federally owned. Approximately 64 percent of those federal lands, or 460 million acres, is managed by the BLM and the Forest Service.

The Forest Service became an agency before it had lands to administer. The Division of Forestry was created in the Department of Agriculture in 1881. Congress authorized withdrawal of the Forest Reserves in 1891, enacted the Organic Administration Act (16 USC 3101) for their administration in 1897, and transferred them to the Division of Forestry from the Department of the Interior in 1905. The division had been renamed the Forest Service, and the Forest Reserves renamed the National Forests, by 1907. The lands of the National Forest System were acquired by reservation of public domain land, principally in the West, under the Forest Reserve Act of 1891 (26 Stat. 1095), and by acquisition of private land, principally in the East, under the Weeks Act of 1911 (16 USC 480). Today, the Forest Service manages 191 million acres of National Forest System land, 163 million acres reserved from the public domain and 28 million acres of acquired land. The Forest Service administers most of these lands under statutory multiple-use management and planning mandates, although some of them are specifically designated for special management as units of the wilderness, wild and scenic river, national trails, or other conservation systems.

Although mineral exploration and development were not among the uses specified by Congress for multiple-use management by the Forest Service, in recent years the agency has included these uses in its land use plans. The agency's 1979 planning regulations, promulgated to implement the planning requirements of the National Forest Management Act (NFMA) of 1976 (16 USC 1600-1604), gave explicit direction to the agency to take minerals into account in its planning (36 CFR 219.22, as amended in 1982). As discussed in Chapter 3, full statutory authority to ensure implementation of planning decisions relating to oil and gas exploration and development was granted to the Forest Service in the Reform Act.

The Bureau of Land Management is a more recent institution with an older heritage. It was created in 1946 by the merger of two predecessor agencies, the General Land Office (1812-1946) and the Grazing Service (1934-1946). Congress provided the BLM with its organic act in 1976 by enacting the Federal Land Policy and Management Act (FLPMA) (43 USC 1701-1782). That act established the policy that the remaining public domain lands under the BLM's management were to be retained in federal ownership and to be planned and managed by the BLM under multiple-use principles. The BLM manages some 270 million acres of public lands, including 93 million acres in Alaska and 177 million acres in 29 other states

(BLM, 1989a). The agency also manages an additional 67 million acres of mineral rights reserved to the federal government when the surface estate was patented to public and private parties (BLM, 1989a). Finally, subject to the concurrence of the Forest Service, the BLM manages leasing on the National Forest System lands for oil and gas exploration and development.

The federal lands administered by the BLM and Forest Service are among the nation's greatest assets, affecting the economic, environmental, and social well-being of all Americans. They contain more than 50 percent of the softwood sawtimber in the United States and are the source of about 25 percent of the annual wood volume harvested. They furnish three-quarters of the West's water supply and a good share of the East's. They contain more than 274 million acres of grazing lands, which sustain large populations of livestock, wildlife, and wild horses and burros. They provide habitat for more than 60 percent of the animal species in the country, including more than 166 threatened or endangered species. They contain more than 215,000 miles of fishable streams, 2.2 million acres of lakes and reservoirs, 27.7 million acres or approximately 80 percent of the country's designated wilderness (outside of Alaska), and support nearly 300 million visitor-days of outdoor recreation a year. They include 66.5 million acres under lease for oil and gas, and more than 400,000 acres of leased federal coal (BLM, 1989a; Forest Service, 1989).

The significance of these varied economic and noneconomic resources to the nation and to the states in which they are located makes planning of their use a formidable task for the land management agencies.

The Forest Service and the BLM will play a major role in shaping the future not only of the federal lands, and the industries that rely on their resources, but also of many of the states in which the federal lands are located. This role stems from the dominant position of the federal lands in those states. In eleven states, the federal lands comprise more than 30 percent of the land base. In the five Rocky Mountain states in which oil and gas exploration interest on federal lands is highest, the percentages of federal ownership are Colorado 36, Montana 31, New Mexico 31, Utah 64, and Wyoming 50 (see Table 1.1, p. 9).

OIL AND GAS RESOURCES ON THE FEDERAL LANDS

Among the most significant uses of the federal lands are the exploration for, and the development of, oil and gas.

No readily available calculation exists of the federal acreage available for oil and gas leasing. The Office of Technology Assessment (OTA) estimated that, in 1975, about 375 million acres of federal land, including land in Alaska, was available for oil and gas leasing (see OTA, 1979, Table B.1). This amount has shrunk in recent years because of the passage

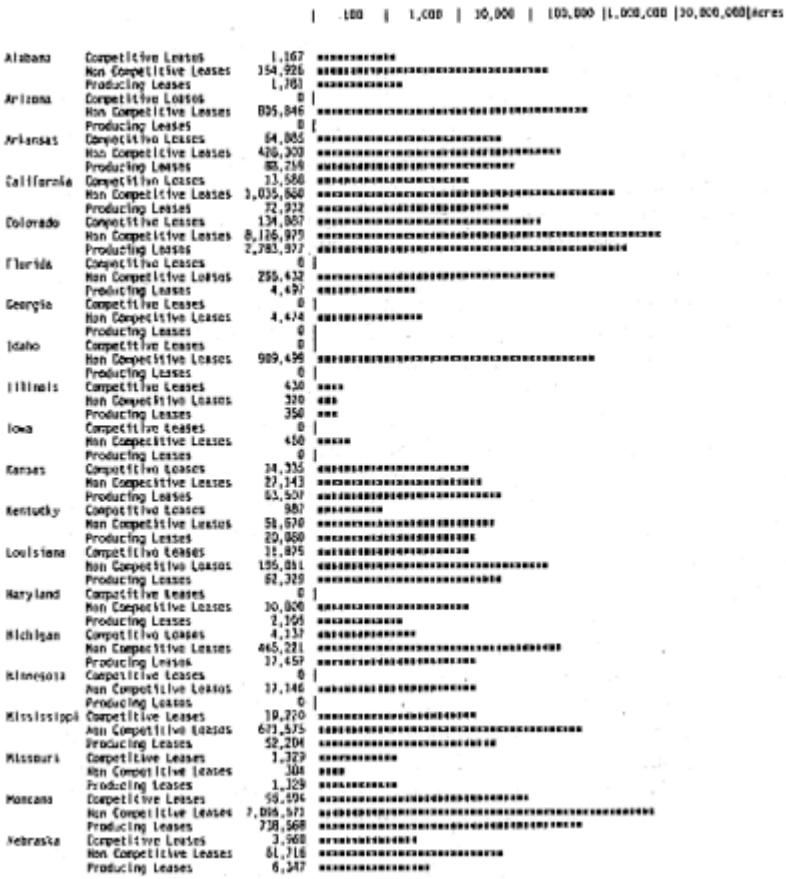
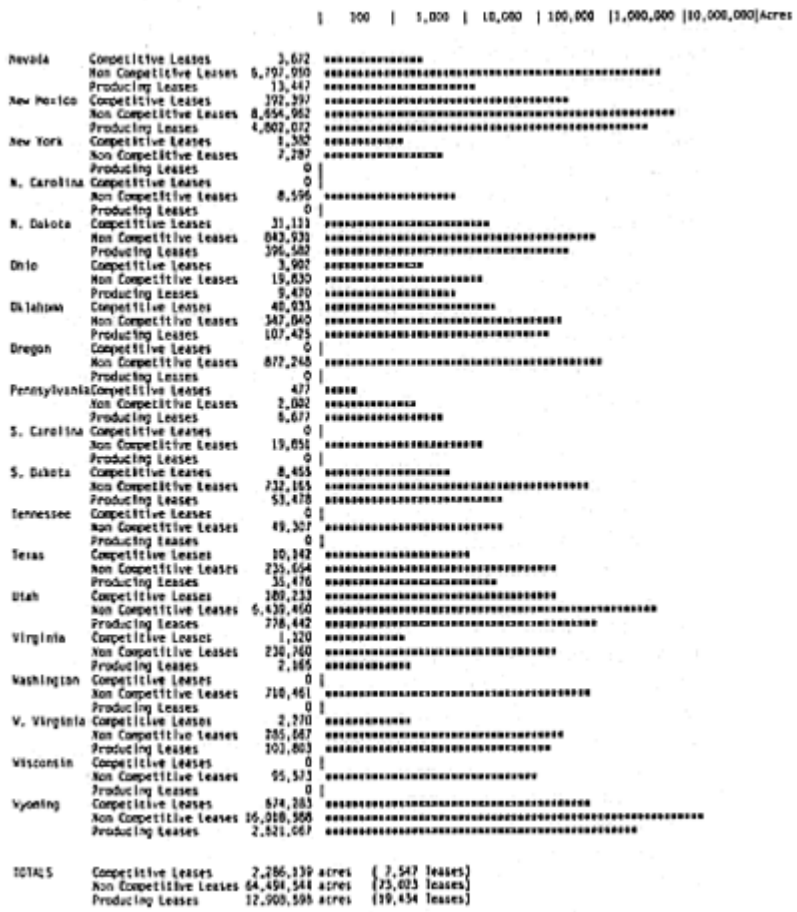


Figure 2.1
Federal lands under oil and gas lease, effective as of September 30, 1988.
Source: Bureau of Land Management (1989a).

of the Alaska National Interest Lands Conservation Act (16 USC 3101) (converting over 100 million acres of federal land in Alaska administered by the BLM and Forest Service into National Parks, wildlife refuges, and wilderness areas), ongoing implementation of the Alaska Statehood Act (48 USC note preceding Section 21) (granting federal land to the state), the enactment of the Alaska Native Claims Settlement Act (43 USC 1601 et seq.) (transferring some 40 million acres of federal land in Alaska to Native organizations), the designation of new wilderness areas, the withdrawal of most other wilderness study lands from leasing, and other occurrences. On



the other hand, a few previously withdrawn lands (e.g., some military lands) have been made available for leasing since 1975. Rough calculations based on these subsequent developments suggest that perhaps 250 million acres of BLM and Forest Service land outside of Alaska is available for oil and gas leasing today.

As of September 1988, approximately 66 million acres was covered by approximately 80,000 federal onshore oil and gas leases in 41 states (Figure 2.1). About 74 percent or 59,000 of these leases were located in the five Rocky Mountain states of Wyoming, New Mexico, Colorado, Montana, and

Utah, with Wyoming having 34 percent of all leases (Figure 2.1). As of the end of fiscal year 1988, more than 19,000 leases were either producing or capable of producing.

During fiscal year 1988 production from federal lands outside of Alaska totaled 138.2 million barrels of oil and 873 billion cubic feet of natural gas (see Figure 2.2). Oil production has declined steadily since 1985. While natural gas production has increased since 1986, it is still below production levels of 1976-1985 (Figure 2.2). Although the number of producible and service wells for oil and gas has increased 1-3 percent per year since 1985 (see Figure 2.3), there has been considerable variation in the numbers of approvals of Application for Permit to Drill (APD) and of wells drilled, completed, or plugged. A comparison of production figures confirms that while the number of wells capable of production on federal lands has increased, the average production per well decreased in the period 1985-1988 (Figures 2.2 and 2.3).

Federal oil and gas leases remain a significant source of revenues to the federal government and states. As indicated in Table 2.1, while bonuses paid when leases are sold have fluctuated, federal royalties paid upon production have declined steadily since 1984. Over $580 million in federal revenues was generated from oil and gas lease bonuses, rents, royalties, and fees in fiscal year 1988 (General Accounting Office, 1989). Under Section 35 of the Mineral Leasing Act of 1920 (30 USC 181-287), 50 percent of all federal lease revenues, except fees, are paid to the 41 states in which the leases are located (30 USC 191). Priority uses of those state-share mineral lease monies are for planning, construction, and maintenance of public facilities, and provision of public services in communities socially or economically impacted by the presence of mineral-related production (30 USC 191). In addition to lease revenues, many states also receive significant revenues from taxes on federal lands, oil and gas production, and related operations such as severance (Table 2.2), sales, and corporate franchise taxes.

Although fiscal year 1988 was the first year of implementation of the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (101 Stat. 1330-256), a number of the changes in the leasing system intended by that statute were achieved. During the five years prior to the enactment of the Reform Act, approximately 85 percent of all onshore oil and gas leases were issued noncompetitively either by the simultaneous oil and gas leasing system—the lottery (mostly for parcels that had previously been leased)—or by over-the-counter application (for previously unleased parcels). The remaining 15 percent was issued competitively through a sealed bidding process (BLM, 1983-1988). The Reform Act required that all parcels be offered initially through a competitive oral bidding process.

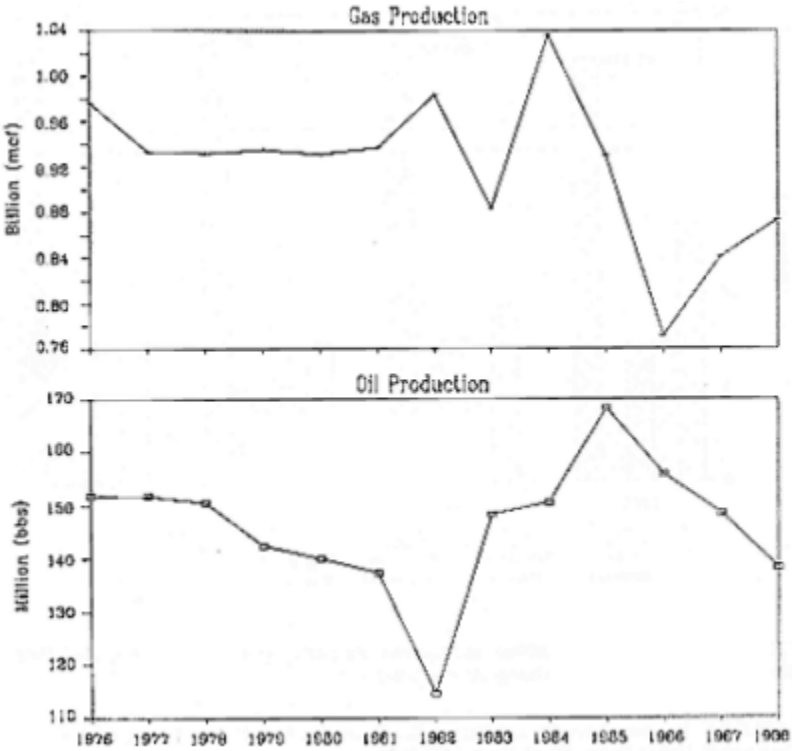


Figure 2.2
Oil and natural gas production from federal lands, onshore continental United States, 1976-1988. Sources: Bureau of Land Management (1977-1983); Minerals Management Service (1988); 1988 data courtesy of the Bureau of Land Management and the Minerals Management Service.

The resultant change was significant, as shown by comparing the pre-Reform Act leasing statistics from fiscal year 1987 and the first part of fiscal year 1988 (FY 1987/1988) with the post-Reform Act leasing statistics from the latter part of fiscal year 1988 (FY 1988). The percentages of noncompetitive leases decreased from 92 percent during pre-Reform Act FY 1987/1988 to 42 percent during post-Reform Act FY 1988 (BLM, 1989c). The average revenues per acre derived from the changed leasing system did not differ as dramatically as the types of leases issued. The average revenue per acre was $9.96 for all acreage leased under the Reform Act in fiscal year 1988, compared to $8.49 during fiscal year 1987 (BLM, 1989c). Total lease sale revenues declined by less than 1 percent between FY 1987 and FY 1988 (BLM, 1989c). A more significant change was seen in

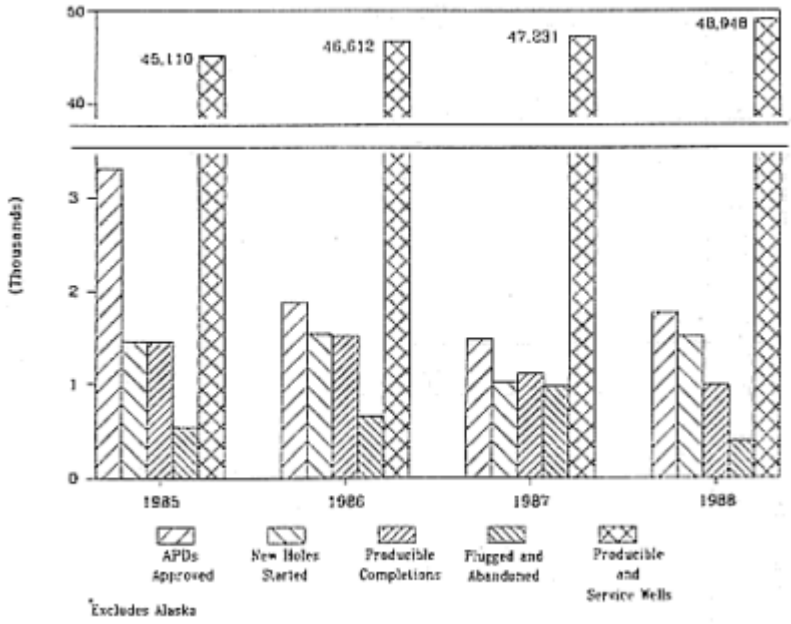


Figure 2.3
Oil and gas drilling activity, onshore continental United States, 1985-1988.
Source: Bureau of Land Management (1986-1989).

TABLE 2.1 Revenues from Oil and Natural Gas Production from Federal Leases, Onshore Continental* United States, Fiscal Years 1978-1988

Year	Oil Royalties	Natural Gas Royalties	Bonuses from Oil and Gas Leases
1978	$180,195,273	$120,224,013	$ 12,705,965
1979	236,739,377	165,102,136	7,597,171
1980	408,651,338	209,037,121	22,048,947
1981	593,364,744	264,983,101	103,314,389
1982	531,605,614	336,232,740	23,950,711
1983	512,512,369	335,492,897	25,426,256
1984	513,489,455	364,265,104	38,287,948
1985	487,363,560	317,739,073	41,838,444
1986	265,968,601	213,699,482	26,643,088
1987	286,332,579	175,717,447	33,345,494
1988	229,537,219	177,547,956	51,208,736

SOURCE: Courtesy of Minerals Management Service.
* excluding Alaska

TABLE 2.2 State Revenues from State Severance Taxes on Federal Oil and Gas Production (millions of dollars)

	1970*	1975*	1980*	1983**	1985**
Alaska	1.9	4.2	5.5	23.0	33.1
Arizona	0	0	0	0	0
California	0.1	0.1	0.2	0.4	0.5
Colorado	0.4	0.8	2.3	9.8	25.2
Idaho	0	0	0	0	0
Montana	2.2	1.3	2.3	6.0	6.9
Nevada	0	0	0	0	0
New Mexico	13.6	24.3	88.8	116.1	137.3
North Dakota	0.6	1.0	4.9	13.7	17.8
Oregon	0	0	0	0	0
Utah	1.0	1.2	2.0	6.3	8.2
Washington	0	0	0	0	0
Wyoming	2.4	10.6	46.5	222.4	283.7
Total	22.2	43.5	152.5	407.7	512.7

* Total severance tax payments obtained from the Bureau of the Census: *State Tax Collections in 1970, State Tax Collections in 1975*, and *State Tax Collections in 1980*. 1970, 1975, and 1980 federal shares based on percent total oil and gas production value coming from federal oil and gas production in 1970, 1975, and 1980, respectively.
** Total state severance tax estimates for 1983 obtained from the U.S. Department of the Treasury (1981): *The Outlook for Severance Tax Collections and the Interstate Allocation of Revenue Sharing* (Office of State and Local Finance). Total 1985 severance tax forecast by applying predicted production and price growth rates to the 1983 Treasury estimates. Federal share estimated at federal share of production value in 1979.

competitive lease sale revenues. The average per-acre bids for competitive leases declined between FY 1987 and FY 1988 (Table 2.3 and 2.4).

RELATIONSHIP OF FEDERAL LAND MANAGEMENT TO STATES AND INDIAN LANDS

As previously noted, because of the large area of federal lands within some states and within or adjacent to some Indian Reservations, federal management of oil and gas activities has a significant impact on those states and Indian tribes. The interests of states and tribes can be generally considered in three categories: land and resource manager, royalty owner, and regulator. Furthermore, in the case of Indian lands, the federal government's trust responsibility for Indian affairs can also significantly affect the development of Indian resources.

Impact on States

As a land manager, a state is concerned with prudent management of all lands, including BLM and Forest Service lands, and related resources within the state. Although states with a major federal land base have from time to time planned for specific development, such as pipeline corridors, water projects, and recreational facilities, in the majority of cases the federal government has taken the lead in land use planning. Where federal lands constitute a significant presence in a state (see Table 1.1, p. 9), federal planning decisions may directly or indirectly limit options for planning the adjacent nonfederal lands and inholdings. For example, where state School Trust Lands occur as inholdings within a designated National Forest wilderness area, the lack of economic access may preclude a state from deriving maximum economic benefit from those Trust Lands.[1] Also, the ability of a county to manage its resource base for a variety of reasons, including lack of revenues, is often severely curtailed by the size of, and planning decisions for, the federal landholdings within its boundaries.

The process of planning for, and protection of, a state's wildlife resources is distinct from timber, mineral resource, or rangeland management. A state wildlife agency generally owns or exerts direct management authority over only a small portion of total wildlife habitat. Except in the case of threatened and endangered species, the ability of the state or agency to ensure protection of wildlife habitat is dependent on its ability to use

[1] State School Trust Lands are lands that were granted to the state by the federal government at the time of statehood. The lands generally include specific sections scattered within federal landholdings and/or other specific land grants. These lands are managed in trust by the state, with revenues dedicated to support the state's school system.

TABLE 2.3 Competitive Sales by Bureau of Land Management Offices, Fiscal Year 1987

State	Sale Date	Parcels Offered	With Accepted Bids		High Bids	Average Bid	
Parcels	Acres	Parcel	Acre				
California	09/87	14	12	1,138	$ 113,173	$ 9,431	$ 99
Colorado	11/86	46	10	2,185	288,849	28,885	132
	09/87	32	31	9,373	445,700	14,377	48
E.S.O.*	12/86	42	27	6,078	393,985	14,592	65
	03/87	18	9	2,253	213,086	23,676	95
	04/87	4	4	2,022	50,002	12,501	25
	09/87	17	13	2,026	217,797	16,754	108
Montana	12/86	62	29	3,455	23,396	807	7
	04/87	63	28	5,629	141,730	5,062	25
	06/87	143	70	11,549	415,471	5,935	36
Nevada	09/87	9	9	2,159	408,033	45,337	189
New Mexico	11/86	77	52	9,258	4,832,091	92,925	522
	02/87	113	88	18,105	13,160,938	149,556	727
	05/87	156	138	34,131	9,644,582	69,888	283
	08/87	101	78	18,150	3,321,313	42,581	183
Utah	01/87	48	45	24,470	1,414,386	31,431	58
	08/87	28	26	12,806	808,832	31,109	63
Wyoming	10/86	76	68	16,603	840,950	12,367	51
	12/86	110	82	19,840	774,824	9,449	39
	02/87	78	64	15,537	814,652	12,729	52
	04/87	95	68	16,214	779,822	11,468	48
	06/87	123	121	25,667	6,436,196	53,192	251
	08/87	81	74	21,573	1,327,546	17,940	62
Total		1,536	1,156	280,491	$46,865,854	$40,541	$167

SOURCE: Bureau of Land Management (1989b).
* E.S.O. = Eastern States Office.

reliable wildlife data in decisions concerning land use planning, leasing, and development. The importance that the state and its citizens place on wildlife, timber, oil and gas, and other resources is critical in establishing wildlife priority in the planning process.

The governor, as well as the legislature, counties, and citizens, have opportunities to comment on proposed federal land use plans under a variety of statutes including NEPA (National Environmental Policy Act), FLPMA, and NFMA. Furthermore, in *Granite Rock* v. *California Coastal* Commission (480 US 572 [1987]), the court confirmed the states' rights to enforce environmental regulations on federal lands, absent a clear conflict of federal law.

A state not only may suffer a loss of control under aggressive federal planning programs, but also may be harmed by the consequences of poor federal planning. Administrative or judicial suspension of oil and gas activities stemming from an inadequate land use plan will have the same impact as an overly restrictive plan: no oil and gas leasing, exploration, or development. Therefore, the state has an interest in ensuring that the federal land planning and management are comprehensive, accurate, balanced, workable, and timely.

As previously noted, under the Mineral Leasing Act, the states receive 50 percent of all bonuses, rentals, and royalties from the leasing and production of federal minerals within their boundaries. In fiscal year 1988, the states received more than $229 million from federal oil and gas leasing and production (Table 2.1). As a royalty owner, the state is best served by orderly development and maximum, efficient extraction and sale of federal oil and gas. Conservation and maximum recovery of oil and gas from state lands may be dependent on coordinated recovery from adjacent federal lands. From the state's perspective, any planning decision that limits leasing or exploration and development may result in lost state royalty revenues as well as federal lease revenues. Although this revenue sharing gives the states a powerful fiscal incentive to support oil and gas leasing and development on federal lands, states may also sometimes favor restrictions on such activity in order to protect other values and resources (e.g., wildlife that is generally subject to state authority).

The state's role as a regulator has become increasingly important in the last 15 years and presents a significant opportunity for the state to influence operations on federal lands within its boundaries. States have assumed primacy for environmental programs governing air, water, and solid or hazardous wastes, as well as delegated authority for auditing, inspection, and enforcement of federal oil and gas operations. The Clean Air Act, Safe Drinking Water Act, and Resource Conservation and Recovery Act are enforced through permits or other compliance measures during exploration, development, and reclamation. These delegated federal authorities

TABLE 2.4 Competitive Sales by Bureau of Land Management Offices, Fiscal Year 1988

State	Sale Date	Parcels Offered	With Accepted Bids		High Bids	Average Bid	
Parcels	Acres	Parcel	Acre				
Arizona	09/88	69	0	0	$ 0	$ 0	$ 0
California	09/88	220	36	17,385	336,694	9,353	19
Colorado	03/88	443	138	115,355	1,188,908	8,536	10
	09/88	357	121	75,884	711,243	5,878	9
E.S.O.*	04/88	397	109	157,184	699,423	6,417	4
	09/88	155	54	51,500	533,473	9,879	10
Idaho	09/88	312	0	0	0	0	0
Montana	10/87**	37	33	10,299	173,920	5,270	17
	03/88	534	100	64,082	268,700	2,687	4
	05/88	360	50	25,399	114,000	2,280	4
	09/88	441	65	20,319	111,827	1,720	6
Nevada	08/88	631	156	284,414	2,075,794	13,306	7
New Mexico	11/87**	89	24	14,900	4,402,529	183,439	295
	04/88	434	154	85,465	3,190,526	20,718	37
	08/88	384	355	255,537	10,820,425	30,480	42
Oregon	09/88	240	0	0	0	0	0
Utah	04/88	376	71	77,563	2,733,711	38,503	35
	08/88	450	74	100,505	910,672	12,306	9
Wyoming	10/87**	137	128	33,828	3,274,665	25,583	97
	12/87**	213	190	65,658	3,091,691	16,272	47
	3/88	867	336	315,388	7,333,301	21,825	23
	06/88	819	375	293,011	7,516,175	20,043	26
	08/88	847	363	278,198	5,827,548	16,054	21
Total		8,803	2,932	2,341,874	$55,304,227	$18,862	$ 24
Total***		8,327	2,557	2,217,189	$44,366,422	$17,351	$ 20

SOURCE: Bureau of Land Management (1989b).
* E.S.O. = Eastern States Office;
** Sales held before passage of the Reform Act;
*** Post-Reform Act only.

are, in addition to legislatively mandated regulatory authority, generally interpreted to apply to all lands within the police power of the state. Federal primacy programs set a floor on regulation through state program requirements that are "no less effective than," "as effective as," or "equivalent to" federal regulations. However, the state sets the regulatory ceiling and establishes and enforces regulations, unilaterally and in coordination with federal agencies.

Most states have an approval process for APDs, although each state's interpretation of its authority over approval—as opposed to acceptance—of the application on federal lands varies. Most states have authority to establish well spacing on nonunitized federal lands. Most states regulate the use of water, although the degree of regulation and the roles of the state land management agencies may vary. Furthermore, state and county health departments are responsible for compliance with health codes on federal lands. All states with a significant federal land base require bonding of oil and gas operations, and most have agreements with federal agencies that alleviate the need for duplicate bonding. While oil and gas well bonds in the past were principally well-plugging bonds, current bonding practices of the BLM, Forest Service, and most states extend the bonding to cover surface reclamation.

The effectiveness of federal land management from the states' perspective is reflected in a balance of resource management, royalty and tax revenues, energy development, recreational use, wilderness, Trust Land values, wildlife values, and local government needs. Where problems have developed in the process of balancing these varied interests, they appear to be the result of insufficient or inaccurate data bases, mechanisms that are not mandatory and are poorly coordinated for factoring specific resource management information during planning and leasing, and federal resource priorities that differ from state, county, or citizen priorities for federal and adjacent nonfederal lands.

Impacts on Indian Lands

Native Americans are also affected by oil and gas activities on federal lands. They are often concerned with the impacts of exploration and development on surface resources such as wildlife and sacred or ceremonial sites. They are also primary beneficiaries of oil and gas leasing when it takes place on lands where they enjoy full rights to subsurface resources or derive revenue from permits for surface occupancy. However, the impacts of federal land use planning and leasing actions on lands with surface or subsurface Indian tribal or allottee ownership and Indian reservations reflect important distinctions in federal actions and responsibility.

The federal government has a trust responsibility to tribes and allottees

(e.g., see *United States* v. *Mitchell*, 463 US 206 [1983]). Where federal planning and leasing on federal lands impacts operations on Indian lands, federal actions may be further constrained by the government's fiduciary duties trustee.

There is no federal planning responsibility, per se, governing Indian lands. However, the federal government, through the Department of the Interior (BLM and Bureau of Indian Affairs), is responsible for NEPA compliance and regulation of oil and gas exploration and development on Indian lands. The tribe sets the standards and procedures for leasing and establishes the terms of the lease. However, because the federal government plans for federal lands adjacent to Indian lands, Indian tribes often find themselves in a position similar to that of the states, where planning for federal lands becomes de facto planning for the nonfederal lands. The converse is also true in that some Indian tribes can assert treaty rights for use of federal lands for the taking of wildlife or for sacred or ceremonial sites. These rights are often contested, along with Native claims to the land itself, when their exercise would inhibit other planned uses of the federal lands.

THE OIL AND GAS INDUSTRY AND ITS FUTURE ON THE FEDERAL LANDS

Onshore federal land management has had an important, but far from dominant, role in the development of the oil and gas industry in the United States. Over the years, the industry has been shaped by broad economic, political, international, and technological factors that entirely overshadow federal land policies and programs. To a large degree these factors will dictate the industry's future interest in, and activities on, the federal lands.

Recently, the percentage of the nation's daily consumption of oil supplied by imported crude oil and product rose above 50 percent—a situation that has significant national security, balance of payments, and other economic implications. Additionally, recent rig counts in the United States have been below or near historic lows, indicating diminished domestic exploration. Although no expert pretends that onshore federal lands outside Alaska may be the answer to the country's increased dependence on foreign oil, they remain an attractive area for further exploration and may contribute significantly to domestic production.

Today, federal onshore lands outside of Alaska provide 4.6 percent of the nation's oil production and 5.0 percent of the its gas production. These proportions have declined slightly since peak production years (1969 for oil, 1982 for gas) from onshore federal lands: from 5.9 percent for oil in 1969, and from 5.8 percent for gas in 1982. Overall, and with the exception of some parts of Alaska and the Outer Continental Shelf, the United States

has been more thoroughly explored for oil and gas than any other region of the world. It is what geologists describe as a "mature province" for oil and gas exploration. Most observers agree that where future oil and gas reserves will likely be found in the contiguous 48 states is now generally known. Of course, their precise locations and volumes can be ascertained only by exploration, but major surprises are unlikely.

The economic factors of prime importance in stimulating oil and gas exploration have been the prices of crude oil and natural gas. As long as domestic oil supplies were plentiful and crude oil prices were low, profits for the major oil companies were made in processing and marketing. The prices of crude and refined oil products were essentially controlled by market conditions in the United States. With the ascent of the Organization of Petroleum Exporting Countries (OPEC) and the shifting of control over price to overseas, prices were first (1972-1982) escalated sharply, encouraging investment in improved oil recovery methods in onshore fields. Then (1982-1987) prices fell so low that several efficient recovery methods became uneconomic and many old wells were abandoned with substantial amounts of oil remaining in the reservoirs. While crude oil prices have risen in the last two years, unpredictability has made the financial community reluctant to make long-term investments in oil properties, thus restricting the drilling activities of the independent producers, the segment of the industry most dependent upon borrowed money.

In addition to impacts from price fluctuations, natural gas producers have faced concern about the ability of domestic gas fields to meet gas demand at adequate rates. Some industry observers believe that price increases could have a more immediate impact on gas production because the financial community might find the greater predictability of natural gas prices and markets more to its liking than the foreign controlled prices for oil.

In recent years, government policy on supply of energy resources has been noninterventionist, with diminishing control of natural gas prices. Increased natural gas production may result from legislative efforts to improve air quality by reducing sulfur dioxide and nitrogen oxide emissions and the resultant need of fixed site energy consumption for cleaner fuels, as well as the natural gas shortage apparently developing in California. Any substantial shift toward greater natural gas consumption likely will entail some increase in the price of domestic natural gas, an expansion in exploration for new gas fields in the United States, and a greater dependence upon foreign (mainly Canadian) sources of natural gas.

If oil and gas prices increase the same relative amount, industry funding for new domestic exploration will probably focus on efforts to find new gas, rather than oil, fields. Funds for oil are more likely to be channeled into improved recovery of oil from existing fields. Two prominent factors favor

expending new money in old oil fields and new gas fields. First, there is very limited engineering potential for improved recovery from many gas fields, making enhanced recovery largely an enterprise in existing oil fields. Second, the geochemical conditions for generation and preservation of oil and gas underground favor oil fields at relatively shallow depths and gas fields at greater depths. Because, in most of the United States the shallow rock horizons have been intensively explored and the deeply buried formations have not, the chances for finding new fields are greater at depths that are more prone to contain gas.

While recent projections suggest the largest undiscovered onshore reserves of natural gas occur in Alaska and the Gulf Coast (U.S. Geological Survey and Minerals Management Service, 1989), the exploration for new domestic gas fields will include the Rocky Mountains. Key Rocky Mountain geologic provinces for natural gas resources include federal lands in the Overthrust Belt of Utah, Idaho, Wyoming, and Montana—a region that also has highly significant surface values. According to the U.S. Geological Survey and the Minerals Management Service (1989), up to 30 percent of the region's reserves have been produced. Of course, such estimates are highly speculative. The National Research Council is studying the methodologies used in these assessments and will issue a report on the subject in the spring of 1990. In general, much of the land base of the Rocky Mountain states, and most of the relatively unexplored lands are federally owned, making gas exploration a significant future use of the federal lands.

The likelihood that new exploration and development on federal lands will favor gas over oil is of significance to future onshore oil and gas leasing and the environmental impacts of leasehold activities. For example, gas fields are usually developed on a spacing pattern of one well per 160-640 acres, whereas oil fields are developed on patterns of much more closely spaced wells, generally one well per 20 or 40 acres. This lower density of gas wells has the potential of reducing the magnitude of environmental impacts from developed fields. It should be noted, however, that such considerations do not rule out the geologic fact that a lessee often does not have a choice as to whether to develop oil or gas.

The profile of companies actively exploring and developing the federal lands may also change. Onshore federal lands, especially those in the Rocky Mountains, increasingly are becoming the domain of the independent oil and gas companies. The expected more modest size of future discoveries on federal lands is likely to attract more independent operators than the major companies. The major companies are increasingly spending their exploration funds overseas where the likelihood of discovering large fields is greater, where costs and conditions may be more conducive to drilling, and where nations often offer price guarantees, tax incentives, or other

financial inducements. Some industry observers believe that although major companies may retain inventories of onshore federal leases, the bulk of the leases that experience active exploration and development will be held by independents.

At the same time, some of the problems encountered during exploration and development may be of greater concern to independent companies. Some federal lands, particularly those in the Overthrust Belt in the Rocky Mountains, present very difficult and costly conditions for exploration and development. The topography is rough and the geology is complex. Under natural limits and federal lease restrictions, surface activities are eliminated altogether in some areas and can take place only during certain seasons or at certain times in other areas. Some independents may find it more difficult to fund the high front-end costs associated with these restrictions.

Certain natural gas reserves in the Rocky Mountain region are sour (high sulfur content) and need special equipment for processing that is costly and requires added time for installation. The committee saw one such natural gas processing facility for the Riley Ridge gas field located mainly on federal lands in Wyoming, which was being developed in a joint venture involving one of the major companies. The higher capital and operating costs for such operations may discourage participation by independent operators.

Nonetheless, many independent producers are strongly dedicated to finding and producing oil and gas on the federal lands. If oil and gas resources on these lands are to be developed in the near future, that development likely will be accomplished primarily by the independents. The BLM and the Forest Service must be cognizant of the interests, capabilities, and concerns of independents, as well as the major operators, in framing their decisions on planning and leasing for, and development of, oil and gas on federal lands.

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3

Origins of Leasing and Planning

For several years prior to enactment of the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (101 Stat. 1330-256), considerable uncertainty and controversy (including litigation) plagued the relationship between the planning and environmental assessment requirements of federal law and the federal government's onshore oil and gas leasing program. To assist in understanding the issues generated by this uncertainty and controversy, brief histories of both the federal oil and gas leasing and management policies and the federal land planning and environmental assessment policies are offered. In Chapter 4, the origins of the present controversy are discussed.

THE MINERAL LEASING ACT OF 1920 AND THE ACQUIRED LANDS MINERAL LEASING ACT OF 1947

The Mineral Leasing Act of 1920 (41 Stat. 437; 30 USC 181-287) authorized the Secretary of the Interior to lease federally owned oil and gas deposits on onshore federal lands.[1] The Mineral Leasing Act created a two-track, competitive and noncompetitive, leasing system. Leases were issued

[1] Prior to enactment of the Mineral Leasing Act, oil and gas had been subject to the uncertain and unwieldy requirements of the Mining Law of 1872, which, after a period of confusion, was made applicable by Congress in the Oil Placer Act of 1897 (61 Stat. 526).

competitively when the lands were "within the known geologic structure of a producing oil or gas field"; otherwise, leases were issued noncompetitively to the "person first making application" (30 USC 226). Today, the ratio of competitive leases to noncompetitive leases differs in various states, reflecting in part the probabilities of locating the oil and gas resources in those jurisdictions (see Figure 2.1, p. 20).

All leasing, competitive and noncompetitive, was subject to the discretion of the Secretary of the Interior, who may lease lands with or without conditions or withhold lands from leasing. Even though the Mineral Leasing Act was designed to promote oil and gas development, it also authorized the secretary, in the words of the U.S. Supreme Court, "to execute leases which, exercising a reasonable discretion, he may think would promote the public welfare" (*United States ex rel. McClennan* v. *Wilbur*, 283 US 414, 419 [1931]; see also *Udall* v. *Tallman* , 380 US 1, 4 [1965]; *McDonald* v. *Clark*, 771 F.2d 460 [10th Cir. 1985]).[2] The secretary also was accorded broad authority under the act to include in each lease such terms and conditions (in the form of lease stipulations) as he deemed necessary "for the protection of the interests of the United States . . . and for the safeguarding of the public welfare" (30 USC 187).

The Mineral Leasing Act preserved for the states opportunity to regulate certain leasehold activities once leases were issued, although the scope of the state (and possibly local government) authority have remained somewhat unclear and are still occasionally tested in litigation. Compare, for example, *Gulf Oil Corp.* v. *Wyoming Oil & Gas Conservation Commission* (693 P. 2d 227 [1985] state agency may regulate method and means of access to federal oil and gas lease on national forest lands) with *Ventura County* v. *Gulf Oil Corp.* (601 F.2d 1080 [9th Cir. 1979], *aff'd mem.* 445 U.S. 947 [1980]; county may not apply zoning restriction to deny federal lessee access to lease).

The Mineral Leasing Act did not disturb the preexisting division of

[2] In addition to his discretion under the Mineral Leasing Act and related statutes to withhold the issuance of mineral leases, the Secretary of the Interior has long had available a separate mechanism to disallow leasing on federal lands—the withdrawal power. This authority, recognized by the U.S. Supreme Court in 1915, in *United States* v. *Midwest Oil* (236 US 459 [1915]), allows the executive to "withdraw" federal lands from the operation of generic disposal and development statutes like the Homestead Act and the Mining Law of 1872 in order to use them for wildlife protection, military or Indian reservations, and other public purposes. More recently, in the Federal Land Policy and Management Act (FLPMA), Congress expanded and codified this authority, giving the Secretary of the Interior broad power to withdraw federal land "in order to maintain . . . public values in [an] area or [to] reserv[e] the area for a particular public purpose or program" (43 USC 1702(j)). Secretarial withdrawals must follow a statutorily specified procedure, including submission of a report to the Congress explaining the reasons for, and costs and benefits of, each withdrawal (43 USC 1714).

responsibility over National Forest land administered by the Forest Service. When Congress in 1905 transferred the Forest Reserves from the Department of the Interior to the newly established Forest Service in the Department of Agriculture, it did not alter the Interior Department's primary responsibility for minerals management. The Mineral Leasing Act provided the Secretary of the Interior with the authority to issue mineral leases on National Forest land.

Under the practice that actually evolved over the years, however, the Forest Service gained an important role in the Interior Department's leasing decisions on National Forest land. Forest Service recommendations for lease issuance and lease stipulations to protect surface values, for example, were almost always accepted by the Bureau of Land Management, the Interior Department agency that exercises the mineral leasing functions (see Wilkinson and Anderson, 1985). This consultation process was formalized in a memorandum of understanding entitled "Interagency Agreement between the BLM and the Forest Service for Mineral Leasing," signed by the agency heads on June 19, 1984 (BLM, 1984).

The Mineral Leasing Act does not apply to mineral interests acquired by the federal government. Such interests, primarily found in National Forests in the eastern United States, are subject to mineral development under the Mineral Leasing Act for Acquired Lands, enacted in 1947 (1947 act; 30 USC 351-359). This act, for the most part, simply incorporated the provisions of the Mineral Leasing Act; that is, acquired minerals were authorized to be leased "under the same conditions as contained in the leasing provisions of the mineral leasing laws" (30 USC 352). Therefore, like the Mineral Leasing Act, the 1947 act vested in the Secretary of the Interior broad discretion over when, where, and under what terms these acquired mineral interests could be leased for oil and gas purposes. Congress has also occasionally authorized BLM to lease other lands, such as acquired military lands previously unavailable for leasing under the Mineral Leasing Act for Acquired Lands (e.g., see 90 Stat. 1083, 1090 [1976], which amends 30 USC 352).

The only important difference in the two laws concerned the role of the Forest Service. The 1947 act provided that leases could not be issued by the Secretary of the Interior "except with the consent of the head of the executive department . . . having jurisdiction over the lands" (30 USC 352). Thus, unlike the Mineral Leasing Act applicable to minerals in National Forests reserved from public domain land, explicit Forest Service consent was statutorily required for oil and gas leasing on acquired National Forest lands. As noted further below, however, the Reform Act gave the Forest Service a veto over oil and gas leasing on public domain National Forests in 1987.

Until recently the Department of the Interior normally followed a practice of issuing onshore oil and gas leases upon request by interested parties in those areas of federal land that were not rendered unavailable to mineral leasing by acts of Congress or executive withdrawals. Prior to the 1970s, this leasing was conducted with relatively little pre-lease analysis of tracts of land proposed for leasing, of the trade-offs between oil and gas exploration and development and other possibly conflicting uses of the land, and of the environmental impacts of oil and gas activity. The Interior Department's decision-making processes had few formal requirements for public participation. Furthermore, the department rarely made any attempt to control the configuration or the timing of issuance of oil and gas leases; these matters were left primarily to the lease applicants.

In the 1950s, interest in leasing federal land for oil and gas grew dramatically. Often many applications were submitted simultaneously for new oil and gas leases, as old leases for the same tracts expired or were canceled. The Department of the Interior interpreted the Mineral Leasing Act to prohibit competitive leasing in many situations where substantial competitive interest existed. Faced with the problem of selecting, in the words of the statute, the "first qualified applicant" for a lease from among many simultaneously filed applications, the Secretary of the Interior created what was in effect a lottery system. One application was chosen at random to determine the lessee. This practice was upheld by the federal courts as a permissible interpretation of the Mineral Leasing Act in *Thor-Westcliffe Dev.* v. *Udall* (314 F. 2d 257 [D.C. Cir. 1963]).

The lottery was widely used because most of the thousands of leases issued annually were issued noncompetitively. As leases expired, they were posted as available for noncompetitive offers (unless they fit the narrow category for competitive leasing), and the lease was issued to the applicant whose name was drawn. In the five years prior to the enactment of the Reform Act, up to 15 percent of leases were issued competitively, 20-40 percent of the noncompetitive leases were issued over-the-counter, and 60-80 percent were selected in the lottery (BLM, 1983-1988).

The federal oil and gas leasing practices—both historical and present—are discussed more fully in Chapter 6.

THE ENVIRONMENTAL LAWS

The statutory basis for onshore oil and gas leasing and management had been in place for over half a century before the enactment of three environmental laws that would play such an important role in the present controversy over oil and gas exploration and development on the public lands. Those three laws are discussed in this section.

The Wilderness Act

In the face of rapidly escalating pressures for uses of the public lands, interest grew among the public and within the land management agencies to preserve a portion of the federal land base undisturbed. This interest culminated in the passage of the Wilderness Act in 1964 (16 USC 1131-1136). As stated in section 2 (p. 1131) of the Wilderness Act:

> In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.

The Wilderness Act established the National Wilderness Preservation System, placed in the system certain areas already managed as wilderness by the Forest Service, and directed the Forest Service, the National Park Service, and the Fish and Wildlife Service to study certain lands for their wilderness character and to make recommendations through the president to the Congress for additional areas to be included by statute in the system. The Forest Service chose to study all roadless lands under its jurisdiction and has done so twice (Roadless Area Reviews and Evaluations, RARE I and II) (Forest Service, 1979). In the Federal Land Policy and Management Act of 1976 (43 USC 1701-1784), the BLM was directed to conduct a similar wilderness review of its lands. Today, the National Forests contain some 32.5 million acres, or 36 percent, of the entire National Wilderness Preservation System. Although Congress has now acted upon most of the recommendations from the second Forest Service wilderness review, it is just beginning to turn its attention to recommendations emerging from the BLM's wilderness review.

Mineral exploration and development were frequently cited by the proponents of the Wilderness Act as among the activities that must be barred from the designated wilderness. In the compromises made to ensure the act's passage, however, such activities were not immediately proscribed. Instead, all valid rights for mineral development were preserved and all units of the National Wilderness Preservation System were left open until January 1, 1984, for further mineral exploration and development, including oil and gas leasing. As discussed in Chapters 5 and 7, the controversies over wilderness designation and oil and gas leasing became increasingly severe as this deadline was approached and passed.

The National Environmental Policy Act

The National Environmental Policy Act became effective on January 1, 1970 (42 USC 4321-4370). It requires all federal agencies engaging in any

action that could significantly affect the quality of the human environment to prepare a document—the environmental impact statement (EIS)—before a decision is reached on the action (42 USC 433(2)(c)). The U.S. Supreme Court has recently described the EIS requirement this way (*Robertson* v. *Methow Valley Citizens' Council*, 57 USLW 4497, 4501 [May 1, 1989]):

> It ensures that the Agency, in reaching its decision, will have available and will carefully consider detailed information concerning significant environmental impacts; it also guarantees that the relevant information will be made available to the larger audience that may also play a role in both the decision-making process and the implementation of that decision.
>
> Simply by focusing the Agency's attention on the environmental consequences of a proposed project, NEPA ensures that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast.

Many federal agencies were slow to respond to this general, broadly worded statute. The courts stepped into the breach, and interpreted the NEPA expansively and vigorously, and in hundreds of cases ordered the preparation and consideration of EISs.

Somewhat curiously, however, the federal onshore oil and gas leasing program escaped judicial scrutiny on NEPA grounds for a decade, even though the federal agencies generally did not prepare EISs on their leasing or management decisions in the oil and gas leasing program, and therefore were vulnerable to challenge under the evolving judicial interpretations of NEPA.

The agencies occasionally did prepare "environmental analysis reports" (EARs) on some of their decisions approving oil and gas activities. While these EARs contained some environmental assessment, they fell short of satisfying the EIS requirement of NEPA.

The Endangered Species Act

In 1973, Congress enacted the Endangered Species Act (ESA; 16 USC 1531-1543). Section 7 of this act requires every federal agency, "in consultation with and with the assistance of the Secretary [of the Interior, to] insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species . . ." (16 USC 1536(a)(2)). "Jeopardy" has been defined very broadly, to include indirect as well as direct reductions in the likelihood of survival and recovery of such species in the wild (see 50 CFR 402.02 [1986]).

The ESA directs the Fish and Wildlife Service in the Department of the Interior to list species that are either threatened or endangered. The

law also creates a consultation process triggered by the determination of the agency proposing the action that the action might affect a listed threatened or endangered species. If such a determination is made, the Fish and Wildlife Service must prepare a "biological opinion" evaluating the nature and extent of possible jeopardy posed by contemplated agency action (16 USC 1536(b)). If the opinion concludes that the proposed action is likely to jeopardize a listed species, the agency proposing the action must modify its proposal to remove the perceived threat, unless an exemption from the ESA is obtained under a special process providing very narrow grounds for exemption (see 16 USC 1536(g), (h)). During the consultation process, the agency proposing the action is forbidden from making any "irreversible or irretrievable commitment of resources" that might lead to the jeopardy the act forbids (16 USC 1536(d)).[3]

The ESA operates in broad terms something like NEPA; that is, it creates a process for analyzing the effects of an agency's proposed action upon the environment (although the ESA concerns only one part of the environment—threatened and endangered species—rather than the environment as a whole, as does NEPA). Both processes conclude with similar documents containing the requisite analysis: the ESA's "biological opinion" and the NEPA's EIS.

On the other hand, the ESA is wholly unlike NEPA in one crucial respect: NEPA's command has been interpreted by the U.S. Supreme Court as being procedural only; that is, the statute "does not mandate particular results, but simply prescribes the necessary process" (*Robertson* v. *Methow Valley Citizens Council*, 57 USLW 4497, 4501 [May 1, 1989]). The ESA, on the other hand, contains a substantive bite, requiring agencies "to afford first priority to the declared national policy of saving endangered species" (*TVA* v. *Hill*, 437 US 153, 185 [1978]). According to the Supreme Court, the "plain intent [is] to halt and reverse the trend toward species extinction, whatever the cost" (437 US 153, 184).

The courts have been as vigorous in enforcing the mandates of the Endangered Species Act as those of NEPA, deciding dozens of cases brought under the ESA in the last decade and a half. But, as with NEPA, the onshore federal oil and gas leasing program was not the subject of litigation on ESA grounds until the early 1980s.

[3] The ESA was substantially overhauled in 1978 after the Supreme Court's decision in the famous "snail darter" case, *TVA* v. *Hill* (437 US 153 [1978]), but the revisions generally strengthened rather than weakened the act, and it has been readopted twice since with only minor revisions.

CONGRESSIONAL CODIFICATION AND STRENGTHENING OF THE FEDERAL LAND MANAGEMENT AGENCIES' LAND AND RESOURCE PLANNING PROCESSES

In the middle 1970s, Congress overhauled the land management planning systems of the Forest Service and the BLM. The Forest and Rangeland Renewable Resources Planning Act of 1974 (16 USC 1600-1614) and the National Forest Management Act of 1976 (16 USC 1601-1614) both applied to the Forest Service; the Federal Land Policy and Management Act of 1976 applied to the BLM. In these statutes, Congress created similar (but not identical) planning processes that the agencies were required to use to guide their management decisions for the lands under their respective jurisdictions.

The land use planning authority and practice—both historical and present—of the two land management agencies are more thoroughly discussed in Chapter 5.

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4

Difficulties in Relating Leasing and Planning

With the enactment in 1976 of the Federal Land Policy and Management Act (FLPMA; 43 USC 1701-1782) and the National Forest Management Act (NFMA; 16 USC 1600-1614), all the basic laws—leasing, environmental, and planning—that affect oil and gas exploration and development on public lands were in place. The regulations implementing the planning directives of the FLPMA and NFMA were first promulgated in 1979 and revised in 1982 (Forest Service, 36 CFR Part 219) and 1983 (BLM, 43 CFR Part 1600). The first land use plans to be prepared entirely under those two statutes and their rules were begun by 1979.

Controversy arose quickly as the Bureau of Land Management and Forest Service planners struggled to marry the new planning requirements of the NFMA and FLPMA and the environmental analysis requirements of the National Environmental Policy Act (42 USC 4321-4370 [1970]) and the Endangered Species Act (16 USC 1531 et seq.) with oil and gas leasing and management processes that had been established for decades. Critics maintained that the agencies were failing to comply with the planning and environmental statutes in their decisions to lease, and authorizations to explore and develop, oil and gas. Although the controversy focused on certain geographical areas in the relatively unspoiled terrain of the Rocky Mountain Front in Wyoming and Montana, its significance was national, spawning both legislation and litigation.

THE ENERGY SECURITY ACT

The initial question was whether decisions on the leasing, and the authorizing of exploration and development, of federal oil and gas should be delayed until existing National Forest land use plans were updated to meet NFMA standards. Congress addressed this issue in 1980. It included in the Energy Security Act adopted that year a provision expressing Congressional "intent . . . that the Secretary of Agriculture . . . process applications for leases . . . and for permits to explore, drill, and develop resources on land leased from the Forest Service, notwithstanding the current status of any plan being prepared under [the NFMA]" (42 USC 8855). The act did not address leasing and planning on lands administered by the BLM.

Subsequently, a federal district court found that the Forest Service had violated this provision by suspending, during preparation of a new land use plan, the processing of lease applications on the Bridger-Teton and Shoshone National Forests in Wyoming (*Mountain States Legal Foundation* v. *Hodel*, 668 F. Supp. 1466 [D. Wyo. 1987]). But the Energy Security Act did not waive or otherwise affect the requirements of NEPA, which were also applicable to any Forest Service decisions on leases. Therefore, the Forest Service was still obligated to comply with NEPA and to prepare an environmental impact statement before it could make decisions on oil and gas exploration and development on these forests. (Indeed, both the Forest Service and the BLM have for some years routinely prepared planning documents on parallel tracks with NEPA documents, or sometimes simply meshed the two, so that a land use plan may be in the format of an environmental impact statement and satisfy the mandates of both NEPA and the planning statutes.)

The failure of Congress to waive the NEPA requirements, in other words, has deprived the Energy Security Act from having real impact on oil and gas leasing, exploration, or development or on the issues before this committee. On the Bridger-Teton National Forest, for example, the Forest Service is still not processing oil and gas lease applications because it has determined that it can best satisfy its obligation to comply with NEPA at the same time as it prepares the new land use plan, and this determination has not been challenged in court.

OIL AND GAS LEASING AND WILDERNESS

Another issue associated with the controversy over oil and gas leasing has been wilderness designation under the Wilderness Act of 1964 (16 USC 1131-1136). The process of congressional consideration of lands recommended for wilderness designation in the second Forest Service wilderness

review has not been completed, and the process of congressional consideration of lands undergoing BLM's wilderness review has just begun. The controversy between wilderness designation and oil and gas leasing has two origins. First, only roadless areas still in a relatively natural condition qualify for wilderness designation, and any significant and lasting disturbance from oil and gas activities (including road building) may either disqualify areas from consideration by the agency for wilderness recommendations to Congress or dissuade Congress from designating the areas. Second, once an area is designated by Congress as wilderness, the Wilderness Act proscribes oil and gas leasing and any activities that require structures or mechanized equipment (16 USC 1133). In recent years, first in annual appropriations acts and now in the 1987 Federal Onshore Oil and Gas Leasing Reform Act (101 Stat. 1330-256), Congress has also prohibited oil and gas leasing in most areas under serious consideration for formal wilderness designation until it decides whether they deserve wilderness status.

Furthermore, the controversy may continue even after Congress decides against designating a particular area as wilderness. An area not designated is typically "released" by Congress for ordinary multiple-use management, which can include mineral leasing, but this does not subsequently prevent the agency from again recommending wilderness designation for the area or Congress from reconsidering and designating the area. The controversy thus continues with wilderness advocates seeking to protect the natural condition of the released area for possible subsequent wilderness designation and proponents of oil and gas exploration and development seeking to have the area leased before any such designation occurs. This issue is discussed further in Chapter 7.

THE COURT DECISIONS—NATIONAL ENVIRONMENTAL POLICY ACT

The courts eventually became participants in the controversy as lawsuits were filed challenging the agencies' oil and gas leasing and management decisions, primarily on the grounds that the land management agencies failed to comply with the National Environmental Policy Act and the Endangered Species Act (16 USC 1531 et seq.).

The first case to contest onshore federal oil and gas leasing on NEPA grounds, *Sierra Club* v. *Peterson* (717 F.2d 1409 [D.C. Cir. 1983], was brought more than a decade after NEPA took effect, and challenged issuance of dozens of leases on the Targhee and Bridger-Teton National Forests in northwestern Wyoming. In this case, the Court of Appeals for the District of Columbia circuit concluded that the federal government could not postpone compliance with NEPA past the stage of lease issuance unless it reserved,

in the lease, complete power to "*preclude* surface disturbing activities" (717 F.2d 1409, 1414 [D.C.Cir. 1983] [emphasis in original]). Otherwise, the court said, "the decision to allow surface disturbing activities has been made at the *leasing stage* and, under NEPA, this is the point at which the environmental impacts of such activities must be evaluated" (717 F.2d 1409, 1414 [D.C. Cir. 1983] [emphasis in original]). The government had argued that the environmental impacts of leasing were not foreseeable at the time of leasing because subsequent exploration activities may or may not be undertaken and may or may not disclose the presence of commercially producible oil and gas, and that production activities would not be planned unless and until successful exploration occurs. The court responded:

> If . . . the Department is in fact concerned that it cannot foresee and evaluate the environmental consequences of leasing without site-specific proposals, then it may delay preparation of an EIS provided that it reserves both the authority to *preclude* all activities pending submission of site-specific proposals and the authority to *prevent* proposed activities if the environmental consequences are unacceptable. If the Department chooses not to retain the authority to *preclude* all surface disturbing activities, then an EIS assessing the full environmental consequences of leasing must be prepared at the point of commitment—when the leases are issued. The Department can decide, in the first instance, by which route it will proceed.

(717 F.2d 1415) (emphasis in original).

Four years later, the Court of Appeals for the Tenth Circuit took a somewhat different view of the question in *Park County Resource Council* v. *U.S. Department of Agriculture* (817 F.2d 609 [10th Cir. 1987]). In this case a federal oil and gas lease had been issued on the Shoshone National Forest in Wyoming in 1982 without an EIS. Although the record is not clear on the point, apparently the lease did not contain an explicit reservation of authority in the federal government to preclude all surface-disturbing activities such as would have satisfied the District of Columbia circuit in the *Peterson* case. The lessee subsequently submitted an Application for a Permit to Drill (APD), and the BLM and the Forest Service prepared an EIS on this application and approved it. The plaintiffs then challenged not only the adequacy of the EIS on the APD, but also the earlier failure to prepare an EIS on the lease issuance.

Because the drilling had already resulted in a dry hole, the court held that the challenge to the APD was moot, but it went on to uphold the lease issuance without an EIS, finding that "in this case, developmental plans were not concrete enough at the leasing stage to require such an inquiry" (817 F.2d 623). It noted that the Forest Service had prepared an "environmental assessment" (rather than a full EIS) on a cluster of oil and gas leases including the one being challenged, and had included in the lease "appropriate . . . stipulations aimed at protecting the environment" (not described by the court), and therefore the agency's conclusion that

lease issuance itself was "essentially a paper transaction" was not unreasonable. The court noted that the environmental plaintiffs had argued that "an EIS must be prepared at the leasing stage because of the eventual cumulative and foreseeable effects of exploratory drilling and then full field development" (817 F.2d 622). The court responded:

> This argument would have more force . . . if full field development were likely to occur and could be specifically described at the leasing stage. . . . Full field development is typically an extremely tentative possibility at best at the leasing stage. . . . To require a cumulative EIS contemplating full field development at the leasing stage would thus result in a gross misallocation of resources, "would trivialize NEPA" and would "diminish its utility in providing useful environmental analysis for major federal actions that truly affect the environment . . .".
> . . . When BLM is considering a mere leasing proposal, it has no idea whether development activities will ever occur, let alone where they might occur. When an [application for permit to drill] is submitted [sometime after a lease is issu ed], BLM then has a concrete, site-specific proposal before it and a more useful environmental appraisal can be undertaken. Only then can BLM determine whether a river system is implicated, where access will be needed and how it should be accomplished, and which wildlife is affected. In short, the specificity that NEPA requires is simply not possible absent concrete proposals.

(817 F.2d 623-624) (citations omitted). The Tenth Circuit's opinion did not discuss, or mention, the *Peterson* opinion.

The Court of Appeals for the Ninth Circuit addressed a similar issue in *Conner* v. *Burford* (848 F.2d 1441 [1987]) and reached the same conclusion as the District of Columbia circuit in the *Peterson* case—that an EIS was required at the lease issuance stage if the lease itself made some sort of "irretrievable commitment" to disturb the environment. The court quoted favorably the above passage from the circuit court opinion in *Peterson* concerning which "route" the land management agency may wish to take—preparation of an EIS or preclusion of all surface-disturbing activities as a condition in the lease. *Conner* did not discuss, or mention, the Tenth Circuit's opinion in *Park County*.

In a subsequent case, *Bob Marshall Alliance* v. *Hodel*, (852 F.2d 1223 [9th Cir. 1988]), the Court of Appeals for the Ninth Circuit followed its decision in *Conner*, reaffirming its view that NEPA requires preparation of an EIS prior to issuing an oil and gas lease unless the lease reserves in the agency the authority to deny any significant surface-disturbing activity on the lease on environmental grounds. Once again the *Park County* decision was not discussed.

It is not clear whether these decisions from three different federal appellate courts are in irreconcilable conflict with each other as to the requirements of NEPA. Representatives of the oil and gas industry believe that a conflict exists and asked the Supreme Court to resolve it by reviewing the Ninth Circuit decision in the *Conner* case. However, the federal

government chose not to join the industry in petitioning for certiorari. Instead, the Solicitor General of the United States took the position before the Supreme Court that the cases were not conflicting, because of the "very different facts present in the cases" (Brief for the Federal Respondents in Opposition to Supreme Court review of *Conner* v. *Burford*, p. 10). The Supreme Court declined to review the *Conner* decision in early 1989, without comment.

THE COURT DECISIONS—ENDANGERED SPECIES ACT

Critical habitat of species protected by the Endangered Species Act can be found in a variety of places across the country. The question of ESA compliance in onshore federal oil and gas leasing has largely focused on one species and one large area of critical habitat—the grizzly bear, a listed threatened species, and an area of the northern Rocky Mountains where the bear's habitat overlays portions of the Overthrust Belt of considerable petroleum industry interest. In all but one of the lawsuits discussed above, agency compliance with the ESA on lease issuance was also in dispute.

The *Conner* v. *Burford* litigation afforded the first occasion to the courts to address the requirements of the ESA as they apply to the onshore federal oil and gas leasing program. In *Conner*, the Ninth Circuit held that a biological opinion on the likelihood of jeopardy to threatened and endangered species (including the grizzly bear) that was prepared prior to leasing must consider not only the effect of issuing the leases themselves, but also the effect of post-leasing activities, including exploration and development. The court specifically noted that "incomplete information about post-leasing activities does not excuse the failure to comply with the statutory requirement of a comprehensive biological opinion using the best information available" (848 F.2d 1454).

In the *Conner* case, the court rejected the government's argument for a segmented approach to ESA compliance, one that would have allowed the pre-lease biological opinion to address only those impacts that would necessarily follow from issuing the leases, and to postpone addressing impacts that would follow from agency decisions after such lease issuance, such as whether to approve a lessee's application for permission to drill exploratory or production wells. The courts had previously approved such a segmented approach in considering the ESA's application to federal oil and gas development on the Outer Continental Shelf.[1]

The Outer Continental Shelf analogy did not work onshore, the Ninth

[1] See, e.g., *North Slope Borough* v. *Andrus* (642 F.2d 589, 608-609 [D.C. Cir. 1980]); *Village of False Pass* v. *Clark* (733 F.2d 605, 609-612 [9th Cir. 1984]).

Circuit determined, because the statutes underlying the two oil and gas leasing programs were different. The Outer Continental Shelf Lands Act (OCSLA; 43 USC 1331-1356) plainly and unequivocally segmented agency decision making among lease issuance, exploration, and development. Agency approval of one stage gave the lessee no right to proceed to the next stage without an additional, legally independent decision by the agency. Thus there was, in the court's view, a "complementary relationship between the ESA's requirements and the segmented approach of OCSLA" (848 F.2d 1456). On the other hand, the Mineral Leasing Act (at least prior to its amendment in 1987 by the Reform Act discussed on pp. 51-52) did not contain an explicit segmentation of the stages of onshore oil and gas activities from leasing through exploration to production. Therefore, there was, according to the court, "no justification to obviate the ESA's congressional mandate that a comprehensive biological opinion be prepared [at the lease issuance stage]" (848 F.2d 1457 [footnote omitted]). (One judge dissented from the three-judge panel's ruling on this point, arguing that segmentation of the ESA compliance is as appropriate under the Mineral Leasing Act as under the OCSLA [848 F.2d 1462-1464].)

The Ninth Circuit reaffirmed its conclusion that the ESA requires preparation of a comprehensive biological opinion at the lease issuance stage in *Bob Marshall Alliance* v. *Hodel*. By contrast, the Tenth Circuit in *Park County Resource Council* v. *Department of Agriculture* upheld the segmentation of ESA compliance in onshore oil and gas leasing, following its determination that NEPA compliance may likewise be segmented, as discussed earlier. The U.S. Supreme Court was asked to review *Conner* v. *Burford* on the ground that it was inconsistent with the *Park County* decision on ESA as well as NEPA grounds, but the Court declined. On the ESA question, the Solicitor General of the United States informed the Supreme Court that, in his judgment, *Conner* was wrong because the onshore oil and gas leasing program did allow for segmented compliance with the ESA. Nevertheless, the Solicitor General recommended that the Supreme Court not review the question because *Conner* was not in irreconcilable conflict with *Park County*, in any event the practical importance of *Conner* was uncertain, and the agencies should be given an opportunity to comply with it (Brief for the United States, pp. 15-16).

THE COURT DECISIONS—INDUSTRY SUITS

Litigation discussed in the previous two sections was initiated by environmental or wilderness advocates. Industry, however, also sought the judiciary's assistance. As noted above, advocates of oil and gas development successfully challenged the delay in processing oil and gas lease

applications under the Energy Security Act in *Mountain States Legal Foundation* v. *Hodel*. Earlier, the same group had successfully prosecuted an action challenging agency delay in processing applications by arguing that the delay was a de facto withdrawal that failed to comply with the process for making withdrawals prescribed in the FLPMA (*Mountain States Legal Foundation* v. *Andrus*, 499 F. Supp. 383 [D. Wyo. 1980]). A prospective oil and gas lessee unsuccessfully challenged BLM's refusal to consider leasing a particular area in *Learned* v. *Watt* (528 F. Supp. 980 [D. Wyo. 1981]). An industry trade association unsuccessfully challenged the BLM's restrictive interpretation of FLPMA as it pertains to oil and gas leasing in wilderness study areas in *Rocky Mountain Oil & Gas Association* v. *Watt* (696 F.2d 734 [10th Cir. 1982]). An oil company unsuccessfully sought to reverse an Interior Department decision finding that further NEPA compliance was necessary before taking action on the company's application to drill a well on its federal oil and gas lease (*Texaco Producing, Inc.* v. *Hodel*, 840 F. Supp. 776 [10th Cir. 1988]).

THE REFORM ACT

Also in the period after enactment of the planning statutes—late 1970s and early 1980s—the oil and gas leasing process itself became increasingly controversial (National Research Council, 1986). The process suffered several leasing moratoria and litigation over the difficulties in defining the "known geologic structure," which was the statutory predicate for competitive leasing, and allegations of widespread fraud and speculation at the public's expense in the "lottery" process of noncompetitive leasing (e.g., see *Arkla Exploration Co.* v. *Texas Oil and Gas Corp.*, 734 F.2d 347 [8th Cir. 1984]). The difficulties encountered in managing the existing leasing process ultimately convinced both the leasing agency—BLM—and the Congress that the process required statutory reform. Legislation was introduced in 1986 that ultimately became the Federal Onshore Oil and Gas Leasing Reform Act of 1987.

Soon after the initiation of legislative deliberations on reform of the leasing process, a number of House members began advocating statutory clarification of the appropriate NEPA analysis and consideration of oil and gas development to be done before leasing, focusing on the land use planning process. The result was section 5 of the version of the Reform Act that passed the House of Representatives (H.R. 2851, 100th Congress, 1987). That provision would have directed that, by January 1, 1991, new BLM and Forest Service land use plans must be issued, or old plans must be amended, wherever the public has expressed substantial interest in oil and gas leasing or the Secretary of the interior has found high potential for

oil and gas recovery. The new or amended plans would have been required to include three considerations:

(A) The potential oil and gas resources including a map and narrative description indicating those areas with known oil and gas reserves as well as lands already under lease for oil and gas.

(B) An analysis of the most likely social, economic, and environmental consequences of exploration and development for oil and gas recovery, including the most likely potential consequences of exploration and development of tracts already leased or for which lease applications are pending.

(C) An identification of those specific protective stipulations to be applied to oil and gas leases, and the specific areas to which each such stipulation shall apply. The Secretary concerned is authorized to use stipulations which reserve the right to prohibit surface occupancy of the lease area only where the Secretary determines that recovery of oil or gas from such area is feasible without surface occupancy.

The Senate-passed version (S.66, 100th Congress, 1987) of the act contained no comparable provisions. The compromise that the House-Senate conferees adopted was section 5111 of the Reform Act, which required this study, and a study by the Comptroller General, of how oil and gas leasing is considered in the BLM's and the Forest Service's land use planning.

The Reform Act did make several significant changes in the administration of the onshore oil and gas leasing program of relevance to this study, which are discussed in Chapters 5 and 6.

AGENCY REFORM EFFORTS

While the courts and the Congress were considering the issues of land use planning and oil and gas leasing on federal lands, the BLM and the Forest Service devised or proposed solutions of their own. Both agencies reexamined, and made a number of modifications in, both their planning and their leasing processes, to address more effectively the exploration and development operations that may ensue from leasing.

The BLM's program modifications focused on land use planning and took the form of field instructions (BLM, 1986), which require that each BLM land use plan include, among a number of analyses, a classification of lands into four management categories of lands closed to oil and gas leasing and lands open to oil and gas leasing, with three categories of environmentally related stipulations, identification of the specific stipulations for the lands determined to be open for leasing, and analysis of the "cumulative environmental impacts of reasonably foreseeable fluid mineral development."

The Forest Service's program modifications related to its role in the leasing process and took the form of proposed regulations published on January 23, 1989 (54 Fed. Reg. 3326-3339). Although these proposed rules address the Forest Service's responsibilities at least issuance, they require several pre-lease decisions (e.g., the suitability or unsuitability of an area for leasing and the terms of lease stipulations) that the agency ultimately intends to make during the planning process. At the time this report was prepared, no final rules had been issued.

REFERENCES

Bureau of Land Management, Department of the Interior. 1986. Supplemental Program Guidance: Energy and Mineral Resources—Fluid Minerals. November 14.

National Research Council. 1986. Committee on Known Geologic Structures. Known Geologic Structures Under the Mineral Leasing Act: Interpreting and Applying the Term "Known Geologic Structure of a Producing Oil and Gas Field."

5

Land Use Planning for Oil and Gas

BACKGROUND

The basic question posed for the committee is how to integrate the planning and environmental analysis requirements of federal law with leasing. The courts have interpreted existing statutes to require the BLM and the Forest Service to consider possible mineral development in devising their land use plans; to require preparation of EISs before making irretrievable commitments to develop federal minerals if development would involve significant environmental impacts; and to give expansive definition to "significant," creating a low threshold for triggering the EIS requirement. There is disagreement about the practical effects of the judicial rulings. Moreover, the agencies' own responses to the issues confronted by the courts are still evolving.

Both the Forest Service and the BLM continue to modify their planning and NEPA regulations and guidelines. New plans attempt to address these issues in new or at least more fully considered ways. Additional guidelines have been issued as planning has progressed. Even the most recently approved plans do not reflect all of the current planning guidelines.

An additional problem is posed by the more than 80,000 oil and gas leases now in force on the federal lands, many of which were issued before leasing was given the level of attention in land use plans or NEPA documents that it receives today. The existing lessees may have property rights that cannot be extinguished without just compensation. Proceeding with exploration and development, however, might be inconsistent with

emerging notions of what kind of development and environmental impact is acceptable.

CURRENT PLANNING DIRECTION

The basic planning approaches used by the BLM and the Forest Service, and required by the Federal Land Policy and Management Act (FLPMA; 43 USC 1701-1782) and the National Forest Management Act (NFMA; 16 USC 1601-1604) are similar. The planning acts for both the Forest Service and the BLM require "comprehensive" and "interdisciplinary" planning. This approach is consistent with the rational comprehensive planning models of the planning profession (i.e., resource capabilities are compared with potential demands on the resources, and choices are made on the basis of some set of public interest criteria). Much of the detailed information used by the agencies in their analyses and in working with the public does not appear in either the draft or the final plans. As a result, reviewing just the information in the plans and EISs, which is voluminous, does not necessarily give a picture of the full extent of the materials that are used.

Plans are prepared for National Forests in the case of the Forest Service and for Resource Management Areas in the case of the BLM.[1] The plans are based on both current and expected future uses of the lands in question, are issued in both draft and final forms, and have typically taken three to five years to complete. The plans themselves are considered major federal actions under NEPA (42 USC 4321-4370 [1970]) and, therefore, are accompanied by environmental impact statements and must meet other NEPA requirements. The planning process is a primary focus for public involvement in making decisions on the federal lands. Public involvement is sought during the early stages of planning in defining issues and concerns that must be addressed, followed by a period of public comment on draft plans and the associated draft. Final plans and final EISs can be appealed. The plans are legal documents whose directives are judicially enforceable; later site-specific decisions by the agencies that are inconsistent with a plan can be enjoined, unless the plan is amended.

National Forest plans must be revised at intervals no greater than 15 years (16 USC 1604(f)(5)); BLM plans have no maximum term. The

[1] Both the Forest Service and the BLM planning processes apply to areas where the agency administers less than the full estate (e.g., only surface rights or only subsurface rights), with the remaining rights in nonfederal ownership or under control of another agency. Federal planning in relation to oil and gas development can obviously be affected by the existence of these so-called split estates, because of the diminished agency control they entail. The committee has not devoted special attention to this issue, except to note its existence.

BLM reviews are triggered by the emergence of issues of possible concern, whereas Forest Service plans are revised regardless of perceived "needs." Both NFMA and FLPMA also require coordination with other federal agency, Indian, and state and local planning.

Both agencies have continued to update their planning direction based on more experience with land management planning. They have also recognized court decisions requiring that more site-specific impacts, as well as cumulative impacts, of oil and gas development be evaluated prior to the issuance of leases, unless the leases reserve authority in the agency to make later separate discretionary decisions to authorize activities on leases (see Chapter 4). Both agencies have also attempted to use some type of staged or segmented analysis of environmental impacts to compensate for the limited information available at the planning stage about the extent to which areas to be leased will be explored and developed. Concepts such as assumed or foreseeable level of development have sometimes been used as a basis for evaluating impacts and determining the areas to be leased and the conditions for leasing.

Some land use decisions are made outside of the land use planning process. Congress from time to time designates portions of both Forest Service and BLM lands to be national parks and monuments, national recreation areas, wilderness areas, wild and scenic rivers, and national trails. Generally, these designations withdraw the areas from oil and gas leasing. In addition, the agencies sometimes designate areas of land under their jurisdiction as research natural areas (Forest Service), as areas of critical environmental concern (BLM), or for other purposes that may also be attended by prohibitions or restrictions on oil and gas leasing. These designations are often made as part of the land use planning process.

Bureau of Land Management Planning

Resource Management Plans (RMPs) of the BLM start at the unit level (Resource Management Areas). The FLPMA requires that the BLM initiate its land use planning by preparing and maintaining "on a continuing basis an inventory of all public lands and their resource and other values . . ." (43 USC 1711(a)).

The specific planning directives in FLPMA are extensive and require that BLM "use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences" (43 USC 1712(c)(2)). The act also requires that an opportunity be allowed for public involvement and that regulations set procedures, including public hearings, to give other federal agencies, state and local governments, and the public an opportunity to participate in formulating plans for the federal lands (43 USC 1712(f)). The plans are intended generally to be consistent with

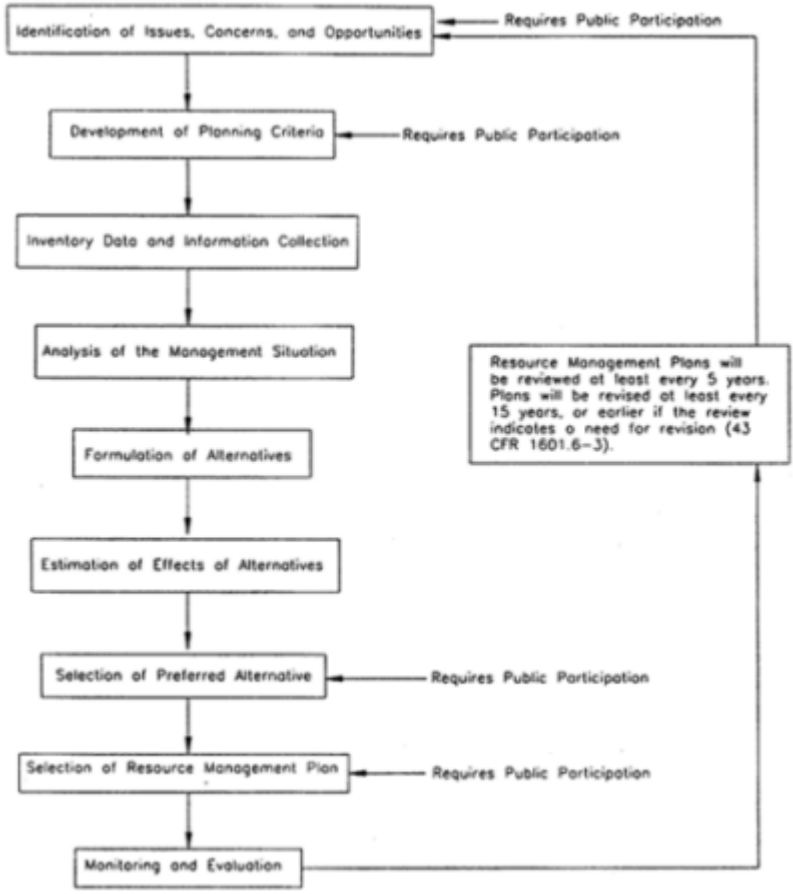

Figure 5.1
Bureau of Land Management resource management planning process.
Source: Courtesy of Bureau of Land Management.

state, local, and other agency plans, but this is limited by considerations of federal law and the national interest (43 USC 1712 (c)(9)). Each plan starts with an identification of issues, which are then addressed in the plan and its land use allocation decisions. Figure 5.1 shows steps in the planning process for a typical RMP.

Before enactment of the 1987 Federal Onshore Oil and Gas Leasing Reform Act (101 Stat. 1330-256), the *Supplemental Program Guidance for Energy and Mineral Resources—Fluid Minerals* (SPG; BLM, 1986) identified the following decisions to be made at the planning stage:

- areas open to oil and gas leasing with standard lease terms and conditions;
- areas open to leasing, but subject to seasonal or minor constraints;
- areas open to leasing, but subject to no-surface-occupancy or other major constraints; and
- areas closed to leasing and development.

The areas subject to each of these limitations are to be shown on maps incorporated in land use plans. In addition, the plans are to show how these limitations will affect existing leases when they expire, the lease stipulations that will be used for areas open to leasing, and the circumstances in which waivers to lease stipulations will be considered. Whether decisions made during planning that affect leasing and development of oil and gas resources also apply to the exploration phase should be noted in plans.

Under the SPG for fluid minerals, the BLM has continued to offer BLM tracts for leasing. It has, however, determined that 20 of its previously completed plans need to be revised in order to satisfy the upgraded planning requirements for oil and gas in the SPG. Some tracts BLM has offered to lease have been challenged for alleged lack of NEPA compliance, but numerous tracts have been leased without challenge.

Forest Service Planning

The 1974 Forest and Rangeland Renewable Resources Planning Act (16 USC 1600-1614) and the 1976 National Forest Management Act provide guidelines that require planning at three administrative levels: national, regional, and individual forest, where, in an iterative process, each level provides inputs for the others. At the national level, every 10 years the Forest Service prepares an "assessment" of the forest and rangeland situation. This report identifies matters of concern that are then addressed in a national "program," which is prepared on a 5-year cycle and identifies needs that can be addressed by Forest Service programs. These "programs," the most recent of which was released in 1985, specified budget needs for the Forest Service for the following four decades. In an iterative process, the national program targets are translated into its resource and program targets for each region and National Forest. There is no parallel structure for assessing national needs and making regional allocations to guide the BLM land use plans.

The 1985 national "program" set a mineral and energy goal for the Forest Service: "provide for mineral prospecting and exploration, and respond to proposals for minerals development, in concert with other resource uses and values, and provide technology for reclamation of disturbed lands. Emphasize energy minerals and minerals of strategic importance." The production of energy minerals from the National Forests is projected to

increase between 32 and 40 percent from 1986, the base year, to 2030. The energy minerals category includes coal, of which the National Forests have large reserves. But it is clear from this projection that the Forest Service expects to continue to make land available for exploration for oil and gas and probably at higher than current levels. Implications for regional goals are not clearly addressed in the 1985 program.

The Forest Service planning process is delineated in Figure 5.2. The Forest Service also uses a sophisticated resource allocation model during the land use planning process. This model, FORPLAN, originally designed to analyze timber resource allocations, is now used to make estimates of the present net value of alternative land use allocations based on their estimated future costs and benefits. FORPLAN is used mainly as a tool in describing results of alternative land use and resource allocations, rather than as a device for reaching final planning decisions. FORPLAN computer runs are used in the public participation process to describe some possible effects of alternatives.

On January 23, 1989, the Forest Service proposed rules by which it would implement the statutory responsibilities for management of oil and gas leasing and attendant surface-disturbing activities conducted on National Forest lands (54 Fed. Reg. 3326 [1989]). These proposed rules were issued to implement the expanded authority given to the Secretary of Agriculture by the Reform Act in the management of oil and gas resources on National Forest System lands.

The proposal outlines the following four steps that would precede all competitive lease sales involving National Forest System land. The process is delineated in a flow chart (Figure 5.3).

1. *The agency would identify lands with potential for leasing.* This would be done within six months of the effective date of the rules. Forest supervisors would identify those areas under their jurisdiction that have potential for oil and gas leasing, and that had not previously been evaluated for their suitability for oil and gas leasing. The rules propose that an area be identified as having potential for leasing if (1) there is ongoing oil and gas production in the area, (2) the geologic environment of the area is known to be favorable for the accumulation of oil and gas resources, or (3) there is ongoing industry interest in obtaining oil and gas leases for the area.
2. *Lands identified with potential for oil and gas would be reviewed for leasing suitability.* Certain lands would be excluded from this suitability review because they are not available for oil and gas leasing because of previous decisions such as withdrawals, or because they are recommended wilderness areas or roadless areas currently undergoing evaluation. Available lands then would be further analyzed to determine whether leasing is

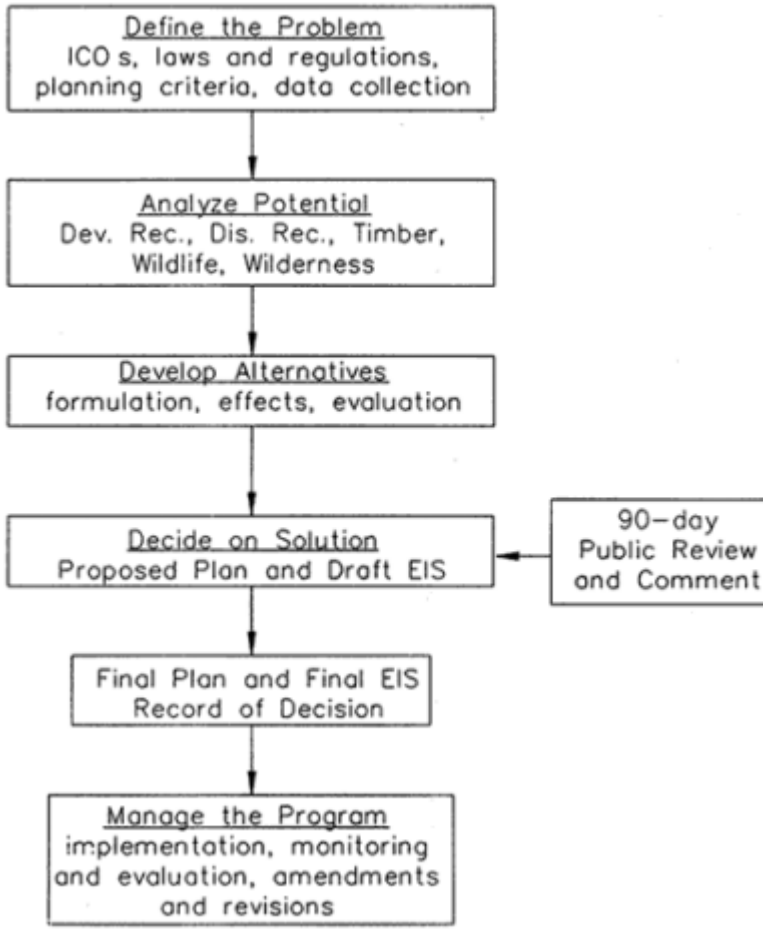

Figure 5.2
Forest Service resource management planning process.
Source: Courtesy of Forest Service.

consistent with the land use plan or at least not precluded by the plan, and whether the lands designated are suitable for leasing with certain stipulations. That process would also include an identification of conditions of surface occupancy and use that would be attached as stipulations in any leases issued for the area to ensure consistency with law and the land use plan for the area.

3. *The outcome of each suitability review would be communicated to the Bureau of Land Management and public notice would be given.* At this

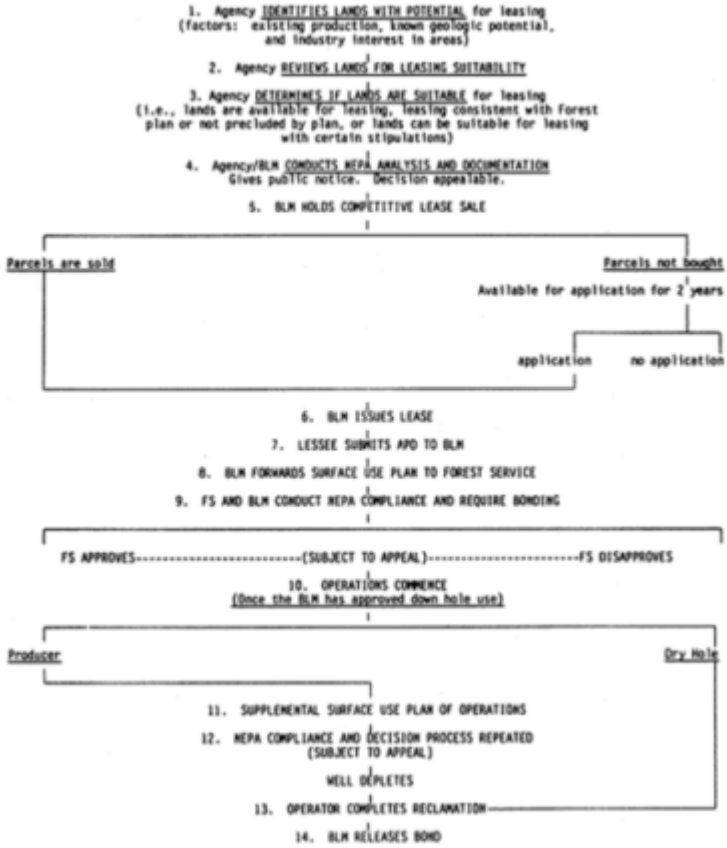

Figure 5.3
Proposed Forest Service oil and gas leasing and operations process.
Source: Forest Service (1989c).

point the NEPA analysis and documentation would be completed, and a final decision would be made as to whether the Forest Service would object to leasing the area. That decision can be appealed up through the Forest Service administrative appeal process.

4. *The BLM would hold a competitive lease sale.* From this point on, the Forest Service and BLM processes would be identical. The Forest Service would be required to approve or disapprove a surface use plan of operations for National Forest System land.

Initially, because leasing and planning stages have not been synchronized, steps 1 through 3 would be conducted based on existing land use plans. Ultimately, as plans are reviewed, the resource, suitability, and environmental reviews would be done at the planning stages.

STATUS OF LAND USE PLANS

Both the Forest Service and the BLM are still preparing some of the first round of land use plans under NFMA and FLPMA. The last 38 National Forest plans are scheduled for completion in 1989, all but two of them for National Forests in the West Coast states of California, Oregon, Washington, and Alaska (Forest Service, 1989c). Completion of these plans has been delayed by disputes over issues generally unrelated to oil and gas leasing. Only two plans in other states remain to be completed. One of these is for the Bridger-Teton National Forest in Wyoming, where oil and gas exploration issues are significant. The BLM had 55 approved RMPs on December 1, 1988, and 35 more are scheduled to be completed by the end of 1992.

Conflict and controversy over the planning process persist. Both environmental and industry representatives have criticized the Forest Service's proposed regulations. At least 28 Forest Service land use plans, 13 Bureau of Land Management land use plans, and 8 lease sales (since the Reform Act) have been protested or appealed through administrative channels because of alleged deficiencies in planning for, or environmental analysis of, oil and gas activities.

A problem for the committee in analyzing land use planning as it relates to oil and gas leasing is that direction for both agencies has been changing constantly over the last 13 years since the passage of NFMA and FLPMA. Such planning is also complicated by existing leases, which pose different issues of regulatory authority than new leases. Currently completed plans in most cases do not reflect the most recent direction because the plans were completed before the directives were issued.

Evaluation of Oil and Gas Resources for Planning

Lack of information on potential mineral resources is a problem at the land use planning stage because of the need to examine potential impacts of resource development in plans. If there has been no exploration or development of oil and gas in the area, it is often impossible to predict the presence, quantity, quality, or other characteristics of the area's potential petroleum resources. This stems from lack of specific information on the subsurface geology of all or part of the planning area. The five geological conditions necessary for oil and gas development are typically discovered

only during exploration. Of the five conditions necessary for hydrocarbon production, only one can be determined without drilling, and even that is usually determined by inference from seismic or other information collected on the surface:

1. Geologists look for subsurface structures that are favorable for trapping hydrocarbons (Figure 5.4). Such structures generally can be detected by seismic reflection techniques. A seismic survey will typically require a field crew to occupy the land surface along a series of survey lines for a period of days or weeks. Seismic reflection surveys provide an acoustical cross section of the earth that resembles a geologic cross section. From a series of acoustical cross sections, a petroleum geologist can determine (within a few hundred feet) the preferred locations for drilling. The presence or absence of favorable geologic conditions is all that can be determined by geological and geophysical studies. Whether oil or gas is present in a structure can only be determined by drilling, except in rare circumstances.
2. The second necessary condition is porosity. Rock must have adequate pores or open spaces between grains or rock fragments where oil or gas can collect. Typical petroleum-bearing rocks have from 5 to as much as 25 percent of their volume in pores. Porosity can be ascertained only by obtaining samples of the rock or by making geophysical measurements in a hole drilled through the rock unit.
3. A third condition is permeability. Pores must be connected to each other so that fluid can flow readily from one pore to another toward lower-pressure conditions, such as a subsurface trap or, ultimately, a pumping well. As with porosity, permeability cannot be measured without drilling.
4. The fourth necessary condition is a source of hydrocarbons. The vast majority of producible hydrocarbons comes from previous life forms, mostly microscopic plants and animals that were entrapped in sediments in the last 600 million years of geologic time. The sediments were later buried to sufficient depths and subjected to sufficient heat, and pressure matures the hydrocarbons into forms that will flow as fluids, either as oil or natural gas.
5. Finally, the hydrocarbons must move to the borehole in response to changing pressure conditions. This phenomenon, known as "drive," requires that the fluids in the reservoir be under sufficient pressure to flow toward a well. If there is no drive, there will be little or no production from a well completed in a reservoir. Drive is measured by a variety of methods, all of which require a drill hole.

If producing fields exist nearby, it is often possible to extrapolate porosity, permeability, and drive conditions from one reservoir to another.

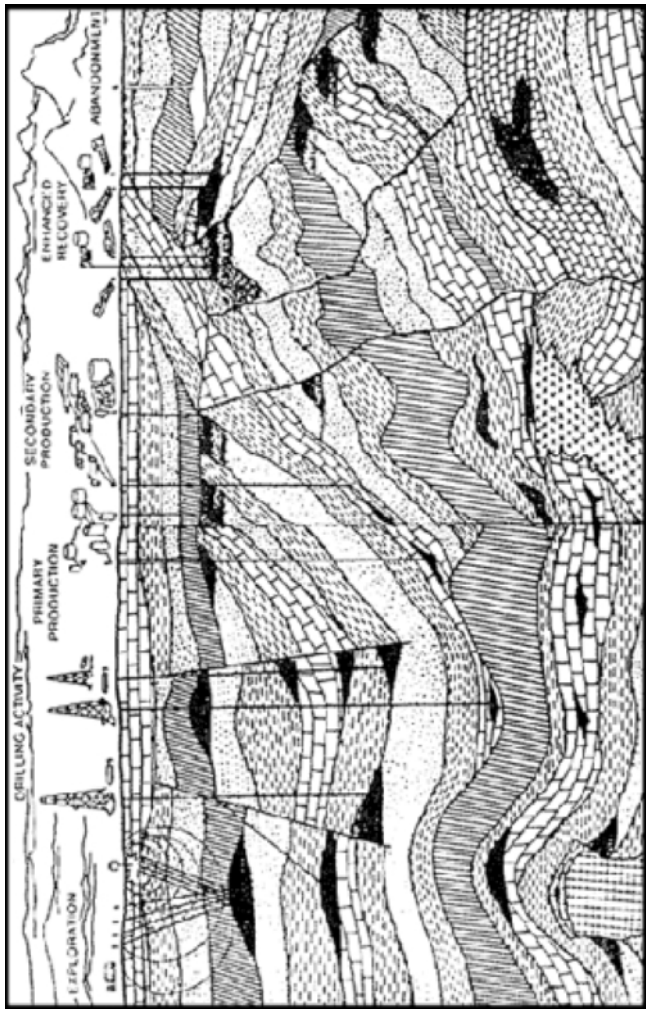

Figure 5.4
Life cycle of a producing oil and gas field. Source: Reprinted, by permission, from Action Systems, Inc. Copyright © 1984 by Action Systems, Inc., Dallas, Texas.

Under some rarely observed conditions, it is possible to detect water-hydrocarbon interfaces in reservoirs with seismic reflection methods. These "direct detection of hydrocarbon" methods are successful under conditions that do not often exist, but when they work, they work well.

Lack of the above kinds of information at the time of planning leads to uncertainties concerning oil and gas values and possible impacts of development. Impacts of development on wildlife and wilderness characteristics are discussed in other portions of this report. Issues concerning environmental impacts tend to revolve around these concerns. The following three cases with which the committee is familiar show the problems raised by uncertainties concerning oil and gas values, especially in areas with no previous history of oil and gas development. The accuracy with which resources can be estimated prior to actual development is highly variable, sometimes by several orders of magnitude.

Case 1: Fort Chaffee, Arkansas

Planning for full field development on the military base at Fort Chaffee, Arkansas, is relatively straightforward, unless oil or gas is discovered in deeper horizons. There is a history of substantial gas production on surrounding lands, so estimating the kind and order of magnitude of producible resources is not difficult. No sophisticated techniques are needed to extract or treat the gas, which is 97 percent methane. The average production depth is about 6,000 feet below the surface.

All lease tracts were competitively leased, despite the fact that one-third of the area had no-surface-occupancy stipulations and much of the area was subject to stipulations related to military training. Lease prices averaged $232 per acre, with a high of $4,000 per acre and a low of $2.00 per acre (in impact areas where directional drilling is required), indicating that commercial interest was high. Gas wellheads are in underground bunkers to prevent interference with military activities.

Full field development planning was simplified by the relatively small area and the known depth, type, and amount of the resource. Because of widespread nearby gas production, analysis could proceed with the knowledge that all five of the necessary criteria for hydrocarbon production were likely present. Even if deeper horizons eventually become productive, the character of development would probably not change significantly.

Case 2: Riley Ridge

Riley Ridge is a gas field on federal land in western Wyoming. Prior to the initial proposal for full field development, information was available from several test wells. In addition, based on the knowledge that all but two counties in Wyoming were oil and gas producers, it was likely that at least

some of the factors necessary for oil and gas production were present on much of the federal land in the state. In fact, the presence of all necessary factors, except permeability, was known when the EIS was prepared for the Riley Ridge field. At the time the EIS was published in 1983, plans called for 238 wells on 160,000 total acres, with construction of four processing plants to remove sulfur from the sour gas. The depth of production is 16,000-18,000 feet below the surface. The development plan set forth in the EIS called for substantially more wells and development than what has taken place. There are now 21 wells on 75,000 acres and only one processing plant. Part of the scale-down of the project to its present size has been dictated by economics, which may change, and part by new information about permeability of the reservoir. Despite the knowledge about the Riley Ridge when plans were made and the EIS was written, changing economic conditions and higher-than-expected permeability reduced the density of wells at full field development by nearly a factor of 5.

Case 3: Mid-Continent Rift

The Mid-Continent Rift is an example of a frontier area where very little is known about the conditions for oil and gas production. It extends from Lake Superior southwestward through Minnesota, Iowa, Nebraska, Kansas, and possibly into Oklahoma. This geologic province has oil seeps near Lake Superior. Based on seismic reflection surveys, several geologic structures the size of Alaska's Prudhoe Bay field are known in Iowa, Kansas, and possibly Nebraska. Two dry wildcat wells have been drilled into geologic structures in Kansas and Iowa. While favorable geologic structures are known to exist, it is not yet known if, or where, favorable source rocks, porosity, permeability, and drive are present. The ultimate hydrocarbon development along the Mid-Continent Rift could vary from nothing to as much as a hundred billion barrels.

Evaluation of Land Use Plans with Respect to Oil and Gas Leasing

As land use planning evolves, oil and gas leasing is proceeding on some lands managed by the BLM and the Forest Service. Leasing on several National Forests has been delayed due to concerns about insufficient NEPA documentation arising from the court decisions discussed in Chapter 4.

Both agencies have reacted to requests for leasing at various stages in the land use planning process and with various levels of information and analysis on oil and gas resources. There are several types of decisions that might be made at the land use planning stage including (1) whether or not a specific area should be leased; (2) if areas are leased, what special lease stipulations would be appropriate; and (3) how oil and gas leasing should be timed or coordinated with the management of other resources. The plans

may also indicate the presence of certain threatened or endangered species, unstable terrain, critical winter range, breeding or birthing grounds for wildlife, and high-value recreation areas as well as standards and guidelines that would apply to any surface disturbance activity, including oil and gas exploration and development, in specific areas.

Since, historically, only 10 percent of leases are ever explored and only 10 percent of those explored are ever developed, a significant question is whether concentrating more effort on planning in relation to oil and gas is productive. Significant questions include (1) what information is required to improve the final plan, (2) how much additional time it would take, (3) how much such additional effort would cost, and (4) who should pay for this increased effort.

The committee reviewed in some detail four land use plans, two of which it was told are recent state-of-the-art plans, and two of which were for an area in Montana that the committee visited. Two BLM plans were reviewed: the 1983 RMP and EIS for the Headwaters Resource Area, which stretches along the east side of the Rocky Mountain Front in Montana; and the 1988 RMP and EIS for the West HiLine area, a recent state-of-the-art plan that covers north-central Montana, east of the Rocky Mountain Front and south from the Canadian border to the Missouri River. Two Forest Service plans were reviewed: the plan and EIS for the Lewis and Clark National Forest, which stretches along the Rocky Mountains south of Glacier National Park in northwestern Montana; and a draft of the final plan and EIS for the Bridger-Teton National Forest, the other state-of-the-art plan, which covers portions of the mountainous and forested area south of Yellowstone and Grand Teton National Parks in west-central Wyoming.

Both BLM and Forest Service plans present information on the status of roadless areas relative to wilderness designations and of other areas being studied for possible inclusion in other land categories that would preclude or sharply restrict oil and gas leasing. In addition, the land use plans define, either generally or specifically, the areas that would be subject to major restrictions on oil and gas leasing, such as steep slopes that would be assigned no-surface-occupancy stipulations and areas that would have seasonal or other temporal restrictions on use.

Headwaters Resource Management Plan (Bureau of Land Management)

The Headwaters RMP is "issue-driven." The first of eleven issues it identifies is "oil and gas leasing and development," and it notes the potential conflict with other resource uses and values. Two of the other ten issues are relevant to oil and gas leasing: which areas should be recommended for wilderness designation and which other areas warrant special

management designations, such as areas of critical environmental concern and outstanding natural areas, that could restrict resource development.

Sequential oil and gas leasing and development was an alternative that was considered but not given detailed study. This would have divided the Rocky Mountain Front in the planning area into four zones, two of which would have been designated for leasing and development during the first 10 years of the planning period and the other two during the second period. This alternative was dropped from further study because adjacent and intermingled nonfederal ownerships could have prevented control of what happened to federal oil and gas resources (BLM, 1983, p. 11).

The plan divides the area into 36 management units, some of which contain federal minerals with very little federal surface. Oil and gas stipulations—standard stipulations, special stipulations, and no-surface-occupancy stipulations—are assigned to each of the management units. The kinds of possible conflicts between oil and gas activities and other values are also identified for each management unit. No distinction is made in the plan between exploration and development stages.

The Rocky Mountain Front sector of the RMP was identified in the plan (BLM, 1983, p. 4) as needing special attention because of wildlife, especially Rocky Mountain elk, grizzly bear, gray wolf, and bighorn sheep. Four alternative sets of land uses were considered in developing the plan and, in each of them, about 30 percent of the area was assigned standard stipulations. But the alternatives varied widely in the proposed use of other areas for oil and gas leasing and in the proposed use of other stipulations. For the "protection" alternative, almost all of the remaining 70 percent of the area was designated for no leasing or leasing with a no-surface-occupancy stipulation. For BLM's "preferred" alternative (the one preferred by the BLM planners after consideration of the various issues and available information), only 28 percent of the area was assigned to these two most restrictive categories. The other 42 percent is to be leased with special stipulations, but ones that permit surface occupancy.

A range of oil and gas leasing alternatives was developed during the planning process. The "preferred" alternative, which was adopted in the plan, would reduce by 9 percent the area that was available for leasing without restrictions on surface occupancy at the time the plan was written in 1983. The plan evaluates wildlife and wildlife habitat concerns that supported these proposed land allocations in the preferred alternative. Discussions of the other alternatives are in the draft RMP/EIS. The discussions are brief with respect to the impacts of oil and gas leasing on wildlife, but do cover each of the major animal and bird species. As noted in the plan, additional constraints may be added prior to issuing leases in sensitive wildlife areas.

The Headwaters plan used an "economic-demographic" computer

model to project possible impacts of three different levels of oil and gas development. Projections were made of impacts on population, additional direct employment in oil and gas activities, additional indirect employment, and total employment in the planning area for each of the three levels of development. Estimates were also presented of the contribution of current levels of oil and gas production, most of which is from nonfederal lands, to landowners' royalties and severance taxes (BLM, 1983, Appendix O).

West HiLine Resource Management Plan (Bureau of Land Management)

Oil and gas development is not among the five issues that are identified in the West HiLine RMP (BLM, 1988), but the positive and negative impacts of oil and gas development on resolution of the five issues are described. The five issues are land tenure adjustment, off-road vehicle management, right-of-way location, "emphasis areas" (three specific geographic areas with special wildlife or cultural resource concerns), and wild and scenic river management.

The plan identifies areas subject to constraints on oil and gas exploration and development. Of the nearly 700,000 acres with high development potential, 53 percent is open subject to standard terms, 36 percent is open subject to seasonal or other "minor" constraints, and 11 percent is closed to leasing. Similarly, of the 425,000 acres with moderate development potential, 70 percent is subject to standard terms, 22 percent is open to seasonal or other minor constraints, and 8 percent is closed to leasing (BLM, 1988, p. 188).

This plan contains a "reasonable development" scenario for oil and gas (BLM, 1988, pp. A-13 to A-55). This scenario describes oil and gas activities from initial exploration through production to plugging and abandonment of wells following depletion of a field. It relates these stages in a general way to the kind of conditions found in the planning area. It then goes on to describe the current status of oil and gas development in the planning area and how this might plausibly be expanded. The potential cumulative impacts of this scenario on air quality, soil, water, cultural resources, vegetation, fire, grazing management, wildlife and fisheries, recreation, visual and aesthetic resources, wilderness, and economic and social factors are described in some detail. These impacts are not tied to any specific area within the planning unit.

In the reasonably foreseeable development scenario, the plan notes the difficulty of assessing the impacts of oil and gas development on the local economy "because of the uncertainty of the extent or spatial distribution of potential oil and activities." It further suggests that the regional economic impacts are likely to be greater than local impacts because expenditures

for equipment, supplies, and management skills are made outside the local economy. The plan also notes that in this planning unit, which has already had oil and gas development, there will be only minor economic and social impacts from a moderate level of exploration, but major discoveries would bring both more economic impacts and more social disruption (BLM, 1988, pp. A-53 to A-55).

The reasonable development scenario is quite specific about the kinds of activities that would take place during the various stages of exploration and development. It does not, however, clearly describe how restrictions would affect these oil and gas activities.

Lewis and Clark Forest Plan (Forest Service)

Oil and gas development receives only passing mention in the list of 14 issues in the Lewis and Clark Forest Plan (Forest Service, 1984), although over 400,000 acres was under oil and gas lease when the plan was written and another 130,000 acres had pending lease applications. The plan indicates 776,000 acres with very high oil and gas potential, 108,000 acres with moderate potential, and 959,000 acres with low potential. The very high potential lands amount to 42 percent of the total area of the National Forest.

The kinds of constraints on oil and gas development that would be used on lands with differing oil and gas potential, indicate that high oil and gas potential areas also have high values for other resources. In the Forest Service's "preferred" alternative, 56 percent of the land with very high oil and gas potential is unavailable for leasing. The remaining 44 percent is in areas where law or executive orders require special protection or mitigation measures. In contrast, for the low oil and gas potential lands in this alternative, standard stipulations apply to 85 percent of the area and special measures required by the regional office of the Forest Service apply on the other 15 percent (Forest Service, 1984, p. 2-81).

Stipulations in this plan were set in a prior environmental assessment of oil and gas leasing for nonwilderness lands on the Lewis and Clark Forest (Forest Service, 1984). This assessment examined the potential for oil and gas, possible effects of development on wildlife and other surface uses, and six alternatives for guiding oil and gas development. The alternative the Forest Service adopted was to permit leasing with the right to occupy the surface only of accessible areas that can be adequately protected with standard and special stipulations (Forest Service, 1981a, pp. 31, 61). Areas that could not be protected with standard and special stipulations would not be leased. The assessment noted that "monitoring the effects on wildlife

is absolutely essential to achieve effective application of these guidelines" (Forest Service, 1981a, p. 49).

An environmental assessment of oil and gas leasing for the Deep Creek and Reservoir North planning areas on the Lewis and Clark Forest was issued at the same time as the more general assessment. This Deep Creek assessment was "tiered to" the EIS that had been prepared by the Forest Service for the second wilderness review (RARE II; Forest Service, 1979). That evaluation determined that the potential effects of oil and gas exploration in "wilderness study areas," of which the Deep Creek area was one, were acceptable. After detailed review, the Forest Service concluded that "occupancy leasing only of accessible areas which are not extremely sensitive" was its preferred alternative (Forest Service, 1981b, pp. 78-81).

The Deep Creek review included an assessment of the potential for oil and gas, possible impacts of exploration and development on surface uses and other conditions in the area, and five alternatives for management. The preferred alternative places about 75 percent of the area in no-surface-occupancy zones, which include all areas with slopes greater than 40 percent and two major areas that are considered extremely sensitive for wildlife. Exceptions to the no-surface-occupancy requirement for greater than 40 percent slope can be granted with additional approvals from the U.S. Geological Survey.

A further environmental assessment (EA; Forest Service, 1982) of geophysical exploration on the Lewis and Clark Forest was issued about two years later (Geophysical Exploration EA). This EA adopted a programmatic, rather than the then current case-by-case, approach for evaluating seismic prospecting applications. Among other things, the programmatic approach included guidelines that prohibited construction of new roads for seismic work and placed limits on concurrent prospecting activities and spacing between such activities. The latter included spacing requirements between helicopter flight paths.

Planning for oil and gas development in the Lewis and Clark plan is not as detailed as in the Deep Creek and geophysical exploration environmental assessments that preceded it. The plan notes that there are differences between the impacts of exploration and those of development, but does not identify the differences and carries this discussion no further. Of the nearly 300,000 acres under oil and gas leases along the Rocky Mountain Front on the Lewis and Clark Forest, 36 percent now has no-surface-occupancy stipulations, 20 percent has limited use stipulations, and 25 percent has timing restrictions. This leaves 19 percent with standard stipulations only.

The Lewis and Clark plan uses five "social traits" to compare the social effects of different patterns of resource use. These are control/self-sufficiency, life-styles and job dependence, population and crowding, community cohesion, and land ownership patterns. The plan also discusses

nine "non-priced benefits": elk hunting quality; semiprimitive recreation setting; threatened and endangered species habitat; plant diversity; visual quality; minerals/oil and gas; post, poles, and firewood; off-forest water use; and community well-being and human and community development programs (Forest Service, 1984, pp. 2-98 to 2-111). In a later section of the plan, the relative social and economic consequences of each of the alternatives are estimated. These include estimates of the effects of oil and gas development, the level of which is indicated by the area that would be available for leasing in each alternative, only on changes in life-style and job dependence. No estimates of the effects of oil and gas development on changes in a sense of control/self-sufficiency, population, or community cohesion were made in this analysis (Forest Service, 1984, pp. 4-123 to 4-127).

Bridger-Teton Forest Plan (Forest Service)

The draft of the final Bridger-Teton plan identifies three general problems and one specific problem. The one specific problem is threatened, endangered, and sensitive species. The three general problems are community economics and jobs from the forest—competition for scarce resources; personal recreation, enjoyment, play, and subsistence on the forest; and impacts of use of natural resource products on changes in natural forest ecological communities. Providing access to natural resources, including oil and gas, and avoiding unacceptable effects of subsurface resources development are issues that fit under these more general problems.

Of the 3.3 million acres in the Bridger-Teton Forest, 1,842,000 acres is available for leasing. For the preferred alternative in the draft final EIS, 85 percent of the available area would have standard, specific, and special stipulations; 10 percent would have no surface occupancy stipulations; and 5 percent would not be available for leasing. Included in the 1,842,000 acres generally available for leasing is 975,000 acres (53 percent) defined as technically unsuitable for leasing because of soil conditions and slopes greater than 40 percent; 44 percent of the forest is in wilderness and is withdrawn from leasing.

The Bridger-Teton plan has a more detailed evaluation of potential oil and gas development scenarios than the other plans we reviewed (Forest Service, 1989a, pp. 201 ff.). Scenarios for future oil and gas activities were based on the potential for areas to contain accumulations of oil or gas and the economic feasibility of developing particular kinds of accumulations. A special assessment of Bridger-Teton's oil and gas potential was done by a consultant to the Forest Service. It rated the potential of areas of the

forest for oil and gas as high, moderate, or low. These ratings were used to develop the scenarios for oil and gas development by management unit.

The EIS notes that the scenarios are "highly speculative," but useful in determining impacts of possible development on other resources and uses by management area (Forest Service, 1989a, p. 203). The Bridger-Teton is divided into eight "community interest areas," each area surrounding a town and each containing a half-dozen or so management areas. Where oil and gas is an issue, there is a moderately detailed discussion of the oil and gas development scenario for each management area. The development scenarios are used as the base for evaluating the effects on other resources and the uses of each of the six major alternatives in the EIS. The plan discusses standard, specific, and special stipulations and indicates the areas to which each applies. The plan distinguishes between the effects of exploration and the effects of development on wildlife and other uses. It contends, among other things, that the access provided by oil and gas development is likely to have impacts that extend beyond the life of the producing field.

The analysis of impacts in the Bridger-Teton draft final plan is organized around seven "human resource units," areas roughly along county lines that have "unique patterns of lifestyles, economic conditions, and geography." The modestly detailed description of each unit includes the role oil and gas exploration and development has played up to the present. Four of the seven units have had significant dependence on oil and gas activities. The plan identified "challenges" faced by the Bridger-Teton Forest, one of which is to provide access to natural resources. The plan notes that access developed through oil and gas activities is available to other national forest users such as ranchers and recreationists. It also notes that the increase in hunting and fishing "may disrupt outfitter and guide activities," a mainstay of the economy in the Jackson human resource unit (Forest Service, 1989a, p. 72).

The plan identifies "community economics and jobs" from the forest as a planning problem, and community stability in relation to oil and gas is identified as one of the principal issues on the forest (Forest Service, 1989a, App. A). Economic input/output models were used to estimate economic impacts and employment for alternative levels of resource use but while the models were used to estimate impacts for the timber, grazing, and several recreation activities, no attempt was made to estimate impacts for oil and gas development (Forest Service, 1989a, App. B).

This plan presents the most sophisticated analysis of the possible effects of oil and gas development that the committee reviewed. It uses a forest-specific analysis of geological potential for oil and gas resources and considers the likely market condition for energy resources. Potential impacts of oil and gas exploration and development on wildlife and

other resources and uses are identified for each management area. Mitigating measures and the lease stipulations that will be applicable to each management area are also identified.

The committee was told that a complex plan such as the Bridger-Teton plan could cost $0.5 to $1 million per year during the intense planning phase, a total of perhaps $2 to $3 million for the entire plan. For the Bridger-Teton plan, a small part of this, less than 5 percent, was attributed to the additional costs for the relatively detailed geological information that was collected and for planning related to mineral exploration and development.

UNSUITABILITY

In its proposed regulations implementing its authority in the Reform Act to not approve oil and gas lease sales on National Forest lands, the Forest Service proposed to review those National Forest lands that have potential for oil and gas leasing to determine whether they are "suitable [or unsuitable] for leasing" (proposed 36 CFR 228.102; 54 Fed. Reg. 3332-3333 [January 23, 1989]). This unsuitability review proposal has proven to be controversial as measured by the public comments on the proposed rules and comments received by this committee. The concept of unsuitability review is not, however, novel. Unsuitability reviews for some other resources in public land planning are required by statute. A review of all federal lands to determine unsuitability for the surface mining of coal, which must be "integrated as closely as possible with present and future land use planning," is required by section 522 of the Surface Mining Control and Reclamation Act (SMCRA) of 1977 (30 USC 1272). The BLM has included 20 criteria to determine unsuitability, and required that the review be completed prior to making the multiple-use trade-off decisions in land use planning, in both its land use planning and its coal management regulations (34 CFR Subpart 3461; 34 CFR 1610.4-4(h) and 1610.7-1). Section 6 of the NFMA requires that the Forest Service develop land use plans to "determine forest management systems, harvesting levels, and procedures in light of . . . the definitions of 'multiple use' and 'sustained yield' as provided in the Multiple-Use, Sustained-Yield Act of 1960 [16 USC 521-528], and the availability of lands and their *suitability* for resource management" (16 USC 1604(e)(2) emphasis added). The section further directs the agency to promulgate regulations that "shall include, but not be limited to . . . specifying guidelines which . . . require the identification of the suitability of lands for resource management" (16 USC 1604 (g)(2)(A)). The Forest Service has established an unsuitability review of lands for timber production. The review includes five criteria to make timber production unsuitability determinations before conducting the multiple-use trade-offs

in land use planning. The criteria are presented in part in regulations (36 CFR 219.14) and fully in Chapter 20 of the Forest Service's (1989b) *Timber Resource Planning Handbook*.

Arguably, the language in the NFMA requires the Forest Service to develop unsuitability reviews not just for timber but also for other National Forest resources, including (at least after enactment of the new Forest Service authority in the Reform Act) oil and gas. Whether that is the case or not, both the Forest Service and the BLM are accorded considerable discretion by the NFMA and FLPMA over their choice of planning methods—discretion that could encompass an unsuitability review for oil and gas leasing.

Both coal and timber unsuitability review processes are used in a similar manner for a similar purpose—to screen out early in the planning process lands on which development of the resource is clearly inappropriate from either an environmental or an economic standpoint. This early screening permits the agencies to focus their attention in a cost-effective manner on those lands where the various competing uses, including development of the resource that has undergone the unsuitability review, might be accommodated with more intensive planning consideration. The benefits of the unsuitability review process were described in an issue paper from the Department of the Interior (1979):

> Unsuitability criteria partly replace some multiple use trade-offs. [Application of these criteria] should result in increased efficiency in the Department coal management budget. Legislation of recent years clearly has imposed major new costs for environmental planning on Federal coal management. If the standard methods were applied, planning leading to identification of those lands that should be leased would be carried out through resource trade-offs. Fairly intensive data are needed to do this job properly. The unsuitability criteria, on the other hand, require only resource identification. The data needed for resource identification are much simpler. That the criteria are indeed inexpensive to apply is borne out by the results of the Department's data task force. This task force estimates the additional cost of application of the criteria during planning at about $100,000 per 2 million acres. Multiple use planning data is on the order of $1 million to $2 million to cover a similar area and is most expensive where coal resources must be managed.

When the coal and timber unsuitability reviews were first proposed, they also were highly controversial. Today, however, they are applied routinely in land use planning and are generally accepted by the public, including most of the developers of the resources under review. This shift from controversy to relative acceptance is due in part to the thorough preparation undertaken by the agencies prior to proposing the unsuitability reviews and the careful monitoring of the review processes after they were implemented. In an unusual agency undertaking, before presenting the surface coal mining unsuitability review process in proposed regulations in 1979, the BLM field tested 24 draft unsuitability criteria over a four-month

period in ten areas of high coal development interest in six states and held a workshop thereafter in which the BLM offices in those six states reviewed the test results and made recommendations for changes in the criteria and the procedures used in applying them. The BLM has since conducted several comprehensive reviews of the performance of the surface coal mining unsuitability review process, resulting in four substantive rule makings to alter or eliminate certain criteria and their exemptions.

Despite their similar origins, and their similar purpose as a screening mechanism early in the land use process, the surface coal mining and timber production unsuitability reviews have significant differences. The coal unsuitability criteria are set forth fully in rules; the timber unsuitability criteria are published fully only in the Forest Service handbook, an internal document not subject to public participation. The coal unsuitability criteria are numerous and more detailed; the timber unsuitability criteria are few and general. The coal unsuitability criteria are concerned only with environmental values, while the timber unsuitability criteria include both environmental and economic considerations.

As described by the Interior Department (1979), the 20 surface coal mining unsuitability criteria can be divided into four categories:

- criteria that are required by section 522 of SMCRA (e.g., protected federal lands such as designated wilderness and wild and scenic rivers, buffer zones along rights-of-way, and land adjacent to certain public, church, and community buildings);
- criteria that are discretionary under section 522 of SMCRA (e.g., land used for scientific studies, municipal watersheds, and floodplains);
- criteria that embody requirements under other statutes that the Interior Department chose to enforce through the application of unsuitability criteria (e.g., habitat for federally listed, threatened or endangered species; bald and golden eagle nests, roosts, and concentration areas; falcon nesting sites; alluvial valley floors; sites on the National Register of Historic Places; and National Natural Landmarks); and
- criteria that are not required by statute but that the Interior Department chose to apply in its discretion as good public policy (e.g., Class I scenic areas, habitats of state-listed threatened and endangered species, high-priority habitats for certain migratory birds, certain species of high state interest, and certain federally approved state criteria).

Most of the criteria are sufficiently specific to be simple to apply once the basic data are collected. Also, to prevent undue preclusion of land from surface coal mining, the criteria are narrowly drawn. For example, floodplains are determined by 100-year recurrence intervals, right-of-way buffer zones can be no wider than 100 feet from the outside line of the right-of-way, and habitat of federal threatened or endangered species must be

designated critical habitat or "habitat which is determined to be of essential value and where the presence of threatened or endangered species has been scientifically documented." Finally, most of the criteria have exceptions and exemptions that permit a determination of suitability under certain circumstances even when the criteria apply. As summarized in the 1979 Secretarial Issue Document, "some of the criteria involve interpretations of legal requirements within circumscribed limits; others represent an attempt to set broader limits on field-level resource management judgments that have previously been entirely discretionary" (Department of the Interior, 1979).

The Forest Service has adopted five criteria to determine lands that would be unsuitable for timber production. These criteria include economic, as well as environmental, considerations, reflecting the NFMA's requirement that the Forest Service's planning regulations specify land use plan guidelines "which insure consideration of the economic and environmental aspects of various systems of renewable resource management" (16 USC 1604(g)(3)(A)). The five criteria specifically reflect the NFMA's requirements for land use plan guidelines for timber harvesting (16 USC 1604 (g)(3)), and do not incorporate requirements of other laws or include discretionary "public policy" considerations. The criteria are

- lands "withdrawn from timber production" by the Congress, the Secretary of Agriculture, or the Chief of the Forest Service (e.g., units of the National Wilderness Preservation System and Research Natural Areas);
- lands "incapable of producing industrial wood," including tree species not likely to be utilized within the next 10 years;
- lands that are "physically [un]suitable forest land" because technology is unavailable to ensure timber production "without irreversible resource damage to soils productivity or watershed conditions";
- lands that are "physically [un]suitable forest lands" because adequate restocking is unlikely to occur within 5 years; and
- lands for which "there is not adequate information available, based on current research and experience, to project responses to timber management practices," with particular reference to lands classified as incapable of producing 20 cubic feet per acre per year (see Forest Service, 1989b, Chapter 20).

The committee notes that many incipient unsuitability criteria for onshore oil and gas leasing are already in place in one form or another. For example, the "standard mitigation guidelines for surface-disturbing activities" developed by the Wyoming office of the Bureau of Land Management from its standard oil and gas lease stipulations, include such potential criteria as "slopes in excess of 25 percent," land "within either one-quarter mile or the visual horizon (whichever is closer) of historic trails," and other

wildlife, cultural resource and special management categories (e.g., sage grouse strutting grounds, raptor nesting sites, campgrounds, reservoirs, occupied dwellings, rights-of-way, and special natural history or paleontological features) (document provided to the committee by the Bureau of Land Management, Wyoming State Office). Further refined and with proper exception procedures, such criteria would resemble formal unsuitability criteria of either general or regional applicability. Also reported to the committee was a joint effort of several environmental organizations and officials of the Interior Department in the summer of 1988 to identify certain circumstances under which oil and gas leasing should be precluded (see France, 1989).

EVALUATING THE IMPACTS OF OIL AND GAS EXPLORATION AND DEVELOPMENT ON WILDLIFE

Wildlife is among the resources that must be considered in BLM and Forest Service planning. Impacts on wildlife should be considered in the land use plans if oil and gas leasing is contemplated. Impacts include physical disturbance of habitat, including groundwater and surface water, and activities, such as human presence and equipment use, that interfere with wildlife. The concern to be addressed in planning is wildlife's need for adequate food, water, and cover and for its interactions free of extraordinary external influences.

The impact of oil and gas exploration and development on wildlife is highly site-specific and varies from low to high depending on the location, intensity, extent, and nature of mitigation measures, and on the species of wildlife. Types of impacts on wildlife from oil and gas activities include

- displacement of wildlife from critical winter range;
- disturbance of wildlife by people, equipment, or facilities, particularly during breeding, birthing, or other critical times of the year;
- damage to aquatic systems, including riparian areas, from spill of salt water or other contaminants, sedimentation, and direct impacts of construction on streams and adjacent riparian areas, including loss of vegetation;
- impacts on important wildlife habitats and activities from the construction and maintenance of access roads, pipelines, and other facilities required to support the oil and gas exploration and development;
- intensive human activity from oil and gas operations, including maintenance activities that require daily access to work areas and unrelated public use of roads and adjacent areas, with possible increases in poaching;
- modification or loss of small but irreplaceable habitat for threatened or endangered species.

These impacts can, to some degree, be avoided if identified early in the planning and leasing processes and if appropriate action is taken. For example, critical winter ranges are reasonably well known and can be identified by most state fish and wildlife agencies. Restrictions on seasons during which exploration or development may occur can be quite effective in reducing that impact. But special restrictions are only effective if they are actually implemented. A complicating factor in evaluating potential oil and gas impacts on wildlife is whether adjacent leases will be developed simultaneously or whether other types of use will occur in the same or adjacent areas and also have impacts on the same species or population of wildlife. The typical lag that occurs between planning and subsequent leasing, exploration, and development, and the uncertainties regarding the type and extent of development, make it difficult to specify during planning the kinds of situations that will occur when exploration and development take place.

Impacts on wildlife during exploration may be transient and limited enough in terms of time of the year to have only temporary effect. The direct impact from construction of drill sites and drilling is usually substantially less than that of associated activities such as roads, pipelines, and other facilities, which are most difficult to envision at the planning stage. The impacts on wildlife are usually greatest during the development phase when roads, pads, and pipelines are being constructed. The operation and maintenance phase typically requires much less human and equipment activity in an area, and such activity may be substantially controlled to limit impacts on wildlife and fish.

It is clear that the type and significance of impacts on wildlife and fish due to oil and gas exploration and development are highly variable and relate both to specific species and their habitat and to the nature and extent of oil and gas operations. There have been a few studies of the impacts of oil and gas development on fish and wildlife, such as fish losses from oil or saltwater spills and increased sedimentation, and disturbance of critical wildlife habitat due to oil and gas development. A realistic evaluation of the probable future impact on fish and wildlife from development of a proposed lease requires access to substantial information on the specific fish and wildlife species in the area, their important habitats, and some understanding of the extent and nature of development that may take place, including associated roads, pipelines, and support facilities. More is usually known about wildlife during planning than is known about the potential type and nature of future oil and gas exploration and development.

A report published by the Ad Hoc Oil and Gas Exploration Committee of the International Association of Fish and Wildlife Agencies (1989) underscores the need to bring the professional expertise of state and

federal wildlife agencies to bear in the evaluation of potential wildlife and fish impacts from oil and gas exploration and development.

LIMITATIONS OF PLANNING FOR OIL AND GAS

Unrealistic expectations have been built around the ability of the land use planning process to resolve all of the conflicts among uses of the federal lands. This is evident for oil and gas development as one of the uses. Such development has proceeded, and presumably will proceed, on a schedule that is not controlled by the planning cycle.

The committee has noted elsewhere that the length of time from planning to drilling can pose problems (see Figure 1.2, p. 12). The land use planning cycle is 10 to 15 years. When combined with lease terms of 5 and 10 years, there can be as much as 30 to 35 years between the time a plan is drafted and a well field is developed; this time lag is exacerbated when implementation of plans is delayed.

The land use planning now being done by the Forest Service and the BLM has significantly improved the allocation of lands among competing uses. It has also helped in directing the use of environmental quality controls for oil and gas development on federal lands. Nevertheless, there are limitations to the planning process and in the information that is available for planning decisions. Some of them are noted in the following sections.

Economic Analysis in the Planning Process

Economic analysis is used in the planning process, especially in the preparation of Forest Service plans. As noted earlier, the Forest Service uses an economic optimization model, FORPLAN, to describe some of the effects of alternatives. Economics is used as only one of the criteria considered in planning, which is consistent with the statutory concept of multiple use in the Multiple Use-Sustained Yield Act and FLPMA that decisions are not to be made solely on the basis of dollar values. The economic analyses are typically used in the public involvement process to describe one kind of impact of allocating lands to alternative uses.

The economic analyses in plans that the committee reviewed help explain the relative values that are being compared in the planning process. But caution is needed with the numbers that are used, as shown in the draft EIS for the Bridger-Teton Forest plan. The draft EIS shows the estimated annual value (in 1982 dollars) of the benefits from each of the major resource uses of the Bridger-Teton for each of five decades in the plan projection. In Table 5.1 the economic calculations for a typical alternative show estimates of the present net value of the sum of both estimated market

TABLE 5.1 Estimated Annual Value of Resource Benefits on the Bridger-Teton National Forest (thousands of 1982 dollars)

	Decade				
	1	2	3	4	5
Recreation	9,398	9,793	10,210	10,496	10,795
Wilderness	3,910	3,910	3,910	3,910	3,910
Wildlife/fish	4,940	4,896	4,827	4,948	5,029
Range	1,675	1,683	1,691	1,700	1,708
Timber	4,257	4,295	5,153	4,456	4,388
Water	73	135	118	148	172
Minerals	28,095	28,095	28,095	28,095	28,095

SOURCE: Forest Service (1989a).

and "assigned" (nonmarket) value (Forest Service, 1989a, EIS, App. B, Sec. 6-126).

The relationship between estimated mineral values and other resource values was much the same for each of the other alternatives in the Bridger-Teton plan. The table shows that mineral values, mainly from oil and gas, estimated by the Forest Service are much higher than the estimated values of any of the other uses of this forest.

Care must be exercised, however, in interpreting these figures. The estimated mineral values in the Bridger-Teton plan are based on statewide averages for *leased* oil and gas lands in Wyoming for the 10 years prior to the draft plan. These were $13.00 per acre for royalties ($108.68 for producing land), $1.25 for rentals, and $10.00 for bonus payments (based on 1988 results), for a total of about $24.00 per acre for leased land. Such averages can only give some sense of relative aggregated values of alternative land allocations. Oil and gas, if they are available in producible quantities on the Bridger-Teton, will generally have higher dollar values than the surface resources and uses with which they compete. The present values of the expected stream of future rentals and royalties plus the values of bonus payments from competitive leasing clearly exceed the present value of timber sales or grazing receipts, as well as dollar values that are assigned to recreation.

However, oil and gas values will not necessarily be higher than those of other resources in all cases where they compete on the forest. Prospective

oil and gas values vary widely from place to place, just as the values of surface resources vary widely. Area-specific comparisons between oil and gas and competing uses must be based on the values that are relevant to each area.

Another difficulty in using expected oil and gas values is evident in the Bridger-Teton analysis. It shows a constant level of revenues from oil and gas for each of the next five decades. Inasmuch as oil and gas leasing on the forest has been halted until the land use plan is completed and leases typically are not drilled for some years after they are let, it is unlikely that full production will occur during the first two decades of the projection period. For economic comparisons based on future values that are discounted to the present, as in the FORPLAN model, timing of the projected income stream is important. The further in the future income is projected to occur, the less impact it has on present value calculations. Thus, comparisons can be skewed by the timing of projected production.

Results of the economic analysis in the Lewis and Clark Forest plan are quite different. Timber values used in the plan far exceed those for oil and gas. The estimated present net value of timber in the Forest Service's "preferred" alternative is $215,770,000, while that for oil and gas development is $850,000 (Forest Service, 1984, p. 2-111). The only projected oil and gas revenues in the Lewis and Clark Forest plan are for annual rentals on leases. In other words, this plan projects no bonuses from the sale of leases or royalties from oil and gas production. This seems as unlikely as the assumption in the Bridger-Teton Forest plan that substantial additional production will occur in the next decade.

Role of Values in Planning for Oil and Gas Development

Most of the conflicts over oil and gas leasing and development involve disagreements over the value to be assigned to alternative land uses between parties who assign different values to land. Land, including the animals, plants, and other objects attached to it, takes on importance to people because of the satisfaction it provides. Land may be important because it is a tradable commodity, or it may be valued as an unaltered state of nature.

A distinction is often made between commodity and noncommodity values on the federal lands. Both categories have ambiguities. For example, opportunities for recreation are sometimes bought and sold in ordinary market transactions, but in other cases, recreation is a free good (a noncommodity). Some uses of the federal lands have largely symbolic importance; for example, the significance of federal land uses to people's or communities' life-styles.

It seems clear, and the agencies have recognized, that the kinds of evaluations made with formal models, such as FORPLAN, have to be

supplemented with other ways of weighing noncommodity and commodity values. Public participation is a critical part of the planning process because of the role it plays in such comparisons.

Information and Planning

While the lack of information on oil and gas resources at the planning stage is a serious problem, there is also a lack of reliable information on other resources and uses of the federal lands. How to measure noncommodity uses and values and weigh them against competing commodity uses limits the usefulness of formal planning models. Nevertheless, other kinds of information are also frequently lacking. How oil and gas development affects wildlife behavior is especially important.

Behavior of some species of wildlife in the wild generally appears to be well understood and documented. Not as well understood is how different wildlife species react to people's activities, such as those associated with oil and gas exploration and development. The committee was told, for example, that research shows that mountain goats suffer more stress, which affects reproduction, than other large wildlife species from the activities associated with exploration. But it was not clear over what period and space the goats would be affected or how these effects could be minimized. On the other hand, the committee was also told that some species are adaptable and seem to be little affected by either exploration or development. Planning in relation to wildlife is complicated by the range of activities that are associated with both exploration and development, from the use of explosives and helicopters during seismic exploration to heavy equipment and road traffic during exploratory well drilling and subsequent development.

Mitigating measures, such as avoiding exploration or development in specified areas during certain times of the year, are apparently effective to a degree. But it also is clear that information on wildlife behavior in relation to people's activities cannot be extrapolated from one wildlife species to another. Some skepticism about the kinds of wildlife information used in planning oil and gas exploration and development is warranted.

Estimated dollar values for noncommodity resources that have no regularly assigned market values can be misleading. As noted in the discussion of the Bridger-Teton Forest plan, the way in which average values are used in planning for commodity resources, such as oil and gas, timber, and grazing, is questionable. The characterizations of aesthetic resources and how they are affected by development are generally vague. This is not to say that the analyses that are part of the planning process are not worthwhile, but the information used in the planning process is often not adequate for planning decisions, which puts much of the burden

for evaluating possible effects of oil and gas development on the public involvement process. In view of the large size of BLM and Forest Service planning units, the detail in the plans is surprisingly good. Restrictions are usually identified in the plans for fairly specific units of land. Plans show stipulations generally in three categories—standard, special (which typically includes timing restrictions), and no surface occupancy. The lack of information on oil and gas potentials during the current round of planning will be corrected in part during the next round of planning. As leasing and exploration proceed, the next generation of plans can be based on new exploration data. The number of truly frontier exploration areas on the federal lands will inevitably diminish.

While the amount of information that is assembled during planning is impressive, the way information is stored and used, especially after plans are completed, appears often to lack purpose. Information on at least some Forest Service planning units is being organized in a Geographic Information System (GIS) using computers for information storage and retrieval. This approach could be used on all planning units.

Land Use Plans and Environmental Reviews

The planning process is driven not only by BLM and Forest Service planning statutes, but also by the requirements of NEPA, the Endangered Species Act of 1973 (16 USC 1531-1543), and other federal laws. Thus, land use plans have to be read in the context of the other analyses to which they are "tiered" and that are subsumed under them. While this is not necessarily a problem for the careful reader, the complexity of the planning process sometimes poses problems for the public and even for the specialist.

Oil and gas exploration and development is a serious issue in those areas that the committee visited and for which it reviewed plans. The seriousness of this issue, however, is not readily apparent in the barrage of paper included with the plans. Oil and gas development is an important issue in the Bridger-Teton Forest, for example, but the sheer bulk of the single-spaced, 1,628-page plan and environmental impact statement obscures its role and importance on this unit of federal lands. The many requirements placed on the agencies in preparing land use plans, as well as the tendency to focus on timber, grazing, and other surface resource issues, often obscure important oil and gas exploration and development issues.

The scenarios used to describe reasonably foreseeable oil and gas development in the West HiLine (BLM) and Bridger-Teton (Forest Service) plans are useful in relating possible effects on surface resources and their uses. The approaches are somewhat different in the two plans, but both achieve the goal of shedding light on the possible environmental impacts of

oil and gas development. The Bridger-Teton plan is more detailed and site-specific than the West HiLine plan, but that may be appropriate in view of the intensity of the conflicts among possible land uses on the Bridger-Teton National Forest.

Language in the version of the Reform Act that passed the House of Representatives (House of Representatives, 1987, 100th Congress, H.R. 2851) would have required new or amended plans to identify potential areas of oil and gas development; analyze the social, economic, and environmental consequences of oil and gas development; and identify specific protective stipulations and the areas where they would be applied. The Bridger-Teton plan does all of this, perhaps in greater detail than any other plan for federal lands. It is more specific about potential areas for oil and gas development than other plans that the committee reviewed. All of the plans reviewed by the committee contained analyses of the social, economic, and environmental consequences of oil and gas development, although, as described earlier, the analyses were typically limited by the lack of site-specific information on possible oil and gas exploration and development. These plans also identified protective stipulations that would be used and where they would be applied.

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6

Oil and Gas Leasing and Management Procedures

Basically, a successful oil and gas exploration and development program consists of a series of operations and decisions, including the following:

- Identification of an exploration target
- Land acquisition (lease)
- Approval of an Application for Permit to Drill (APD)
- Exploration drilling
- Well completion (for production)
- Additional APD approvals for development wells
- Full field development and production
- Cessation of economic production, well plugging, and reclamation

This entire process generally occurs over a 20-to 40-year period, depending on the size of the field. While the process is predictable, the location and impacts of resource production are not, at lease at the early stages of exploration and development.

OVERVIEW

Onshore federal oil and gas leases are made available for exploration and development by means of a legal contract called a lease.[1] The terms

[1] Seismic and other geophysical investigation, but not drilling, can generally take place on federal lands open to oil and gas leasing without a lease. A Notice of Intent is required by the BLM, except in Alaska, where a permit is required. The Forest Service requires a permit. Some states require permits or otherwise regulate seismic surveys.

and process for issuing leases are set out in statute. Each lease contains a number of standard terms and conditions (Appendix C) and may also contain special stipulations. Moreover, the Department of the Interior periodically issues Onshore Oil and Gas Orders and Notices to Lessees (NTLs) that also may restrict how lease operations are conducted. In addition to the APD review conducted by the BLM, a state may regulate operations on the lease through its own statutes and rules, including a separate review of the APD. Each of these conditions, whether in the statute, regulations, or the lease, defines or limits the property rights conveyed in the lease.

Issuance of the lease does not, by itself, authorize on-the-ground activities. No drilling can take place under a lease except upon the BLM's approval of an APD (43 CFR 3162.3-1). Nevertheless, it is generally assumed that the issuance of a lease conveys to the lessee some legitimate expectation amounting to a legal right to drill for, and extract mineral from, that leasehold, unless applicable law or the terms of the lease itself would prevent it. For example, a lease term may obligate the lessee not to violate the Endangered Species Act (16 USC 1531 et seq.) in carrying out activities under the lease. If it were subsequently determined that *any* surface activity on the lease would jeopardize an endangered species, then the lessee has no legal right to occupy the lease surface to drill that lease, nor presumably can the lessee demand compensation for its investment in the lease. Probably the same result would be reached whether or not the lease contained a specific term obligating the lessee to comply with the Endangered Species Act, because the standard lease form obligates the lessee to comply with all federal laws, of which the Endangered Species Act is one.

Under current practices, even a condition in a lease that generally would allow the government to deny permission to occupy the surface in order to drill on that lease can be waived by the federal land management agency. The no-surface-occupancy stipulation, for example, does not absolutely and forever bar the lessee from occupying that part of the land surface identified in the stipulation. Rather, it says that there can be no occupancy without further express permission of the land management agency.

However, the agency may be forbidden or restricted by statute or regulation from waiving certain stipulations. For example, the agency could not waive a stipulation protecting endangered species because of the Endangered Species Act. Further, as some federal courts have pointed out, an agency's proposal to waive a stipulation may result in significant environmental impact triggering NEPA's EIS requirement (e.g., *Conner* v. *Burford*, 848 F.2d 1441 at 1447-1448).

Unless the leases have been unitized, the location of the proposed well, as delineated in the APD, is dictated by drilling and spacing orders of a state oil and gas conservation commission.[2] An APD on a federal lease is usually approved by the BLM and the state with conditions that are binding on the operator. These are aimed both at ensuring that the drilling comports with sound engineering practice and at protecting the environment through reclamation of the drill site and plugging of the well bore.

If oil or gas production in paying quantities is discovered, then the well is completed in accordance with an approved procedure. In addition to federal review and approval, further plans for development of a well or field, including unitization and enhanced or secondary recovery, also require state as well as BLM approval.

OIL AND GAS LEASE ISSUANCE

Current Oil and Gas Leasing Procedures for BLM and Forest Service Lands

Under the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (101 Stat. 1330-256), the BLM has established an orderly, well-defined oil and gas leasing process. Prior to passage of the Reform Act, the acreage of leases offered noncompetitively (both by lottery and over-the-counter) far exceeded competitive lease acreage (Figure 6.1). The predominance of noncompetitive leases reflected the speculative nature of the resource and the lower front-end acquisition costs, as well as the specific process of leasing. Reform Act provisions were implemented in mid-fiscal year 1988 that required competitive offering of all parcels prior to any consideration for noncompetitive leasing. As a result, while total acreage under lease declined slightly, the acreage leased competitively increased significantly. As of the first half of 1989, 21 percent of the leases offered received bids during the competitive lease phase (*Rocky Mountain Reporter*, 1989).

While the range varies significantly from state to state, on the average, one-fourth of the leases and one-fifth of the acreage under lease are held by oil and gas production (see Figure 2.1, p. 20). The ratio of leases is slightly higher in both Montana and Wyoming (1:5) and in Utah (1:6), and lower in New Mexico and Colorado (1:2).

[2] Unitization is a process of combining a group of leases under a single operating agreement that identifies the operator, how expenses and revenues will be shared, and how the unit will be operated. The spacing of wells within a unit is determined by the unit operating agreement, not by state drilling and spacing rules.

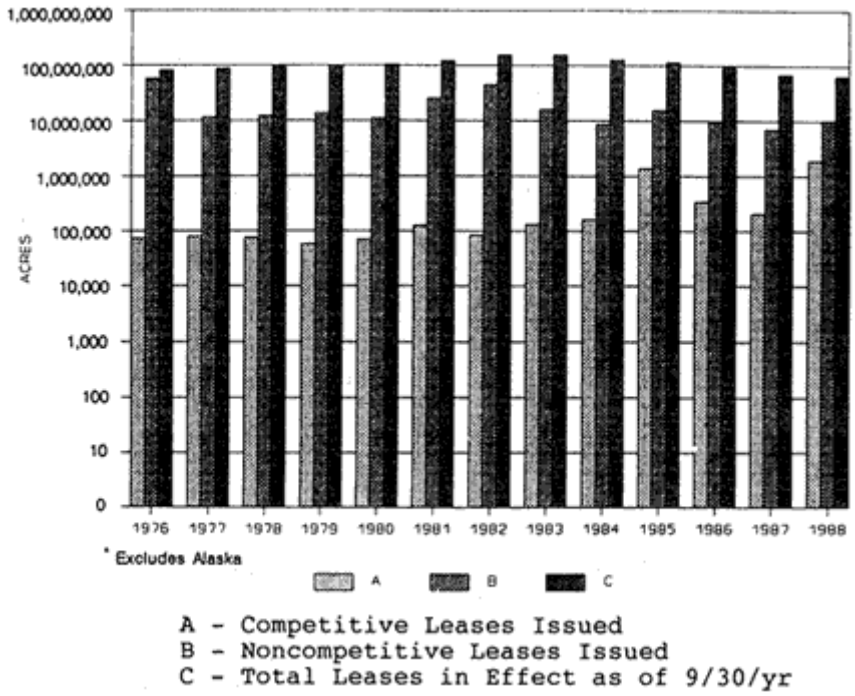

Figure 6.1
Competitive and noncompetitive oil and gas leasing on federal lands, onshore continental United States, Fiscal Years 1976-1988.
Source: Bureau of Land Management (1977-1989).

The current oil and gas leasing system for BLM and Forest Service lands is derived from the Mineral Leasing Act of 1920 (30 USC 181-287), the Mineral Leasing Act for Acquired Lands of 1947 (30 USC 351-359), the Federal Land Planning and Management Act of 1976 (43 USC 1701-1782), the National Forest Management Act of 1976 (16 USC 1600-1614), the National Environmental Policy Act of 1970 (42 USC 4321-4370), and the Reform Act. Important components of the system include the following requirements:

1. All leases will be offered competitively by oral bid, with a minimum bid of $2.00 per acre.
2. Lease sales will be held at least quarterly.
3. Tracts not leased by competitive bidding will be offered within 30 days noncompetitively, at the minimum royalty rate.
4. Parcels offered for lease may not exceed 2,560 acres for competitive leases or 10,240 acres for noncompetitive leases, outside Alaska.
5. Competitive leases carry a 5-year primary term, while noncompetitive leases retain a 10-year primary term.

6. Tracts not leased noncompetitively within 2 years are again offered competitively.
7. Notices of lease offerings and maps showing parcels proposed for leasing must be posted 45 days prior to sale.
8. The royalty (for all leases) is 12.5 percent. Rentals are $1.50 per acre for the first 1-5 years, and $2.00 per acre for all additional years.
9. Leases on Forest Service land will not be issued over the objection of the Secretary of Agriculture.
10. An APD, including a map of the lease area, must be posted for 30 days prior to approval.
11. The Secretary of the Interior and, for National Forest lands, the Secretary of Agriculture, will regulate all surface-disturbing activities to protect surface resources, and no APD will be approved "without the analysis and approval by the Secretary concerned of a plan of operations.
12. No leases may be issued on federal lands that are

- recommended for wilderness designation by the surface managing agency,
- BLM wilderness study areas,
- designated by Congress for wilderness study (unless Congress has otherwise provided), or
- allocated for wilderness further planning in Executive Communication 1504, 96th Congress, with some exceptions.

The BLM adopted final regulations to implement changes in the leasing system under the Reform Act in June 1988. The final regulations reflected evaluation of a series of test sales, including variations in scheduling of sales, postcompetitive lease offering, and related options. The leasing procedure ultimately implemented by the BLM is delineated in Figure 6.2.

Under the Reform Act there have been one or more competitive lease sales in every state with a significant federal land base (see Table 2.4, p. 30). Furthermore, noncompetitive sales have proceeded on leases "left over" from competitive sales (Table 6.1). The BLM procedure for conducting lease sales appears to be effective. The General Accounting Office (1989), in its recent review of the newly implemented leasing procedures, confirmed the increased percentage of competitive leases and the increased revenues from competitive leasing.

While the Reform Act did not contain any statutory changes in land use planning procedures relative to oil and gas leasing, the Forest Service and the BLM recognized the need to revise their administrative procedures and regulations under existing law. Using the Supplemental Program Guidance, the BLM has continued to offer BLM tracts for leasing. It has, however, determined that some of its previously completed plans need to be revised. Some tracts that BLM has offered for lease have been challenged for

Figure 6.2
Federal oil and gas leasing process, post-Reform Act.
Source: Courtesy of Bureau of Land Management.

alleged lack of NEPA compliance, but numerous tracts have been leased without challenge.

The committee spent some time examining the process of issuing leases and administering them once issued. It appears that the Reform Act requirements for public notice (30 USC 226(f)) are being only minimally

TABLE 6.1 Noncompetitive Leasing by Year and Lease Category, Bureau of Land Management

				Average Filing Fee Revenues Per	
Fiscal Year	Parcels	Acres	Filing Fee Revenues	Parcel	Acre
FY 1988					
Pre-Reform Act					
SIMO	3,992	5,713,254	$ 6,573,000	$1,647	$1.15
Applications	204	1,493,869	15,300	75	0.01
Post-Reform Act					
Applications	1,875	2,333,802	758,550	405	0.33
FY 1988 Total	6,071	9,450,925	$ 7,346,850	$1,210	$0.77
FY 1987					
SIMO	5,789	6,088,942	$16,619,000	$2,871	2.73
Applications	576	1,126,273	43,000	75	0.04
FY 1987 Total	6,365	7,215,215	$16,662,000	$2,618	$2.31

Note: Leasing in FY 1988 that occurred prior to enactment of the Reform Act under the application system included 204 parcels containing 1,493,869 acres. Leasing under SIMO in FY 1988 (pre-Reform Act) included 3,992 parcels containing 5,713,254 acres. For FY 1987, 5,789 parcels containing 6,088,942 acres were leased via SIMO, while 576 parcels containing 1,126,273 acres were leased via the application process. At the end of FY 1988, 75,823 leases (covering 67.3 million acres) that had been issued under noncompetitive procedures were in effect.

SOURCE: Bureau of Land Management (1989).

implemented in some cases. While this information is made available, the committee heard complaints from some members of the public as well as from state agencies that the information was not in a form that was readily usable. (The sale notices typically identify offered tracts only by legal description, requiring considerable deciphering.) The committee was also informed that listings and maps of tracts being offered for lease are sometimes not available at the regional or local BLM and Forest Service offices, or are not made available in a form that is usable by the public.

Congress dealt with these issues to some extent in the Reform Act. It requires the Secretary of the Interior to "provide notice by posting" in the appropriate local office of the leasing and land management agencies "at least 45 days before offering lands for lease, and at least 30 days before approving an APD" or "substantially modifying the terms of any lease." The notice must include "the terms or modified lease terms and maps or a narrative description of the affected lands." Where maps are impracticable in the notice, they should be available for public review and "shall show the location of all tracts to be leased, and of all leases already issued in the general area" (30 USC 226(f)). While a similar requirement does not exist in statute for the Secretary of Agriculture, the proposed Forest Service regulations require notice for significant modification of stipulations.

Proposed Forest Service Oil and Gas Leasing Procedures

Prior to the Reform Act, the Forest Service established a procedure for reviewing oil and gas leasing and exploration development activities, as detailed in Figure 6.3. The Forest Service has now proposed rules by which it will implement the statutory responsibilities of the Reform Act for management of oil and gas leasing and attendant surface-disturbing activities conducted on National Forest System oil and gas leases.

A controversial feature of the Forest Service proposal requires the inclusion of the following standard stipulation in all oil and gas leases issued for National Forest System land:

> The lessee must comply with the applicable rules and regulations of the Secretary of Agriculture set forth in Title 36, Chapter II of the Code of Federal Regulations governing use and management of the National Forest System and must submit to the authorized forest officer a surface use plan of operations for approval or disapproval in accordance with CFR, Part 228(e). *The Secretary of Agriculture retains the authority under this lease to preclude all operations on a leasehold where analysis of the environment indicates such action is appropriate.* [Emphasized portion is new.]

The potential impacts of this stipulation are discussed in more detail below under "Forest Service Proposed Stipulation."

The proposed Forest Service regulations generally require public "notice in a newspaper of general circulation" for any "decision to modify or

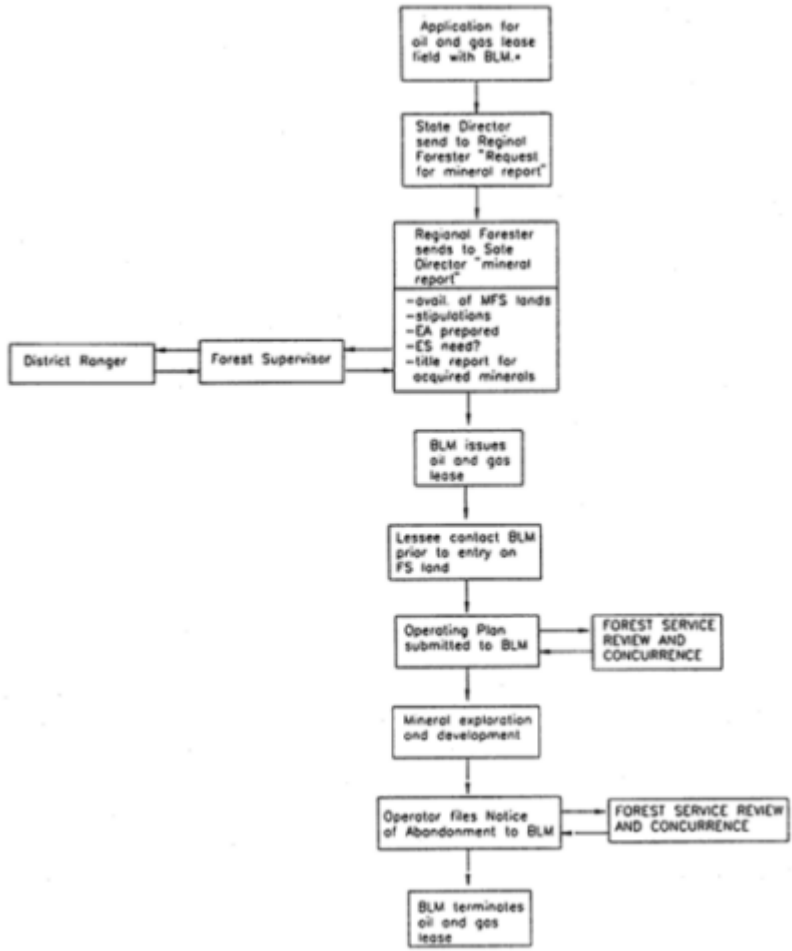

Figure 6.3
Administration of federal oil and gas leases on national forest system lands.
Source: Courtesy of Forest Service.

waive a lease stipulation that would result in a substantial modification of a lease term" (CFR 228.104(c)(2)). The regulations also provide that Forest Service review of lessee's request for modification or waiver of a lease stipulation is subject to NEPA (see CFR 228.104(b)(1)), which could provide an additional opportunity, for public comment. The courts have counseled

that at least important lease stipulations "cannot be freely altered without an EIS" (see *Conner* v. *Burford*, 848 F.2d 1441 at 1447-1448 [9th Cir. 1987]).

LEASE STIPULATIONS

Stipulations, attached to the lease at the time of the lease sale, are used to prevent or mitigate impacts of oil and gas exploration and development on other resource values. These stipulations enable the surface management agencies to accommodate uncertainties in predicting and assessing environmental and other impacts at the planning stage. Since there may be as much as 15 years between plan approval and lease issuance (see Figure 1.2, p. 12), up-to-date data bases on resources are essential if stipulations are to be effective. The surface management agency should maintain the data base and ensure that the plan and the decisions to lease, with or without special stipulations, accurately reflect the current data.

The committee heard considerable discussion concerning the impact of seismic exploration and drilling on threatened and endangered species, primarily grizzly bear, and big game, particularly elk. This type of surface land use information should be shared among state and federal agencies, environmental groups, industry, and public during the land use planning process. Furthermore, even after the plan is approved, wildlife data bases should be maintained and updated. Comments suggest that information is not being shared and, in fact, may be intentionally withheld in some cases.

In addition to standard lease stipulations, terms, and conditions, special stipulations may control the timing of oil and gas activities, occupancy of the surface, use of the surface, and contingent rights to conduct any or all activities. While the wording of standard lease stipulations is established in the lease, the wording of other stipulations has varied. The Rocky Mountain Regional Coordinating Committee (1989), comprised of BLM and Forest Service representatives, has recommended standard wording and classification of stipulations.

Standard Stipulations or Terms of the Lease

The Offer to Lease and Lease for Oil and Gas (Appendix C) contain the standard terms and conditions for all federal oil and gas leases. As noted, the lease states:

> Rights granted are subject to applicable laws, the terms, conditions, and attached stipulations to this lease, the Secretary of the Interior's regulations and formal orders in effect as of lease issuance, and to regulations and formal orders hereafter promulgated when not inconsistent with lease rights granted or specific provisions of this lease.

Drilling is prohibited on any oil and gas lease until the BLM reviews

and approves an APD. While these generic requirements make drilling on all leases contingent upon securing governmental approval of the APD, it is generally thought that on leases with standard stipulations the government must approve an APD where drilling will not violate specific environmental laws, such as the Clean Water Act or the Endangered Species Act. That is, it is generally believed that the lessee has some right to drill a lease with standard stipulations.

In addition, the state oil and gas regulatory agency will frequently add operation-specific stipulations through its review and approval of the APD or development plan. These state-imposed requirements generally address environmental or conservation issues that are site specific and are not therefore considered at the lease stage.

Timing Limitation (Seasonal) Stipulation

One of the more common special stipulations limits the range or duration of time during which oil and gas exploration and development can be conducted on the lease. This stipulation is primarily designed to protect certain wildlife values, such as use of critical winter range, rutting and/or calving periods, eagle nesting, and similar activities that could be impaired by oil and gas operations, principally exploration. This stipulation might also limit activities near campgrounds or other seasonal recreation use areas, although it has not been widely used in that context. There is judicial authority for the idea that a stipulation forbidding lease activity to certain seasons, at least if not part of the original lease but instead attached as a condition to approval of an application for permit to drill, extends the lease term by an amount of time equivalent to the period of enforced inactivity (*Copper Valley Machine Works* v. *Andrus*, 653 F. 2d 595 [D.D. Cir. 1981]).

The stipulation may be location-specific or leasewide, depending on the impacts and duration of the time limitation. Under current regulation, a waiver or modification may be granted if conditions can be proven to have changed or if impacts are acceptable.

Controlled Surface Use Stipulation

The controlled surface use stipulation does not prohibit surface use for oil and gas exploration and development, but does strictly control how activities will be conducted. According to the Rocky Mountain Regional Coordinating Committee guidance (1989), a controlled surface use stipulation is designed to restrict or control a specific type of activity, not all activities. An example given is the restriction of access to the established

roadway (i.e., no new access roads may be constructed). This stipulation can also be waived or modified unless otherwise prohibited.

No-Surface-Occupancy Stipulations

No-surface-occupancy stipulations prohibit occupancy of all or part of the leased surface without express approval of the agency. Whereas a timing limitation prohibits access to an area for a specific period of time, a no-surface-occupancy stipulation limits surface use at all times. Leases with this stipulation convey a right to explore and develop if it can be done without occupying that part of the leased surface subject to the stipulation (e.g., by directional drilling).

The shape and size of areas subject to a no-surface-occupancy stipulation may be such that much of the area under the stipulation could be directionally drilled. This appeared to be the case on the Lewis and Clark National Forest, for example, where no-surface-occupancy stipulations were applied to slopes greater than 40 percent. Such slopes generally were alongside long valleys where drilling would be permitted. Thus, much of the area could apparently be drilled from adjacent lands.

However, the federal agencies have apparently sometimes used no-surface-occupancy stipulations in a blanket fashion, covering the entire surface of several lease tracts in an area. If the blanket use of this stipulation means there is no practical possibility that a lease can be developed by directional drilling (because neighboring leaseholds are also covered by stipulated leases or otherwise unavailable for occupancy), the stipulation is being used to reserve a contingent right. For example, in the Palisades area of the Targhee National Forest Management Plan (Forest Service, 1985), approximately 80 percent of the leased acreage (219,000 of 247,000 acres) was covered by no-surface-occupancy stipulations. That is, stipulations were attached to all leases in areas the Forest Service had defined as "highly environmentally sensitive," which included lands necessary for the protection of threatened and endangered species, lands with slopes greater than 40 percent, lands with regionally unique plant or animal species, and lands with significant cultural resources (see *Sierra Club* v. *Peterson*, 717 F. 2d 1409, 1411, note 3, 1412 [D.C. Cir. 1983]). In *Conner* v. *Burford*, the government issued some 709 leases covering 1.35 million acres: 57 leases had no-surface-occupancy stipulations covering the entire lease, and about 500 leases had no-surface-occupancy stipulations covering a portion of each lease's acreage (848 F. 2d 1441, 1447 [9th Cir. 1988]). In the Deep Creek Plan on the Lewis and Clark National Forest, 75 percent of the 42,000 acres leased was covered by a no-surface-occupancy stipulation (*Bob Marshall Alliance* v. *Watt*, 658 F. Supp. 1514, 1518 [D. Mont. 1986]).

Contingent Right Stipulation

Through the use of contingent rights stipulations, the government reserves the right to say no to any activity on the lease whether it be exploration or development. Disapproval of any activity may result in the lease never being drilled before it expires, but no compensation is owed to the lessee because the government had expressly reserved this right at the outset.

The term came into general use in 1982 when the Department of the Interior approved the use of a contingent rights stipulation on noncompetitive oil and gas leases and the Forest Service, on April 22, 1982, announced the test of a contingent rights stipulation to be included in geothermal and noncompetitive oil and gas leases (see 47 Fed. Reg. 82 [April 28, 1982]).

The stipulation proposed for the test included the following language: "All operations on this lease are subject to Government approval with such site specific stipulations as may be necessary to assure reasonable protection of or mitigation of effects on other values. A plan of operation shall not be approved if it results in unacceptable impact on other resources, land uses, and/or the environment . . .".

This test was based on the premise that adequate NEPA analysis could not be conducted and proper stipulations could not be determined without some site-specific information on the nature of the exploration and development that would ultimately occur on the leasehold. Such a process clearly required the ability to stop exploration or development if it caused unacceptable environmental impact. Otherwise, neither NEPA compliance nor protection of the public interest could be assured. By concentrating the analysis of potential impacts on a specific exploration or development proposal, use of the proposed stipulations avoided having the Forest Service spend large sums of money on analyses of exploration and development that both were speculative and had a low probability of ever happening.

The courts have never squarely decided whether such a stipulation is within the broad powers over lease terms delegated to the federal agencies by the Mineral Leasing Act. A number of different courts have, however, necessarily assumed the validity of such a stipulation, in holding that its inclusion allows the agency to postpone full-fledged compliance with NEPA in issuing oil and gas leases (e.g., see *Sierra Club* v. *Peterson* and *Conner* v. *Burford* discussed in Chapter 4, pp. 46 ff.) Legislation dealing both with oil and gas on the Outer Continental Shelf and with geothermal resources onshore contains explicit provisions making lease rights leases contingent upon agency approval of development proposals. The Outer Continental Shelf Lands Act (OCSLA) of 1982 (43 USC 1331-1356) provides specific procedures for reimbursing a lessee who is not allowed to proceed with development.

Outer Continental Shelf leases and to some extent geothermal leases are also contingent right leases in that development depends on the approval of development proposals. The OCSLA provides specific procedures for reimbursing a lessee who is not allowed to proceed to development.

Forest Service Proposed Stipulation

The Forest Service regulations to implement the 1987 Reform Act contained a proposed provision that some have called a contingent right stipulation. The 1987 Reform Act strengthened the authority of the Forest Service by giving it the right to disapprove leasing on National Forest land (30 USC 226 (h)). The Forest Service already had such authority over acquired land. The Reform Act also provided that the responsible federal agencies "shall regulate all surface disturbing activities conducted (under leases) and shall determine reclamation or other actions as required in the interest of conservation of surface resources" (30 USC 226(g)). This section also provided that no permit to drill shall be "granted without analysis and approval by the Secretary concerned (either Interior or Agriculture) of a plan of operation covering proposed surface disturbing activities within the lease area." The requirement for approval presumably includes the right to disapprove a proposed plan if the agency determines an unacceptable impact will result. The 1987 Reform Act is, thus, susceptible to the interpretation that it makes *every* onshore oil and gas lease contingent upon additional approval or potential disapproval by the agency if the agency determines that the impact is unacceptable.

Because the Reform Act requires the federal agencies to approve surface operations on their leases, the Department of Agriculture apparently takes the position that the act *requires*, in effect, that all oil and gas leases on National Forest lands are contingent upon subsequent approval by the Forest Service of the environmental acceptability of plans of operations on the leases (see section 228.106 of the proposed regulations). Presumably this means that if approval is denied, the lessee can neither develop the lease nor obtain compensation for the loss of opportunity to develop. This position has not been tested in the courts to date, and the industry has vigorously challenged it in comments to the agency.

Apart from questions of its legality, this stipulation appears to be based upon three considerations. First, it enables the Forest Service to comply with the Reform Act, which requires the federal agencies to analyze and approve a plan of operations before allowing any lease to be drilled (30 USC 226(g)). That is, it reserves authority to the agency to deny approval if the environmental impacts are unacceptable.

Second, the stipulation addresses the situation in which, before an area is leased, it is not feasible to determine all of the potential environmental

impacts that might occur on the lease. Therefore, it reserves the authority of the Secretary of Agriculture to prevent activities that cause clearly unacceptable environmental impact.

Third, it would allow staged or segmented environmental analysis of oil and gas leasing activities by specifically reserving the right to say no to an activity. This would appear to satisfy court decisions like *Conner* v. *Burford* where the court held that unless the ability to prohibit an unacceptable environmental impact is retained, the agency must prepare full NEPA documentation, including analysis of full field development, prior to issuance of a lease.

The stipulation provides two public benefits. First, it enables the agency to retain the authority to prevent environmentally unacceptable impacts from oil and gas development. One of the fears repeatedly expressed to this committee was that a lease allows developmental impacts that may be clearly unacceptable. This fear rests both on the idea that the lease conveys some form of legal property right to develop and on the idea that the act of leasing establishes a momentum toward development that cannot be stopped, even if development is substantially different and causes more serious impact than that envisioned when the lease was issued. The fear is particularly strong in roadless and other environmentally sensitive areas, where not much is known about the potential oil and gas resource or the nature of the probable exploration and development activities.

Second, the use of this stipulation simplifies NEPA documentation and makes it much less costly. It allows the agency to concentrate on a realistic analysis of the exploration and probable development on the lease, without engaging in speculation about possible full field development scenarios at a stage when very little is known about the area. It also could reduce the tendency to "boilerplate" the lease with stipulations to cover every conceivable condition that might be encountered.

Apart from possible questions about legal authority to employ this kind of contingent rights stipulation, there are two concerns about it. First, there could be a reluctance to bid on leases with such clauses, and the amount of the bid could be reduced to reflect uncertainty. Second, with such a clause in the lease, the agency might be reluctant to say no to proposed leases in areas where the agency believes that development would likely result in unacceptable impact. The clause might, in other words, be seen as an easy way to put off decisions about unsuitability, even in areas likely to be unsuitable.

General Concerns Regarding Stipulations

The committee is concerned about two allegations regarding stipulations. First, restrictions and stipulations recommended in land use plans

are not always specified in the leases themselves. Furthermore, the state and federal agencies, industry, and the public may fail to share data with each other, particularly concerning wildlife and geologic prospects. Industry considers its geologic data proprietary and may be reluctant to share them with the agency planners.

Second, the process for rescinding, modifying, or suspending lease stipulations is poorly defined and actions are not well documented or justified. The committee heard complaints that this process was often a very informal one, without public notice or much environmental assessment. The question is of considerable concern because of the agencies' apparent tendency to "load up" leases with stipulations rather than make what might be controversial or difficult decisions about oil and gas development at the planning or lease issuance stage. For instance, no-surface-occupancy stipulations may be used to delay rather than confirm a planning decision. Further, such stipulations may be removed administratively at the APD approval stage without public hearing.

ANTICIPATING EXPLORATION AND DEVELOPMENT

An exploration program is designed to target an area where oil and/or gas may have been trapped. The resource is then tested to determine if it is present in "paying quantities." The expenditure of exploration time and money is predicated on the right to develop, transport, and sell the resource. While the goals seem simplistic, full field development is dependent on a variety of exploration and production scenarios. Unless there is previous exploration or development in an area, it is virtually impossible to accurately forecast a specific exploration and development scenario at the planning or leasing stage.

At the planning and leasing stages, the potential types of oil and gas drilling targets may be defined. However, the criteria that determine the actual size and type of drilling operation (i.e., depth, specific geology, and type of well) will be determined only at the APD stage.

Some impacts of exploration are determined by the geology of the exploration target. For instance, the size of the exploration site and the degree of disturbance will be dependent on the projected drilling depth, the type of mud system(s), and the nature of the drilling (stratigraphic test versus borehole capable of production). However, surface impacts can be controlled or limited, often at significant cost to the operator, by requirements for self-contained mud systems, helicopter versus road access, seasonal time constraints, or requirements for directional drilling.

Likewise, full field development is predicated on the information provided during exploration and ongoing development of a field. Again, the geologic nature of the field will determine the number and location of

wells, the type of pumping or auxiliary equipment, equipment for special treatment of oil (e.g., waxy crude) or gas (e.g., sour gas), storage and transportation systems, and location and density of service roads. The impacts of full field development can be controlled, again at potentially significant cost to the operator, through requirements for multiple wells or completions from a single surface location, pipeline versus truck transport, specific site and road construction, timing of development, contemporaneous reclamation, and establishment of alternate habitat for wildlife.

EXPLORATION DRILLING AND FULL FIELD DEVELOPMENT

The BLM approved 1,772 APDs in 1988, down 53 percent from 1985 (Figure 2.3, p. 24). The purpose of an environmental review at the APD or plan of operations stage is to capture concerns that were identified at the planning and leasing stages, and ensure that they are reflected in APD stipulations.

As noted earlier, the agencies are hampered by the very nature of oil and gas resources. Unless there is a history of production in an area, neither the agency nor the industry can predict at the planning or leasing stages, the exact type and magnitude of activity necessary for exploration and development of a potential oil or gas resource. Review and approval of the APD and operations for full field development provide two opportunities for federal and state agencies to ensure, through regulations and stipulations, that the oil and gas operations will be conducted in a manner consistent with sound conservation and environmental practices. Sometimes the agencies use the APD and other decision points after issuance of leases to insert new conditions or restrictions on lease activity that did not exist in the original lease. It is not easy to determine the extent to which this actually occurs. The standard lease form reserves a degree of continuing authority in the government to regulate activity on the lease. Sometimes what might appear to be "new" restrictions imposed at the APD stage are actually just more precisely articulated restrictions that can fairly be embraced in general stipulations in the lease itself. On the other hand, the restrictions can be beyond those contemplated in the original lease, but which the lessee accepts in order to secure agency approval to proceed. As this demonstrates, there is a continuing relationship between the lessor agency and the lessee that generally requires close cooperation between the two.

The BLM is the agency responsible for review and approval or disapproval of APDs on federal lands, Indian trust lands, and federal units. On Forest Service lands, APDs are not approved over the objection of the Secretary of Agriculture, in accordance with the Reform Act. The process is initiated by either a Notice of Staking or an APD, as outlined in the flow

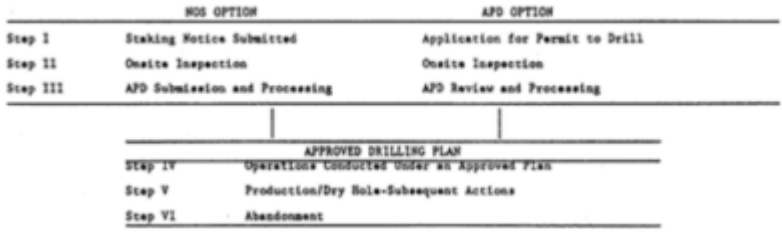

Figure 6.4
Procedures for approval of lease operations.
Source: Bureau of Land Management and Forest Service (1989).

chart (Figure 6.4). As indicated, the review process includes evaluations of the engineering of the well, proposed completion, reclamation, archeological survey, environmental impacts, wildlife impacts, and water use. The state's responsibility may include ensuring that the well location comports with drilling and spacing orders, approving use of a water source, and designating other requirements as necessary to protect the environmental value and ensure reclamation.

Drilling activities, as well as certain geophysical surveys, are monitored through BLM, and often state, inspection and enforcement. Such monitoring is done in part to ensure that the operations on the ground are consistent with permits and regulations. Evaluation of the exploration drilling results in either plugging of the well and reclamation of the site, or plans to complete the well for production and initiate further exploration or development of the lease. The generalized scenario for exploration through production to reclamation is illustrated in Figure 5.4 (see p. 64).

The term full field development is used generally to describe all surface facilities necessary to establish and maintain oil and/or gas production within the field or area of production. This might include pump jacks, tanks, pipelines, compressors, heater treaters, storage sheds, offices, hydrogen sulfide abatement equipment, roads, drilling/production pads, equipment storage areas, and vehicles. However, full field development is not automatically initiated by the first successful well. Furthermore, the size and character of the field are often not certain until a number of wells have been drilled. Most companies can and do attempt to estimate the size and character of the target field on the basis of seismic work prior to drilling the first well. However, the uncertainties of economic production and the exact requirements of the field make any planning projections expensive and speculative for both the agency and industry.

Completion of the well for production is usually based on preapproved plans in the APD. Any changes, on a well-by-well basis, are handled through Sundry Notices, which describe proposed changes in previously approved

activities. Support facilities that are not part of a well site would generally require special use permits. Pipelines are reviewed and approved through right-of-way or special use permits. All such approvals, under the Reform Act, must be secured from both the BLM and the surface management agency.

A field may be unitized in order to more efficiently produce oil and/or gas from the field, often by utilizing enhanced or secondary recovery processes. Units may include a variety of surface and subsurface land ownership. In most cases, unitization and enhanced or secondary recovery processes also require approval by a state oil and gas conservation commission. The plan is updated and reviewed on an annual basis. While the bulk of the plan addresses engineering and conservation practices, it also reflects any stipulations or reclamation requirements.

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7

Areas of the Greatest Conflict in Values

Modern controversies over oil and gas leasing on federal lands have often been associated with questions of managing areas of federal land for such purposes as wilderness designation, protection of the critical habitat of endangered species and other wildlife, and protection of large, relatively undeveloped ecosystems. Each is considered below.

THE WILDERNESS REVIEW AND DESIGNATION PROCESS

For a number of years, the BLM and the Forest Service have been reviewing the lands under their respective jurisdictions for possible congressional designation as part of the National Wilderness Preservation System (NWPS) created by the Wilderness Act of 1964 (16 USC 1131-1136). Generally only tracts of land over 5000 acres in size, without roads, and otherwise still in a relatively natural condition, qualify for wilderness designation. Thus any significant and relatively lasting disturbance, such as road building, that usually accompanies oil and gas exploration, tends to disqualify an area (although Congress can choose to overlook previous disturbances).

The decision to designate an area as wilderness is one that Congress has reserved for itself, although Congress can be significantly influenced by the recommendations of the managing federal agency. Especially in recent years, oil and gas potential has been taken into account by the Forest Service and the BLM in deciding whether to recommend that Congress designate

areas under their respective jurisdictions as wilderness. It may also be taken into account by Congress in making its decisions, and boundaries of designated wilderness areas have sometimes been drawn with oil and gas potential in mind.

However, such potential usually remains speculative in the absence of actual drilling, and this creates a dilemma. Drilling (and accompanying road building) to gain this information can alter the natural conditions enough to disqualify the area from wilderness consideration. Therefore, lack of certainty as to the presence or absence of commercial quantities of oil and gas seems practically unavoidable at the time the wilderness decision is made.

Once an area has been designated by Congress as wilderness, oil and gas leasing is, under the terms of the Wilderness Act, no longer permitted. Furthermore, the act prohibits structures or mechanized equipment in designated wilderness, except pursuant to "valid existing rights" (16 USC 1133). Such rights may be created by oil and gas leases in effect when the area is designated. With this exception, wilderness designation generally withdraws the land from oil and gas activity.

Although these restrictions apply only upon congressional designation of an area as wilderness, in recent years Congress has also placed similar limits on most lands that are under serious consideration for congressional designation as wilderness, until it decides whether a particular area deserves wilderness status. This leasing prohibition in so-called study areas was included in almost every annual appropriation act in the early 1980s and was made permanent by section 5112 of the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (101 Stat. 1330-256; 30 USC 226-3(a)).

These prohibitions on oil and gas activity have helped to make the wilderness review and designation process controversial in a number of areas. The principal reasons underlying the controversy are the size of the wilderness study tracts, the sharpness of the conflict of values between wilderness advocates and those who want to extract the mineral resources of the area, and the location of a number of these roadless lands in areas where the oil and gas industry has high interest.

The practice of Congress in recent years has been to consider wilderness designation on a statewide basis for each federal land management agency. Congress has, for example, enacted separate statutes designating certain tracts on the National Forests as wilderness in almost all of the western states. Congress is just beginning the process of considering wilderness designation, on a state-by-state basis, for lands managed by the BLM. This wilderness review for BLM lands was initiated by Congress in the Federal Land Policy and Management Act of 1976 (43 USC 1701-1782), and BLM must make its recommendations to Congress on all of its roadless areas by 1991.

Congressional "Release" of Lands Not Designated Wilderness

Even if Congress decides against designating a specific roadless area as wilderness in enacting a state wilderness bill, this often does not end the conflict between wilderness potential and oil and gas leasing. Under the practice Congress has usually followed in the past several years, specific areas not designated as wilderness are either "released" for ordinary multiple-use management by the Forest Service (and presumably by the BLM, if Congress uses the same approach to BLM wilderness study areas) or designated for "further study" of their wilderness potential and suitability for nonwilderness management goals.

The standard "release" approach used by Congress has been to include a legislative finding that the agency's previous consideration of wilderness suitability is adequate for the life of current plans. For example, in the language of the Utah Wilderness Act of 1984 (98 Stat. 1657), which is typical of 1980s legislation designating National Forest wilderness, the agency "shall not be required to review the wilderness option prior to revisions of the [current] plans, but shall review the wilderness option when the plans are revised, which revisions will ordinarily occur on a ten-year cycle, or at least every fifteen years, unless prior to such time the [agency] finds that conditions in a unit have significantly changed" (98 Stat. 1657, 1659-1660).

However, this kind of "release" does *not* constitute a congressional decision that such "released" lands *must* be leased for oil and gas (or developed to serve other commodity uses). "Release" lifts the statutory ban on oil and gas leasing in "released" roadless areas, but it only makes the land subject to multiple-use planning and decision making, which may or may not authorize oil and gas activity. The agency still has the discretion to decide not to lease the area in order to protect other values on these lands. Again, according to the Utah Wilderness Act of 1984: "[Areas] . . . not designated wilderness upon enactment of this Act shall be managed for multiple use in accordance with land management plans . . . *Provided*, That such areas *need not be managed for the purpose of protecting their suitability for wilderness designation prior to or during revision of the . . . land management plan*" (98 Stat. 1660, emphasis added).

The permissive character of this legislative approach allows the agency to decide, prior to the following planning cycle, against oil and gas leasing for any supportable reason, such as protecting wildlife habitat or the area's potential for eventual designation as wilderness. It also allows the agency to reconsider wilderness designation in subsequent planning cycles. Furthermore, the "release" of such nondesignated lands does not prevent Congress from reconsidering at any time its decision not to designate the area as wilderness.

For all of these reasons, conflicts between wilderness potential and oil and gas leasing do not end when wilderness candidate areas emerge from congressional consideration without being designated as wilderness. Wilderness advocates have often continued to oppose oil and gas leasing in these areas, in order to keep the wilderness option open, an option that would otherwise be jeopardized by oil and gas exploration and development.

"Release" and the Planning Process

To date, both the Forest Service and the BLM have conducted special, systemwide reviews of the wilderness potential of their lands, outside their ordinary planning processes. These reviews have been largely separate from the agencies' multiple-use planning processes. The Forest Service's review was in the form of successive nationwide Roadless Area Reviews and Evaluations, RARE I and II, while the BLM is carrying out one systemwide wilderness review that must be completed by 1991. These special reviews serve up the initial designation decisions, with agency recommendations, to Congress.

Congress's practice, in turn, has been to take a "first cut" at designations in statewide wilderness bills, designating some lands, calling for further study of others, and releasing the remainder for multiple-use management. Lands in this last category are henceforth addressed in the agency's ongoing planning process. The net effect of this congressional practice is to make the planning process the focal point for future wilderness evaluations. From that process will emerge decisions whether these undesignated wilderness candidate areas are to be managed in a way that retains their potential for wilderness designation or are instead made available for oil and gas leasing.

The conflicts between petroleum activity and roadless area preservation are an important part of the controversy that exists over onshore federal oil and gas leasing. Much (although not all) of the litigation over such leasing in recent years has involved areas with the potential for congressional designation as wilderness. But it is important to note that the conflict is not simply between wilderness values and production of oil and gas. Instead, the road building that usually attends exploration for oil and gas may disqualify an area from wilderness consideration.

The amount of acreage involved in the wilderness review, designation, and "release" process is substantial. When considered in the context of oil and gas leasing, however, acreage numbers alone may paint a misleading picture. Many roadless lands lack oil and gas potential, or are so remote and rugged as to make petroleum exploration, extraction and transportation uneconomic. Still, the acreage figures do provide some rough indication of the extent of the potential conflict.

The Forest Service's RARE II process, for example, reviewed about

62 million acres of potential wilderness on the National Forests and recommended that about 15 million acres be designated wilderness, 36 million acres be "released" for multiple-use management, and 11 million acres be subject to further study. The BLM has determined that about 25 million acres under its jurisdiction is roadless and has the potential for wilderness designation. Many observers expect it to recommend about 10-15 million acres for wilderness designation, with the rest "released" for multiple-use management. Congress is not bound by these agency recommendations, of course, so no firm figures on wilderness-potential acreage that might eventually be subject to the multiple-use planning process can be provided.

WILDLIFE HABITAT PROTECTION

Similar and sometimes closely related questions about ultimate management goals for certain geographic areas have also complicated the oil and gas leasing process in recent years. Efforts in some Rocky Mountain states to preserve quality habitat for big game or other terrestrial and aquatic species have frequently led to opposition to oil and gas leasing, especially for those species that are migratory and prized by hunters. In some cases, relatively small land units may be crucial habitats, either seasonally or continuously, for indigenous fauna.

Threatened and endangered species pose similar concerns, especially for those species like the grizzly bear that have relatively large critical habitats. The Endangered Species Act generally mandates full protection for species that are formally listed as threatened or endangered, but identifying the critical habitat and specifying the measures necessary for full protection are often tasks that the agencies' land and resource planning process must address.

ECOSYSTEM MANAGEMENT

Concerns are also emerging about what some call "ecosystem management," and the fact that jurisdictional and management lines do not follow ecosystem boundaries. Certain ecosystem characteristics such as wildlife and hydrology, some argue, require broader management coordination between adjacent planning units of the same agency and between adjacent lands managed by different agencies. This need occasionally leads to proposals to expand national parks (where oil and gas development is generally prohibited) to include some adjacent multiple use lands or to manage the latter in ways that provide "buffer zones" for the parks. State, tribal, and private land may often be involved as well. Here too, the planning process will usually provide the vehicle for addressing such issues of coordination

and can add complexity to the consideration of oil and gas leasing in this process.

IMPLICATIONS FOR THIS REPORT

The continuing existence of the wilderness issue, concerns about wildlife, and emerging debate over ecosystem management have some important implications for any assessment of oil and gas leasing policy in relation to planning and NEPA requirements.

- Issues like wilderness pose basic questions of values upon which the relevant agencies and the general public (nationally and in local communities most directly affected) can be deeply divided. To be sure, the planning process often addresses conflicts among values and land management goals, but wilderness in particular tends to pose conflicts of a more fundamental character, on which opportunities for compromise may be limited. Wilderness character may be prized for its own sake, in addition to serving other ends like watershed and wildlife protection, and providing some forms of recreation. On the other hand, wilderness candidate lands can often be highly sought after by petroleum explorers, because such lands are unexplored almost by definition and because in some cases seismic work has indicated the presence of geological structures favorable to petroleum occurrence.
- Wilderness protection is sometimes difficult to separate from other concerns in the planning and environmental assessment processes. A road proposed to provide access to oil and gas development may disqualify an area from further consideration as wilderness, but it may affect wildlife, water quality, and nonwilderness recreational opportunities as well. It may open the area to access by vehicles, facilitate timber harvesting, and reduce opportunities for small businesses that provide outfitting and guide services.
- These broader wilderness issues are not raised on most of the federal lands now available for oil and gas leasing. That is, despite the fact that the wilderness issue is a focal point for controversy over oil and gas leasing, it is actually a live concern on only a fraction of the federal lands available for, or now subject to, oil and gas leasing. Therefore, in the judgment of this committee, there are risks and costs in trying to design planning, environmental assessment, and oil and gas leasing processes that would operate uniformly across the country, when the nature of some of the underlying issues is region-specific. Stated another way, it would be a mistake to design and uniformly implement procedures for oil and gas planning and leasing that are aimed primarily at dealing with wilderness/oil and gas conflicts.
- More broadly, probably nothing that the agencies or the Congress can do will totally resolve the conflict and controversy over oil and gas

leasing in relation to wilderness designation. Well-documented Forest and Resource Management Plans and updated data bases enable the agencies and the public to better define areas of conflict and potentially establish workable alternatives. While Congress could make decisions, tract by tract, that roadless federal lands not designated as wilderness should be leased for oil and gas, it has not done so. Nor has Congress chosen to make "hard release" designations for wilderness study areas. Moreover, the committee believes that it is impractical and ultimately unwise for Congress to attempt to do so. As difficult as it may sometimes be for the planning process to deal with fundamental conflicts among the multiple uses, the process is a useful one characterized by openness, interdisciplinary and interagency consultation, and public participation.

The nation has made considerable progress in the last 25 years in settling the wilderness question. Most candidate tracts of federal land have already been reviewed by the BLM and the Forest Service. Many of them have already gone through the congressional designation process once, and the remainder (mostly BLM lands) will do so in the next few years. Some of the lands not designated by Congress as wilderness have been, and will continue to be, subject to road building, oil and gas leasing, and other activities inconsistent with wilderness preservation. Others will likely be designated wilderness as Congress continues to legislate on the subject.

Over time, then, the number of acres of land with wilderness potential that the federal agencies can make available for oil and gas leasing has been steadily shrinking. This fact does not minimize the degree of conflict on the roadless lands that remain available for oil and gas leasing, but it does suggest that these conflicts will gradually become much less important in the overall context of federal land management.

It is not clear whether the same can be said about the other issues discussed —wildlife concerns and ecosystem management—that may at times resemble wilderness conflicts in their effects on oil and gas leasing and the planning process. These questions pose more ongoing problems of management.

8

Discussion and Recommendations

INTRODUCTION

The committee agreed that a number of the problems involved in balancing oil and gas development with other uses of the federal lands could be ameliorated by adjustments in current planning and leasing practices. In some cases, the BLM and the Forest Service are already making such adjustments.

The planning process now used by both agencies provides some governmental guidance and control for what had been a system of largely privately initiated mineral development. A strength of that prior system was that it could respond quickly to changes in economic conditions. The modern planning system mandated by Congress for both BLM and Forest Service lands requires that decisions be made well in advance of specific kinds of activities, thereby limiting the private sector's ability to respond promptly to changes in market conditions.

Federal land and resource planning has evolved rapidly in response to increasing demands for resources from these lands and to growing concerns for environmental protection across the society as a whole. At the same time, the agencies have markedly improved their ability to meet the requirements of the National Environmental Policy Act in their planning and leasing decisions, although recent court decisions demonstrate that some uncertainty still exists about these legal mandates. These court decisions and the evolving refinement of the planning process have increased the complexity, cost, and length of time required for that process.

These plans, upon adoption by the agencies, are legally binding; that is, they control the agency's exercise of its management discretion unless and until modified. In some situations these plans will preserve options for various future uses of federal lands and resources, and will provide some measure of stability by limiting agency discretion over the plan's life. On the other hand, the plans may restrict future uses of federal lands on the basis of currently available information, and may create new costs and limits for future generations. For example, communities surrounded by federal lands may find their opportunities to respond to changes in economic and other conditions constrained by planning decisions that may not be easy to alter in coming years.

The planning process attempts to balance national and local interests, and makes judgments about costs and benefits, although it may not do so explicitly. The statutory definitions of the "multiple use" management goals, assigned by Congress to both the Forest Service and the BLM in the Federal Land Policy and Management Act of 1976 (43 USC 1701-1782) explicitly caution, however, that the agencies are "not necessarily to [select] the combination of uses that give the greatest economic return or the greatest unit output" (43 USC 1702(c)).

Perceptions of benefits and costs are not necessarily the same for the national and the state or local interests. For example, the cost of closing some federal lands to oil and gas development to meet national demands for recreation and environmental quality may be largely borne by people in the immediate area of federal lands. On the other hand, the cost of meeting national needs for oil and gas may be borne by local communities in terms of recreational and environmental impacts. Community opinion may be divided between those who welcome economic opportunities from oil and gas activity, and those who place a premium on recreation and preservation or who emphasize stability, continuity, support for existing industries (such as timber), and avoidance of boom-bust cycles. The committee visited and heard from officials in two counties (both named Teton County, one in Wyoming and one in Montana), where the public officials took diametrically opposed positions on oil and gas leasing on federal lands within their jurisdictions. The disparities in these local attitudes underscore the difficulty facing any planning and decision-making process.

SUMMARY OF CORE RECOMMENDATIONS

The committee has addressed a number of significant issues posed by current practice. The following is a summary of its core recommendations. In general, the agencies should analyze the reasonably foreseeable impacts of oil and gas exploration and development in land and resource plans

formulated for those areas where potential exists for oil and gas activity. As a result of this analysis, one of three judgments ought to be made:

1. If this analysis leads the agencies to conclude that oil and gas development can be regulated to control its impacts on other values to acceptable levels, they should make such lands available for leasing, with such stipulations as the planning analysis indicates are required to protect those other values.
2. In some cases, information available at the planning stage may not be sufficient to analyze the necessary trade-offs between protecting an area's important environmentally related values and developing any oil and gas that might exist. This may be the case with large areas of unexplored land. In such cases, however, available information may be sufficient to conclude that a limited number of exploratory wells can be drilled without creating unacceptable impacts. If so, the agency ought to make the lands available for leasing on a segmented basis. Such leases would contain stipulations that convey to the lessee only the right to drill one or more exploratory wells in areas identified by analysis in the planning process as environmentally acceptable. The lessee would not have the right to bring the lease into production until and unless the agency concludes that the impacts of production are environmentally acceptable. The agency would use the information gained by the exploratory well(s) to carry out a better-informed, less-speculative analysis of the benefits and costs of production, before making a final decision whether to allow it. If the agency decides, after this further analysis, to disallow production, the lessee ought to be reimbursed for the direct costs it incurred in acquiring and exploring the lease.
3. In some cases, the information available at the planning stage may show that even the drilling of exploratory wells, regardless of how strictly it is regulated, would probably create unacceptable impacts on other high-priority values. If so, the agency should declare that the lands involved are presently unsuitable for oil and gas leasing. The agencies should formulate specific criteria for determining unsuitability through a combination of nationally applicable standards (established by rule making to amend the agencies' generic planning regulations) and more localized standards (formulated and applied in the planning process for local planning units).

The committee also recommends that all onshore oil and gas leases contain a carefully drawn stipulation that allows the land management agency to prohibit further activity on any lease after it has been issued where the agency determines that serious, unacceptable, environmental harm is likely to result and the benefits of such prohibition outweigh the

costs. In such situations, lessees ought to be compensated for their direct costs in obtaining and developing their leases.

The reasoning behind the committee's core recommendations is twofold. First, it believes the planning process should be the principal focal point for making decisions about where and under what conditions oil and gas leasing should proceed on federal lands. Practically all the disparate interests that addressed this issue in their presentations and comments to this committee agreed upon that approach, even though they had somewhat diverging views on exactly how the planning process should arrive at these decisions. The committee is persuaded that the planning process, with its systematic, interdisciplinary approach, allowing ample opportunity for participation by all interests, is an essential component of decision making.

Second, the committee is concerned or that the planning process could be saddled with a task that in some circumstances it could not perform well. That is, in some cases it may simply be beyond the inherent limits of the planning process to make meaningful, realistic forecasts about the impacts of oil and gas development (as opposed to exploration) on other resources and values. Where that is the case, further analysis may be necessary after exploration has produced enough information to allow such projections to be made. Furthermore, in some cases environmental concerns may be recognized or be more fully appreciated only after the planning and leasing process is completed. This suggests the need for agencies to retain continuing authority to prohibit, with reimbursement of the lessee's out-of-pocket costs in appropriate cases, activities in order to prevent serious environmental harm.

An elaboration of the committee's core recommendations follows. After that, a few other, narrower recommendations to improve the oil and gas leasing process are set forth and explained.

RECOMMENDATION ONE

The agencies should use their planning processes to forecast the reasonably foreseeable consequences of oil and gas exploration and development. Where those consequences are deemed acceptable, the agencies should make the lands available for leasing.

As noted earlier, there is usually a significant time lag between agency planning and leasing, exploration, or development. The period can stretch over several decades. A plan may be in effect for 15 years. Leasing may not take place until near the end of the plan's term. A lease is typically not drilled even for exploration until the last year of either a 5-or a 10-year lease term, and it may take several more years to drill step-out wells and prepare a field for full production. A moment's reflection on the changes in technology, public opinion, policy, and scientific knowledge

of environmental impacts that have occurred in the past few decades demonstrates the difficulty of making realistic projections over such a time period.

Changes that can occur over such a time scale can cut both ways; that is, they may make mineral activity more or less acceptable. An energy crisis and the emergence of new, lower-impact exploration and development technology are examples of the former. The identification or formal listing of an endangered species and the discovery of a geologic condition that makes oil and gas development hazardous are examples of the latter.

Agency decisions not to lease or to lease only with severe restrictions can readily be altered to accommodate changes that make mineral development more acceptable. No-leasing decisions can be reversed and leases issued; restrictive lease stipulations can be waived, suspended, or modified.

It is more difficult to deal with changes that argue for restricting mineral development after leases are issued. The problem is a mixed one of policy (honoring legitimate expectations of lessees) and law (the potential "taking" of property rights).

Besides the problem of time lag and evolving information and values, there is the additional problem of efficiency; namely, the potential waste of (mostly governmental) resources involved in assessing the possible environmental impacts of developing thousands of leases, when only a small fraction of them will actually be drilled, and still fewer will yield petroleum in quantities sufficient to warrant full field development. The government's response to this problem has generally been to try to avoid or postpone doing the environmental assessment until a proposal to drill is actually made. This has usually been close to the end of the primary lease term, and can be as much as 20 to 25 years after a land and resource plan is prepared for the area.

The committee believes that the agencies should generally attempt in their planning processes to forecast the reasonably foreseeable consequences of oil and gas exploration and development. In many, perhaps most, areas, such forecasts can be made with considerable confidence. Areas subject to planning may have already experienced exploratory drilling or even production. Nearby areas under the jurisdiction of another agency, federal or state, may have likewise seen oil and gas activity that has yielded useful information about petroleum potential and the likely impacts of petroleum activity on the lands subject to the planning process.

In some areas, however, particularly in wildcat areas where reliable information on petroleum potential is lacking, forecasting the reasonably foreseeable consequences of exploration and development will require substantial speculation because the actual impacts of oil and gas development are controlled by the location, quality, and other characteristics of the petroleum resource. Even in these wildcat areas, however, the agencies,

prodded by some of the court decisions discussed in this report, are working to improve the reliability of such forecasts.

In most cases, the committee believes that enough information about the likely consequences of development will be available to allow the agencies to determine, at the planning stage, whether the consequences of exploration and development are acceptable, considering the other values and uses of the lands. If the agency determines that the impacts are acceptable, the lands ought to be made available for leasing under stipulations identified in the planning process as appropriate to protect other values.

In such cases the agencies should, in advance of actually holding lease sales, perform an additional analysis to ensure that the conditions and assumptions made in the planning process leading to the decision in favor of leasing have not significantly changed. If they have, of course, the agencies should prepare NEPA documentation and, if necessary, plan amendments, to explore whether leasing remains acceptable.

Similarly, the agencies should also perform an additional analysis in advance of acting on applications for permits to drill, and prior to approval of full field development plans of operations, in order to ensure that the forecasts in the planning process have not significantly changed. If they have, the agencies should prepare NEPA documentation and, if necessary, plan amendments, to determine the appropriate level or type of activities.

While the committee recommends placing principal reliance on the planning process in making basic decisions about oil and gas leasing, it urges the agencies to try to keep the information they use as current as possible. Agency plans sometimes tend to take on a life of their own, and agencies may be reluctant to make major revisions or update the information in these plans in subsequent plan amendments or revisions. Given the speculative nature of some of the information, particularly geologic data, used in the planning process, the committee believes it is especially important that the agencies attempt to ensure that the most current and reliable data are used in these plans or any amendments or revisions thereof. Information and accompanying analyses in previous plans should not, through inertia, go unexamined over time. In the end, the plans may only be as good as the accuracy of the data used.

RECOMMENDATION TWO

In areas where available information indicates the potential for high-value oil and gas resources, but where surface values are especially high and potential land use conflicts cannot be resolved during planning, lands should be made available for leasing with a right only to drill exploratory wells in defined locations. Information gained by that exploration should be used to make a subsequent analysis and agency decision on proceeding

with development if discovery of petroleum makes development possible. If, after that analysis, further exploration and development is prohibited, the lessee should be reimbursed for its direct costs of obtaining and exploring the leasehold.

In some situations, especially in wildcat areas where petroleum potential is significant but where little hard information is available, and where other values that might be jeopardized by oil and gas development are important, a decision to issue leases that convey a right to proceed to full development may be problematic. That is, because the actual characteristics of any petroleum resource discovered in the area will determine many of the impacts of development, in some cases the agency may simply be unable to determine at the planning stage what these impacts will be, and therefore be unable to make meaningful judgments about whether the impacts are acceptable. Put a little differently, in some cases information available to the agency at the planning stage suggests that the competing values involved are in rough balance with each other (and that some of these values may not be subject to conventional dollar weighing).

This information is relevant to both the benefit and the cost sides of the leasing decision. On the benefit side, it shows the positive contributions obtained from oil and gas activity (necessary to weigh against the environmental costs of the development). On the cost side, this information is a primary determinant of the environmental impact of the activity, because the presence, location, and characteristics of the petroleum resource will control the number and location of roads, drilling sites, gathering lines, processing facilities, and other components of a producing field.

On the other hand, there will usually be enough information available at the planning stage for the agencies to make a meaningful assessment of the likely cumulative impacts of oil and gas exploration, because exploration usually involves the drilling of a limited number of wells in relatively discrete areas. This will generally allow the agency, in turn, to determine at the planning stage whether the impact of exploration on other values is acceptable.

In these cases, which would generally be areas that have never been explored by drilling, the committee recommends that the agencies concentrate their analysis at the planning stage on the impacts of exploration. If those impacts are deemed acceptable, the agencies should make such lands available for leasing with a special stipulation that would convey to the lessee only the right to drill exploratory wells.

The lease would not convey the right to proceed to production or full field development. Such a right would only be granted to the lessee after further analysis and a further decision by the agency. The agency would use the information gained by the exploratory well(s) to engage

in a better-informed, less-speculative analysis of the benefits and costs of production, before making a final decision whether to allow it. This additional analysis could take place in a process to amend the agency's plan, in an environmental impact statement under NEPA, or in a document that serves both functions.

This circumscribed category of staged leasing would not be the same as the contingent rights stipulation sometimes used in the past. Leases with contingent rights stipulations carry with them no rights to explore or develop without further permission. The staged leasing the committee proposes would contain a right to explore under suitable mitigating conditions, but not a right to proceed to development. The exploration permitted would obtain information on the petroleum resource sufficient to allow the agency to engage in a much more informed analysis of the consequences of development.

Although this staged approach to leasing would pose some risk to lessees, a number of features would substantially mitigate the risk. First, prospective lessees would know of this limitation in advance of leasing and could discount their bids by their assessment of the likelihood that permission to proceed with full development may be denied. Second, the recommendation is that if this subsequent analysis leads the agency to conclude that development is unacceptable, the lessee ought to receive compensation for out-of-pocket costs. This would be done by means of the lease stipulation discussed more fully under recommendation four. Third, prospective lessees may be assuaged by the expectation that if the exploratory well(s) disclose the existence of a sizeable petroleum resource, the balancing of the costs and benefits of production will likely shift toward development. In reality, in other words, the agency would be unlikely to deny the opportunity to develop the lease if substantial oil and gas resources are found, even though it would retain the right to do so.

Conceivably there might be some difficulties in applying this exploration-only approach in areas that contain state or private land beyond the direct control of the federal agencies. In such situations, close coordination among the different owners may be necessary to ensure the efficacy of the approach, a matter dealt with in recommendation eight.

The Outer Continental Shelf Model

The committee's proposal for a limited amount of leasing for exploration only borrows from the generic approach of the oil and gas leasing program used on the Outer Continental Shelf. In its 1978 overhaul of the Outer Continental Shelf leasing statute (Outer Continental Shelf Lands Act; 43 USC 1331-1356), Congress explicitly segmented the decision-making

process into four stages: (1) a 5-year leasing plan, (2) lease sales, (3) exploration, and (4) development and production, (43 USC 1337, 1340, 1344, 1351). Generally speaking, each stage is separate, and the completion of one stage does not entitle a lessee to begin the next.

The Outer Continental Shelf program also authorizes test or exploratory wells to be drilled, under governmental supervision, for environmental protection purposes (see 30 CFR Part 251). At the conclusion of drilling, such wells are permanently plugged and abandoned (30 CFR 251.6-2(g)). The person proposing to drill a test well must "afford all interested persons, through a signed agreement, an opportunity to participate in the drilling on a cost-sharing basis" (30 CFR 251.6-3(a)). The information gained as a result of the exploratory well must be shared with the federal government and others who have shared in the cost of the well (30 CFR 251.11; 251.12). The regulations also provide detailed guidance on disclosure of the information to the public and the affected states (30 CFR 251.14-1; 251.14-3).

The committee recommends that a similar approach for cost and information sharing be used in this limited category of staged leasing onshore.

An Alternative Considered and Rejected

One alternative considered by the committee was that the agencies determine, through analysis at the planning stage, the maximum amount of acceptable development and attach stipulations to subsequent leases that would prevent lessees from exceeding the maximum. Under this approach, the planning process would be used to fix the maximum number of development features such as wells, miles of new or upgraded roads, and length of gathering lines or pipelines, as well as the maximum amount of deterioration in air and water quality. Leases would not convey any right to develop above those maximums set in the plans. If additional development was proposed above that level, new environmental analysis (and plan amendments) would be required. Lessees would have no right to develop above that level, but leases could be suspended until the level of development drops below the maximum, thereby allowing additional activity to occur. This approach would commit the government legally to allow some level of reasonably foreseeable development that is determined to be acceptable at the plan/lease issuance stage, but the lessee would have only a contingent right to develop beyond that level.

While this approach has some theoretical appeal, the committee believes that practical problems would prevent its functioning soundly. It would be very difficult for planners to express maximum levels of acceptable development in meaningful terms. Number of miles of roads, for

example, is much too crude a measure. The location and construction standards of roads are usually much more important than their length in determining environmental impact. Moreover, this approach would require such forecasting at the planning stage, before much may be known about the location, extent, and likely methods for extracting and processing whatever oil and gas exist. The Department of the Interior's coal leasing program at one time contained an idea similar to this—determining maximum levels of impact in a particular area subject to coal development—but it was eventually discarded as unworkable.

There might also be difficulties in sorting out rights of potentially numerous different existing lessees in an area. An analogy might be drawn here to the Environmental Protection Agency (EPA) "bubble" or emissions trading concepts under the Clean Air Act, where rights to pollute up to acceptable maximum levels may be parceled out on a first-come, first-served basis, and a private secondary market may operate to achieve the most efficient use of available development rights. But location is again arguably more important with on-the-ground impacts of oil and gas development than with air quality, where more "mixing" and uniformity of pollution are achieved in ambient air.

RECOMMENDATION THREE

The agencies should use their planning processes to determine whether certain lands are currently unsuitable for oil and gas exploration and development when other potential uses of the land clearly outweigh potential values for oil and gas resources.

Prior to enactment and implementation of modern environmental assessment and planning laws, the federal government generally followed the practice of issuing oil and gas leases upon request, without much (if any) advance scrutiny of whether, for environmental or other reasons, exploration and development of a particular area was wise. In substantial part this traditional practice stemmed from a general consensus in the Department of the Interior (and probably the society at large) that mineral development was the highest and best use of most federal lands (those not formally withdrawn from mineral development for national parks, military uses, and the like).

Under this traditional practice, nearly all available lands were offered for leasing, and for releasing as old leases expired, whenever anyone expressed an interest in obtaining such a lease. The leasing program had a life of its own—the Department of the Interior's role was rather mechanical and reactive. Furthermore, the Forest Service played a fairly limited role in oil and gas leasing on National Forests. This leasing practice was not, however, required by law. The Mineral Leasing Act (30 USC 181-287)

enacted in 1920 gave the Department of the Interior broad discretion to lease or not to lease as it saw fit.

The NEPA and the planning statutes of the 1970s required a change in that practice by, in effect, mandating the federal agencies to be more proactive than reactive. How much of a proactive mandate these laws contain is not precisely clear, as exemplified by various court decisions discussed in Chapter 4. But these court decisions are unanimous in concluding that the traditional way of proceeding—leasing without some measure of environmentally conscious decision making—is inconsistent with current law. These modern laws have, in other words, legislated a fundamental change in agency decision-making processes as they relate to oil and gas leasing, namely, that the wisdom of issuing oil and gas leases that carry with them some right to explore and develop the resource must be evaluated and explained in land and resource plans and/or environmental assessment documents prepared pursuant to NEPA.

In the committee's judgment, the prior tradition of leasing upon request (as well as the policy direction from Department of the Interior leadership in the past several years favoring leasing of all available land) has led to a strong presumption in favor of leasing. That is, it is the committee's perception that the BLM and the Forest Service have been somewhat reluctant to make decisions that certain lands should not be leased for oil and gas.

In some cases, in fact, the government may be issuing oil and gas leases in situations where the land management agency believes actual exploration and development is likely to pose an unacceptable degree of degradation to other values. Leases may be issued with the hope that exploration or development will not be proposed (because, on the average, many more leases are issued than are ever drilled), or that lease stipulations giving the government the right to prohibit certain activity or to require stringent mitigation measures will suffice to mitigate the consequences of drilling and production activity.

As in earlier recommendations, the committee believes that the land management agencies should use the planning process as the primary focal point for the exercise of their discretion over leasing. Logically, this includes a decision not to lease areas where, based upon the information developed in the planning process, the agency is reasonably convinced that exploring or developing a particular area would be environmentally unacceptable.

For example, an area being considered for oil and gas leasing in the planning process may contain important habitat of an endangered species. The federal agencies (which here would include the Fish and Wildlife Service, given a key role in implementing the Endangered Species Act. 16 USC 1531 et seq.) may, at the planning stage, be reasonably confident that oil and gas development can take place there without jeopardizing

the species. On the other hand, they may be reasonably confident that it cannot, that is, that no amount of regulation and mitigation can prevent jeopardy to the species. If this is the case, then the committee believes that the agency should defer leasing indefinitely, until better information or technological or other changes may allow leasing and development to proceed.

Even where it is clear that exploration or development is unlikely to be permitted, the agencies have sometimes chosen to proceed to lease the area with a stipulation that reserves the government's right to halt activity if an endangered species is jeopardized. In the committee's judgment this course of action is not satisfactory. While this kind of protective lease stipulation ought to be included in all leases in order to provide notice to lessees of the requirements of the Endangered Species Act, the committee also believes that no leases should be issued where the government has grave doubts that jeopardy can be avoided under any usual exploration or development scenario.

The planning process ought to contain, in other words, an explicit unsuitability component—a process for screening out lands presently unsuitable for oil and gas leasing. These will be areas where oil and gas activity, regardless of how strictly it is regulated, would create unacceptable impacts on other, higher-priority values. Specific criteria for determining unsuitability ought to be formulated in advance of their application to specific lands, through a combination of nationally applicable standards (formulated by rule making to amend the agencies' generic planning regulations) and more localized standards formulated and applied in the planning process for local planning units.

An explicit unsuitability review at the planning stage would have several benefits. First, it would simplify planning, by permitting the early exclusion from further consideration for leasing of lands that might ultimately be excluded in final planning decisions, but only after engendering more costly data collection and analysis and unnecessarily prolonged conflict.

Second, an unsuitability process would provide up-front assurance to those concerned with environmental values that these values will receive a certain level of automatic protection. Such assurance would help overcome the legacy of the traditional practice where agencies tended toward the presumption that every available acre ought to be leased, with conflicts resolved through mitigation.

Third, the process would also provide a measure of discipline for the Forest Service and the BLM. It would encourage them to make explicit decisions on suitability up front, in a setting that provides substantial opportunity for public participation, rather than blanketing leases with highly restrictive stipulations that can later be waived in circumstances

where realistic opportunity for public input is much less. ("Public" here of course includes state and local governments and other federal agencies.)

Fourth, an unsuitability review would provide up-front assurance to the oil and gas industry that the exclusions resulting from a suitability review will be circumscribed and—most important—uniform, that is, not subject to the idiosyncratic judgment of individual planners. It would also furnish better notice to the petroleum industry of applicable environmental concerns. Specifically, an unsuitability review would avoid creating unrealistic expectations among potential lessees as to the prospects for proceeding with development and would, at the same time, provide a strong incentive for that industry to participate fully in the planning process, including sharing information with the planners on petroleum potential and likely development scenarios.

Finally, an unsuitability review would also encourage the search for exploration and development technologies that reduce the impact of these activities on other values.

Many of those commenting to the committee agreed that most of the federal lands now legally available for leasing will not pose extreme situations where impacts of mineral development cannot be controlled to acceptable levels. The proportion will, obviously, vary from region to region, but many environmentally sensitive areas have already been withdrawn from leasing through national park, wilderness, or other special designations. Furthermore, the committee believes that, in most circumstances, oil and gas activity likely can be regulated to an acceptable level of compatibility with other uses and values found on federal lands by means of lease stipulations and the exercise of other regulatory authority.

The fraction of federal land legally available for leasing that might pose irreconcilable conflicts includes, in the committee's judgment, many of the ones of the greatest controversy. The committee is *not* advocating that leasing be deferred indefinitely wherever it may be controversial, but if the committee is correct in thinking that only a comparatively few areas pose irreconcilable conflicts, then it does not seem wise to place the whole program in jeopardy (or make the entire program inefficiently laden with red tape) because agencies may have difficulty making decisions to defer leasing in specific areas where good reasons for deferral exist.

Nor is the committee advocating that wilderness designation potential should always, or even usually, be a sufficient reason for finding an area unsuitable for leasing. When Congress has "released" lands from wilderness study, it has in effect left the agency to make explicit judgments about whether such lands ought to be made available for uses like oil and gas leasing under ordinary multiple-use decision making. The committee also believes, however, that some of the other values served by wilderness

character, such as wildlife protection, should properly be taken into account in making unsuitability determinations.

Nor is the committee advocating that leasing be deferred in all areas where an endangered species is or might be present. In many such cases, the committee would expect that oil and gas activity might be carried out without jeopardizing the species or otherwise running afoul of the Endangered Species Act. But in some cases, as discussed above, information available at the planning stage may suggest that any oil and gas activity will be incompatible with protection of the species. In such cases, the area ought to be declared presently unsuitable for leasing.

The threshold screening for suitability in the Forest Service's proposed regulations is a usable framework for systematically making that kind of judgment. But the committee believes the proposed regulations are flawed by their failure to set out specific criteria for making unsuitability determinations. Instead, the regulations say only that suitability for leasing shall be based upon a "finding that oil and gas leasing operations on the area would be consistent with, or would not be precluded by, the applicable forest land and resource management plan, management prescriptions, and associated standards and guidelines in the plan" (U.S. Forest Service, 1989, proposed section 228.102 (d) (3)).

The committee recommends that the concept of an unsuitability screening at the planning stage be implemented by means of explicit limiting criteria. Some of these criteria could be national in scope, and formulated by means of formally proposed and adopted amendments to the agencies' generic planning regulations. Others may be more regional or local in scope, and established in the planning process followed for particular planning units.

Although unsuitability reviews in other federal resource management programs have been controversial when initially proposed, they are today applied routinely in the planning process and are generally accepted by the public, including most developers of the resources under review. This shift from controversy to relative acceptance is (see p. 75) due in part to the thorough preparation undertaken by the agencies prior to proposing the reviews and in part to careful monitoring of actual implementation experience. The committee recommends following a similar practice here.

Furthermore, there are some important differences between the unsuitability review processes conducted in connection with the BLM's coal leasing program and the Forest Service's timber sale program. Most important, the coal criteria are relatively specific, concerned only with environmental values, and not limited to the requirements of a single statute. The timber unsuitability criteria are broader, include economic as well as environmental considerations, and reflect only the requirements of the National Forest Management Act (16 USC 1600-1604).

If an oil and gas leasing unsuitability review is to achieve the benefits discussed above, the criteria for determining unsuitability should be (1) limited to environmental values (but reflect all relevant environmental values capable of application through criteria); (2) tightly drawn to reduce planners' discretion (but provide for exceptions under certain conditions); (3) embodied in formal rule making where all interested parties can participate; and (4) field-tested prior to rule making and subject to frequent performance reviews. These recommendations reflect the committee's judgment that the criteria for oil and gas leasing should more closely approximate the coal unsuitability process than the one used in connection with timber management.

The committee recommends that the agencies work cooperatively with each other, the industry, other federal and state agencies, and the public, to identify and publish specific criteria. Many of the criteria that might be adopted are already being used in one form or another in various local plans. The committee is also encouraged by some instances of apparent cooperation between environmental organizations and officials of the Department of the Interior to identify circumstances under which oil and gas leasing should be precluded.

RECOMMENDATION FOUR

All leases should include a standard stipulation that preserves the government's flexibility to control and, if necessary, to prohibit, activities on the leases that pose serious and unacceptable impacts on other values, but with the provision that a lessee would be reimbursed for its direct costs in acquiring and developing its lease if further exploration and development is prohibited.

The committee believes that the uncertainties inherent in predicting and assessing environmental and other impacts over a substantial period of time make it prudent to include in every oil and gas lease a carefully framed stipulation that allows the government to prohibit further activity on the lease, in order to prevent serious harm to the environment. Out of fairness to the lessee, however, the stipulation should also obligate the government to reimburse the lessee for the latter's out-of-pocket costs (including lease costs, bonus bids, and rentals and accountable exploration costs such as geological and seismic work) if the lessee is prohibited from developing the lease.

This amount would not necessarily be the same as the fair market value of the leasehold (what the lessee would obtain if the government simply condemned the lease in an eminent domain proceeding). Fair market value is usually defined as what a willing buyer would pay a willing seller, which includes a notion of reasonable expectancy of profit. In some cases a

lessee's reasonable expectation of profit would be more, and in some cases less, than the amount the lessee has expended on the lease.

The committee notes that including such a stipulation in all onshore leases might lead bidders to bid less, and result in less returns to federal and state treasuries. That is, winning bids might be lower than they would be without the stipulation, as bidders discount their bids by their assessment of the likelihood that such a stipulation would be invoked. To the extent this is true, a provision obligating the government to compensate a lessee who is ultimately denied the opportunity to develop a lease might be viewed as paying the lessee twice for the same loss. Although this objection is not without force, it is not clear that lower bidding would result. The compensation feature of the stipulation would in effect insure the lessee against loss of its investment. Limiting compensation to out-of-pocket costs rather than profit expectations might lead to some discounting of initial bids for leases, but it appears to the committee to strike a reasonable compromise.

The potential relationship between lease stipulations and bidding behavior points up an important secondary effect of the Reform Act's expansion of the opportunities for competitive bidding. Such bidding allows potential lessees to make judgments about the risks that government regulation (through exercise of, among other things, the power reserved in lease stipulations) will interfere with activity on the lease, and to act on those judgments in the bidding process. This kind of risk assessment is not very different from a potential bidder's assessment of the oil and gas potential of tracts offered for lease. By permitting a bidder in effect to express uncertainty over the exercise of a lease stipulation in dollar terms in a bid, the competitive bidding process tends to allay concerns about the fairness of imposing such terms.

In this context, the committee's recommendation of compensation for a lessee's direct costs when the authority contained in the recommended "environmental fail-safe" stipulation is invoked may limit the discounting of bids that might otherwise result. In any event, it would provide a safety net for smaller companies who may find it difficult to bear the cost of losing an opportunity to develop a lease because of environmental hazards.

In sum, the committee believes this approach is a reasonable compromise between the polar positions, on the one hand, of denying a lessee all opportunity to proceed in certain circumstances without reimbursement of lease costs and, on the other hand, of allowing a lessee to develop a lease despite serious and unacceptable environmental consequences. The compensation feature also helps ensure that the government agency will judge the seriousness of the environmental threat without being overly influenced about the impact on a lessee's fiscal health of a decision against proceeding. Finally, as with recommendation two, the committee believes

that, in reality, an agency is only likely to exercise the power reserved in this stipulation to permanently stop development of a significant deposit of oil or gas if no alternative course of action would avoid very serious environmental harm.

The Outer Continental Shelf Model

The committee's recommendation also has the advantage of being very close to the policy Congress has adopted in integrating environmental assessment and planning with the federal oil and gas leasing program on the Outer Continental Shelf. That is, in its 1978 overhaul of the 1953 Outer Continental Shelf Lands Act (43 USC 1338), Congress explicitly made offshore leases somewhat contingent upon environmental acceptability, at the same time providing a measure of reimbursement to a lessee who is denied the right to develop a lease under certain circumstances. The act authorizes the Secretary of the Interior to cancel a lease for environmental reasons upon a determination that "(i) continued activity . . . would probably cause serious harm or damage to . . . [the] environment; (ii) the threat of harm or damage will not disappear or decrease to an acceptable extent within a reasonable period of time; and (iii) the advantages of cancellation outweigh the advantages of continuing such lease or permit in force."

Congress also required payment of compensation to the lessee if the lease is canceled under certain circumstances (43 USC 1334(a)(2)(C)). Specifically, the lessee is entitled to receive the lesser of (1) the fair value of the canceled rights as of the date of cancellation, taking account of both anticipated revenues from the lease and anticipated costs, including costs of compliance with all applicable regulations and operating orders, liability for cleanup costs or damages, or both, in the case of an oil spill, and all other costs reasonably anticipated on the lease, or (2) the excess, if any, over the lessee's revenues, from the lease (plus interest) of all consideration paid for the lease and all direct expenditures made by the lessee after the date of issuance of such lease and in connection with exploration or development, or both, pursuant to the lease (plus interest). For leases issued prior to the 1978 amendments, the standard of compensation is (1), the fair value of the canceled rights.

The committee has noted that, in addition to the Outer Continental Shelf model, Congress has explicitly adopted a somewhat similar approach in the geothermal leasing program onshore. The geothermal provisions of the Mineral Leasing Act were amended in 1988 to require the Secretary of the Interior to include stipulations in leases to protect significant thermal features in units of the National Park system, including provisions that would terminate leases if significant adverse effects cannot be eliminated

within a reasonable period of time (30 USC 1026(d)). No compensation would be provided if such leases were terminated under this stipulation.

The Strength of the Outer Continental Shelf Analogy

In making this recommendation, the committee considered the strength of the analogy between offshore and onshore oil and gas leasing. Clearly there are some differences. The scale of activity offshore is markedly different. Exploration and development costs tend to be much higher, and marketable deposits tend to be larger. The higher capital investment required makes the Outer Continental Shelf more the domain of the major oil companies.

Moreover, transportation problems are different and so are some environmental risks (e.g., impact of oil spills on the marine environment). There are also, arguably, fewer conflicts offshore than onshore between oil and gas and other uses of the area. Also, offshore oil and gas development does not open up relatively inaccessible areas to other uses the way onshore development may.

Subsurface geology in areas targeted for activity offshore tends to be less complex than onshore, at least compared to onshore areas like the Overthrust Belt in the Rocky Mountains. One consequence is that while per well costs are lower onshore than offshore (although these costs increase if the sites are in remote or rugged terrain), smaller pools and less well defined structures generally require that more holes be drilled. Another consequence is that directional drilling is comparatively less expensive and likely to be more widely practiced offshore than onshore, which gives offshore drillers more flexibility in drilling sites than their onshore counterparts.

Ownership patterns onshore can be very complex, involving state and private as well as federal interests. Offshore, by contrast, federal sovereignty is uniform, except along the limits of state jurisdiction (generally out to 3 miles off the coast). Management of the Outer Continental Shelf is not as subject to overlapping jurisdiction of different federal managing agencies as are onshore federal lands. Finally, offshore development has a much shorter history and is not as encumbered as onshore development by the complex assortment of thousands of existing leases of varying size with varying expiration dates.

Some of these differences might argue for more environmental attention offshore (scale: the worst-case scenario from a major oil spill is more serious offshore), while others might support more environmental attention onshore (there are potentially greater conflicts among a wider variety of uses onshore). The question is whether these differences destroy the utility of the analogy.

In the judgment of the committee, the analogy is close enough that onshore leases ought to contain the same environmental "contingency" as that included in offshore leases. The difficulty of making lasting judgments about possible environmental impacts of leasing and their acceptability over the potentially lengthy time period between leasing and development argues for the stipulation.

The committee does recommend one adjustment in transplanting the offshore approach onshore. If the stipulation is invoked to prohibit further development offshore, the standard for compensation is the lesser of the fair market value of the lease or the lessee's out-of-pocket costs. This might be justified on the theory that the companies operating offshore are likely to have substantial capital reserves to bear the risks involved. Onshore, on the other hand, lessees are typically smaller independent companies much less able to bear that risk. In short, while reimbursement of actual direct costs may not be of critical assistance or concern to major oil companies, it can mean the difference between survival and bankruptcy for smaller independents that are increasingly important in the federal onshore leasing program.

In light of this difference, the committee recommends that the standard of compensation onshore be uniform, and the government be obligated to compensate the lessee for its out-of-pocket costs if exploration or development of the lease is prohibited because of unacceptable environmental impacts. This would mean that the lessee would be compensated for out-of-pocket costs even if the lessee's reasonable expectation of profit were less than that.

Cash Versus Other Forms of Compensation

Besides cash reimbursement, one option would be to compensate the lessee who is denied development by giving it a bidding credit on other leases. Such a credit has some useful advantages. It would keep the lessee's investment "in play," as it were, in the oil and gas program. If the credit was limited to bidding on other leases in the same state, furthermore, it would ensure that the same state would retain a share in the potential revenues obtained under the revenue-sharing provisions of the Mineral Leasing Act.

Another option is to compensate the lessee with a right to exchange the existing lease for a new lease on another tract. This is more problematical because it cuts against the 1987 Federal Onshore Oil and Gas Leasing Reform Act's (101 Stat. 1330-256) policy of promoting competitive leasing. Furthermore, although the committee has not studied the question, it is of the understanding that the actual operation of a similar provision in the Surface Mining Control and Reclamation Act (authorizing exchanges in the context of leases in alluvial valley floors) has not proved very workable.

Comparing the Committee's Recommendation to the Forest Service's Proposed Regulations

The committee emphasizes that while the generic stipulation it recommends would make every onshore oil and gas lease contingent upon environmental acceptability, it believes this approach is superior to the one taken by the Forest Service in its proposed regulations published in the *Federal Register* on January 23, 1989. In that proposal, each oil and gas lease would contain an explicit provision that the Secretary of Agriculture "retains the authority under this lease to preclude all operations on a leasehold where analyses of the environment indicate such action is appropriate" (proposed 36 CFR section 228(c)).

The committee's proposal differs from that of the Forest Service in two important respects. First, it more tightly constricts the circumstances under which the retained authority to withhold approval from the lessee to proceed can be exercised by the agency. The Forest Service proposal is largely unbounded, requiring the agency to determine only that "analyses of the environment indicate" that halting activity is "appropriate." By contrast, the language of the Outer Continental Shelf Lands Act, which the committee endorses, requires an explicit determination that activity would "probably cause serious [environmental] harm or damage" that cannot be mitigated within a reasonable period of time, and that cancellation of the lease is better than continuing it in effect.

In the committee's view, the kinds of contingencies that would give rise to exercising the power retained in the stipulation would be serious ones, of the kind that would usually not have been foreseen or appreciated in the planning and environmental assessment process that occurred before the lease was issued. The contingency ought to be drawn, in other words, so that it may be invoked only as a result of a serious threat of unmitigable environmental damage. A very broad stipulation of the kind proposed by the Forest Service could undercut the agencies' incentive to take the pre-lease planning and environmental assessment process seriously.

It is the committee's judgment, in short, that the agencies ought to reserve authority to restrict or prohibit lessees from proceeding where necessary in extraordinary circumstances to prevent serious harm to the environment. Such power ought not to be exercised casually. It is the committee's understanding that it has not yet been exercised offshore even though it has been part of the law for 11 years.

The second important difference between the committee's proposal and that of the Forest Service is that the latter lacks a compensation feature. The committee believes such a feature is essential to provide elemental fairness for oil and gas lessees onshore, many of whom are

independent operators without the resources to absorb unexpected losses of drilling opportunities.

An Alternative Considered and Rejected

The principal alternative to this kind of "safeguard" lease stipulation is to issue oil and gas leases with stipulations that would let the burden of environmental unacceptability fall upon the government rather than the lessee. Under this approach, leases would arguably convey a property right to develop, and if development ultimately proved unacceptable, the government's only recourse might be to institute an eminent domain action in federal court, compensating the leaseholder with taxpayer funds for the fair market value of the lease.

This approach would in effect place the burden of inertia on the government, allowing unacceptable impacts to occur unless the government instituted a judicial action to condemn the leasehold interest. Cranking up the eminent domain machinery takes considerable time, with serious environmental harm possible in the interim. It would also severely tax the planning process, by in effect requiring the government to make the necessary trade-offs and enter into firm commitments to explore and develop on the basis of the information available then. In an imperfect world, this is not always possible. Mistakes will be made, and unforeseen events will occur. A proper regard for protecting the environment requires, in the judgment of the committee, that the leases contain a general safety valve for dealing with serious environmental problems, so long as the lessee is reimbursed for its direct costs if development is prohibited.

Implementing the Committee's Recommendation

The committee notes that a potential difficulty with the compensation feature it endorses is in defining and determining what out-of-pocket costs are compensable. For example, a lessee may hold several adjacent leases. Drilling on one might encounter the type of environmental problem that would lead the government to invoke the stipulation. A lessee might run a seismic line along the edge of that environmentally sensitive lease and then seek reimbursement for the seismic survey, even though it was intended to, and did, provide valuable information for development of the adjacent, environmentally acceptable lease. Reimbursable costs should be specifically and tightly defined to ward off such abuse.

Finally, the committee also considered the possibility of establishing an insurance pool to cover the costs of compensating lessees. One idea would be to levy a small surcharge on lease bonuses and/or on lease royalties, calculated to raise a few million dollars a year. As indicated earlier,

the committee believes that it should be rare for lease stipulations giving rise to compensation to be invoked; therefore, the pool for compensation need not be very large. Reimbursement decisions might be supervised by a compensation board, with members expert in resource appraisal, petroleum accounting, and other pertinent fields.

The advantage of establishing a mechanism to raise money for compensation is that, at least theoretically, it allows the government agency to decide whether to invoke the stipulation without being unduly influenced by concerns about whether funds are available to compensate the lessee. A disadvantage is that it complicates accounting and might require creation of a minibureaucracy to administer.

The committee concluded that, because the experience on the Outer Continental Shelf has been that the power to stop development of a lease had never been used, there is no need at this point to create a full-blown funding and administrative mechanism to implement this lease stipulation onshore. Until and unless experience gained under this approach suggests the need for such a mechanism, it could be handled under existing lease administration procedures.

The proposals discussed above are the committee's core recommendations. The committee also considered a number of other matters upon which it submits the following recommendations.

RECOMMENDATION FIVE

The agencies should make efforts, short of creating substantial moratoria on lease offerings, to control the configuration and timing of leases in a particular area to allow for better assessment of the cumulative impacts of leasehold activities in the area.

As noted earlier, the customary federal practice has been to offer lands for lease as soon as they become available. Because federal lands have usually not been offered for lease except upon request, and are made available for releasing automatically upon expiration of existing leases, the configuration (tract sizes and locations) and timing of leases are fixed relatively haphazardly. The result is that lease offerings often do not form a pattern that allows for sensible planning and assessment of impacts on surface resources. Such variations may also adversely affect the industry's ability to assemble logical exploration units. The Reform Act speaks a little to this issue, requiring that lease tracts "be as nearly compact as possible" (30 USC 226(b)(1)(A)).

One way to deal with the uncertainty of whether an area contains oil and gas in developable quantities is to lease only part of an area, and refrain from leasing the remainder until more is known through exploration of the

few tracts leased. In one sense, this is a variation of the concept of leasing for exploration in the committee's recommendation two. But rather than separate the development decision from the leasing decision by means of stipulations in the lease itself, this approach would separate the decision to develop a large area of land from the decision to issue an individual lease or leases for a part of that land.

A major practical difficulty with moving vigorously toward such a system of leasing in stages with more coherent tract configuration is that it could lead to (in fact, would probably require in some cases) delays in releasing tracts as old leases expire, in order to assemble a block of unleased land to be able to start fresh. This can create difficulties for those states that are dependent upon steady streams of revenue from the federal leasing program, because it can interrupt the flow of lease revenues. Such moratoria, even if they are temporary, can also lead to concern in the petroleum industry that a delay in leasing in a particular area will make it more difficult to resume leasing. Another problem is that state and private lands are sometimes intermingled with federal lands, which lessens the control the federal agencies can exercise over the timing of exploration and development.

A delay in leasing to reconfigure tracts might, on National Forest land, be seen as inconsistent with the thrust of the Energy Security Act (see p. 45), which admonished the Forest Service not to delay leasing decisions in order to prepare new plans. Cutting the other way, however, are decisions construing the National Environmental Policy Act as requiring agencies to consider, before taking any action, the cumulative impacts of several individual, contemporaneous agency actions in a single environmental analysis, such as where several pending proposals for energy development "will have cumulative or synergistic environmental impact upon a region" (*Kleppe* v. *Sierra Club*, 427 US 390, 410 [1976]).

The committee believes that the federal land management agencies ought to pay more attention to this issue in administering the leasing system, but should move carefully because of the potential difficulties involved in delaying lease offerings. Where the agencies have the opportunity, such as in leasing areas for the first time, or where temporary delays in leasing in certain areas have occurred for other reasons, the agencies should try to configure and assemble parcels for leasing in a way that would allow better and fairer (to both potential lessees and other interests) consideration of the trade-offs between the environment and mineral development.

To the extent this is attempted, the Reform Act creates a potential obstacle to synchronizing leases in a particular area. It requires that lands offered for lease but not leased competitively "shall be offered promptly within 30 days for [noncompetitive] leasing . . . and shall remain available for [noncompetitive] leasing for a period of 2 years after the competitive

lease sale" (30 USC 226 (b)(1)(A)). This allowance of a 2-year window for noncompetitive leasing creates the possibility that leases issued at the same time in a particular area may have considerably different expiration dates.

In order to keep leases in a particular area in synchronization with each other as much as possible, the committee suggests that consideration be given to amending the statute to narrow the "window" for noncompetitive leasing to two weeks or 30 days. This would not require much change in actual practice, because to date, almost all of the leases issued noncompetitively are actually issued within one week of the competitive sale.

RECOMMENDATION SIX

Consideration ought to be given to shortening the term of noncompetitive leases.

Competitive leases are issued for 5-year terms; noncompetitive leases, for 10 years (30 USC 226 (e)). Shortening the noncompetitive lease term offers a partial solution to the forecasting difficulties in making leasing decisions in land use plans; that is, every year the lease term is shortened would shorten the planning horizon, and the time lag between leasing decisions and drilling, by like amount. At least theoretically, this would make better forecasts of impacts possible.

Good reasons may exist independently of the problem under discussion to recommend shortening the noncompetitive lease term. Making both kinds of leases the same term would undercut the bidders' incentive to avoid bidding competitively on leases and would probably result in greater financial return to federal and state treasuries.

On the other hand, the committee is unable to reach a conclusion about the impact such a shorter lease term may have upon the onshore oil and gas industry. A shorter term may lessen the ability of onshore lessees to assemble land positions (combinations of leases) necessary to carry out an exploration program. As noted earlier, onshore land ownership patterns are more variegated and complex than offshore, and substantial time may be required to negotiate necessary arrangements. Also, the fact that onshore operators are usually smaller independent companies means they tend to require more outside financing for exploration, which may also require substantial time to negotiate.

RECOMMENDATION SEVEN

The agencies should improve opportunities for public participation in their decisions to issue leases and to waive, suspend, or modify lease stipulations.

The committee recommends that the agencies create a simple, standard procedure for dealing with these public participation issues. These are largely technical, process matters susceptible of relatively easy solutions. They are, however, important in giving the oil and gas industry, other interest groups, the public, and other governmental agencies confidence in the oil and gas leasing program and its administration.

The agencies should do more than just post a notice in their offices; they should be aggressive in reaching out to provide notice to, and solicit input from, the state and local governments and the public. The agencies should maintain a mailing list of interested parties to receive notice of sales and related decisions as a matter of routine. Furthermore, the process for rescinding, modifying, or suspending lease stipulations should be treated with the same dignity and weight as the process of selecting them in the first place.

RECOMMENDATION EIGHT

Where the potential impacts of oil and gas activity would extend beyond the borders of the planning area, the federal land management agency should coordinate its planning analysis with planning efforts by the same agency in adjacent planning areas, and with other agencies that have jurisdiction over nearby lands and other surface values.

One of the obstacles to rational planning in relation to oil and gas development is the complexity of ownerships often encountered. Federal land or federally owned minerals may be intermingled with state, tribal, and private land or minerals. Moreover, federal land may itself be under the jurisdiction of different federal agencies, typically, the Forest Service and the Bureau of Land Management.

Ownership and management jurisdictional lines usually depart from watershed or ecosystem boundaries, and at least some environmental impacts from oil and gas activity may be felt on adjacent lands. This also renders more difficult efforts to predict and assess what kind of development is reasonably foreseeable at the planning stage; that is, the agencies may have little or no control over development on state, tribal or private lands in the same area.

From the standpoint of rational planning, the difficulties here are similar to those created by the hodgepodge pattern of leases and lease expiration dates that has resulted from the former general practice of leasing available lands upon request.

The committee believes the agencies should coordinate their oil and gas planning and decision making with adjacent planning units of the same agency, and with other agencies and parties (federal, state, tribal, local, and private) that manage or regulate activities on nearby lands. Existing law

already contains provisions that promote such coordination; to some extent problems can be mitigated if the agencies aggressively solicit the input of other affected interests during their planning and NEPA processes.

Coordination does not, of course, demand consistency in recommendations, decisions, and policies. It can, however, help all interested parties and agencies plan for, and respond to, the activities authorized in the plans.

The committee recognizes that there is no mechanism, other than persuasion, that requires adjacent planning units to cooperate in the federal land use planning process. In the event that these adjacent planning units fail to cooperate, or fail to cooperate in a timely fashion, the federal planning agencies should continue their planning activities on schedule.

RECOMMENDATION NINE

To the extent feasible, the foregoing recommendations ought to be incorporated in the agencies' planning and leasing systems and applied to existing lessees.

An effort to resolve the conflicts and problems arising out of current planning and leasing practices must take account of the presence of some 80,000 existing oil and gas leases covering some 67 million acres of federal lands. The nature of the rights to explore and produce conveyed in these leases may vary somewhat from lease to lease. To the extent that these leases actually convey vested rights to develop, they may limit or even prevent application of some of the committee's recommendations to activities conducted on the leaseholds.

Furthermore, solutions to the current problems must also take into account the ongoing nature of the agencies' planning processes. In some areas plans have been completed that may not comport with the recommendations here. But, the agencies are taking steps to revise the treatment of oil and gas leasing in current plans that they have determined do not adequately comply with the judicial decisions discussed earlier in this report.

A single, generic solution to these problems is probably not practical. The committee believes that existing leases ought to be subject, to the extent feasible, to the regime that the committee recommends. The analysis of reasonably foreseeable impacts of development and the unsuitability review the committee recommends for the planning stage obviously must not be applied in a way that destroys vested rights in existing leases. At the same time, existing leases must be taken into account. Furthermore, the committee recommends that, where possible, existing leases be made subject to the reservation of authority to prevent serious environmental harm, with an obligation to reimburse the lessee, as stated in the committee's recommendation four. Some leases may already contain such a reservation of authority. Even where they do not, it is possible that existing lessees

might be agreeable to amending their leases voluntarily to include such a condition, because the promise of reimbursement upon denial of permission to proceed is a more certain remedy than lessees now have under existing law. That is, even though existing lessees may have a right of compensation under certain circumstances, costly litigation might be necessary to establish it.

One way that some existing lessees might be encouraged to agree to accept the stipulation would be if the Secretary of the Interior were willing to suspend lease operations for a limited period, such as one year. One possibility that might allow this is for the secretary to use his authority under section 39 of the Mineral Leasing Act to suspend lease operations, with a commensurate extension of the lease term, in the interests of conservation (30 USC 209). Such an extension of the term of existing leases to allow incorporation of the stipulation could, at least in sensitive areas where the availability of the stipulation might be particularly important, be a useful step to take.

In any event, if applying such a stipulation to existing lessees unwilling to include it voluntarily would require legislation, the committee notes that Congress in the 1978 Outer Continental Shelf Lands Act Amendments did apply such a provision to existing lessees.

Regarding land use plans, the committee recommends that the agencies continue their practice of modifying and amending their plans as necessary to conform to its recommendations. The committee cautions, however, that a general or even substantial moratorium on new leasing should not be instituted in order to implement its recommendations fully and immediately. The committee notes, in this connection, that the clarifications and adjustments in the agencies' planning processes contained in the House version of the Reform Act would have given the agencies a transition period of more than 3 years to bring their plans into conformity with the bill (see H.R. Rep. No. 100-378, pp. 4, 9).

National needs for oil and gas exploration and production and the desirability of sustaining a domestic onshore industry cannot be ignored in the transition to an improved system. Perfection in land use planning and in administering an oil and gas leasing and management program is unattainable. The committee believes that planning and leasing can be improved by implementing the recommendations in this report, but improvement may take some time to realize in the ongoing planning and leasing processes.

The committee has no firm basis for estimating the costs and agency staff needs that would be required to implement its recommendations. Land use plans such as that for the Bridger-Teton National Forest, a relatively complex and costly plan, can cost on the order of $3 million. Only a portion of the cost of such plans, which generally devote considerably

more attention to other resources, concerns planning related to oil and gas exploration and development. Furthermore, the costs may decline as the new planning requirements become more familiar. The committee's recommendations would place some additional burden on the planning process and add marginally to the cost of land use planning.

Bidders and lessees are also likely to incur some additional costs for data collection and analysis if the committee's recommendations are adopted. These would add marginally to the already substantial costs of evaluating federal land areas for possible exploration and development.

To be weighed against the additional governmental and industry planning costs are the costs to the public of continued stalemates in oil and gas leasing on some federal lands. These, too, are costs for which the committee is unable to provide estimates. But resolving the contentious environmental and oil and gas development issues, to which the committee's recommendations are directed, is intended to reduce these costs to the public. The committee believes that the most cost-effective and equitable way to resolve these issues is through strengthening the role of planning in the leasing process, and making some adjustments in the leasing process to make planning more effective.

Finally, the committee has not examined closely whether the agencies have authority to implement these recommendations under existing law, or whether legislation is necessary. In one case—committee recommendation six, that consideration be given to shortening the lease term for noncompetitive leases—legislation would clearly be necessary. With other recommendations, the matter is not so clear. Ultimately, the legal questions involved are up to the agencies and, if necessary, Congress or the courts to decide.

REFERENCE

Forest Service. 1989. Oil and Gas Resources Proposed Rule. Fed. Reg. 54(13):3326-3339.

Minority Statement

The recommendations of the committee do not adequately address the fact that the specific location of oil and gas fields remains unknown until exploration occurs. The report recommends that exploration and discovery should proceed with stipulations, then a second decision should be made by the Agency as to whether or not the discovered oil or gas could be produced. The report further recommends that in some areas no exploration should take place until environmental concerns are compared with the potential for oil or gas field development. Both of these approaches to planning for oil and gas use on federal lands, not already withdrawn from leasing, are unrealistic operating procedures for industry, and further they provide undefined reasons for protests by groups opposed to oil and gas activities on federal land.

There has been very little input to the report from the industry. It would benefit the agencies and congressional committees greatly to get additional input as to whether or not the recommendations are realistic and the report is usable. The report that we produced very adequately addresses the environmental concerns of oil and gas use, but due to the makeup of the committee the recommendations are inadequate and unrealistic as to the practical effect on oil and gas development.

This Minority Statement is submitted with the sincere hope that the agencies and committees will consider the reasonableness and workability of the recommendations. Implementing the recommendations would move us toward a set of rules in which industry cannot function and that are counter to the best interest of our country's economic and national security.

Submitted by:
James A. Barlow, Jr.
September 18, 1989

Appendixes

Appendix A

Statement of Tasks Agreed on by the Bureau of Land Management, the Forest Service, and the National Academy of Sciences

The Committee is established to conduct a study on the manner by which oil and gas resources are considered in land use planning by the Forest Service (FS) and the Bureau of Land Management (BLM), including impacts of oil and gas exploration and development and the extent to which the consequences of oil and gas development can be analyzed, or reasonably foreseen, during the land use planning stage prior to actual lease issuance.

The Committee will conduct a study of:

- current BLM and FS land use planning direction as it relates to oil and gas leasing;
- the interrelation between oil and gas leasing decisions and other resource planning decisions;
- impacts of oil and gas exploration and development on wildlife and other resource values;
- whether lease stipulations presently in use are largely successful in resolving potential resource value conflicts (as amended by a letter of Frank Press, October 3, 1988).

Appendix B

Letter from Chairmen Clarifying Task

Congress of the United States

House of Representatives

Washington, D.C. 20515

March 2, 1988

Frank Press, President
National Academy of Sciences
Charles A. Bowsher, Comptroller General
U.S. General Accounting Office
Washington, D.C.

Dear Messrs. Press and Bowsher:

Section 5111 of the Federal Onshore Oil and Gas Leasing Reform Act of 1987, recently enacted as part of the Omnibus Budget Reconciliation Act of 1987, requires the National Academy of Sciences and the Comptroller General of the United States to conduct a study on the manner by which oil and gas resources are considered in land use plans developed pursuant to the Federal Land Policy and Management Act of 1976 and the Rangeland Renewable Resources Planning Act of 1974 as amended.

The language of section 5111 provides for the study to recommend any improvements which could be made to ensure that (1) potential oil and gas resources are adequately addressed in planning documents, (2) the social, economic and environmental consequences of exploration and development of oil and gas resources are determined, and (3) any stipulations to be applied to oil and gas leases are clearly identified.

As the authors of the legislation which ultimately became the subject of our House-Senate Conference Committee meetings on the Federal Onshore Oil and Gas Leasing Reform Act of 1987, we would like to take this opportunity to provide the National Academy of Sciences and General Accounting Office with our views on the issues which the study should examine.

It should be noted that the study provision was devised during the conference as a compromise to section 5 of H.R. 2851, the bill which was reported by the Committee on Interior and Insular Affairs and included as section 5004 of the House version of the budget reconciliation legislation (H.R. 3545).

Section 5 of H.R. 2851 was drafted to address problems in land use planning as it relates to oil and gas leasing based on testimony received during a number of hearings conducted by the Subcommittee on Mining and Natural Resources. The Senate conferees fundamentally disagreed with the House regarding the need for legislative changes in oil and gas leasing land use planning. However, the Senate agreed to examine the issues raised by section 5 in the future. The study requested by section 5111 is to assist in this oversight effort and future congressional deliberations.

In effect, the purpose of the study is to examine the issues raised by section 5 of the House bill and to provide relevant data, information, analyses and expert opinion on these issues so as to assist Congress in reaching a consensus regarding the question of whether there is a need for revisions to land use planning or leasing statutes.

In accordance with section 5111 of the Federal Onshore Oil and Gas Leasing Reform Act we would find the following information useful. The study, however, should not necessarily be limited to only these items.

- The adequacy of BLM and Forest Service land use planning budgets.
- A survey of current BLM and Forest Service land use planning direction as it relates to oil and gas leasing.
- A catalogue of the treatment of oil and gas leasing issues in existing BLM and Forest Service land use plans.
- Study of specific impacts of oil and gas exploration and development, including case studies, on wildlife and other resource values.
- Study of the interrelation between oil and gas leasing decisions and other resource planning decisions.
- The extent to which the consequences of oil and gas development can be analyzed, or reasonably foreseen, during the land use planning stage prior to actual lease issuance.
- The effectiveness of lease stipulations.

As the study progresses please do not hesitate to contact us if we may be of any assistances.

Sincerely,

DALE BUMPERS, CHAIRMAN
SUBCOMMITTEE ON PUBLIC LANDS,
NATIONAL PARKS AND FORESTS

NICK J. RAHALL, CHAIRMAN
SUBCOMMITTEE ON MINING
AND NATURAL RESOURCES

Appendix C

U.S. Department of the Interior, Bureau of Land Management, Offer to Lease and Lease for Oil and Gas

Form 3100-11
(June 1988)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Serial No.

OFFER TO LEASE AND LEASE FOR OIL AND GAS

The undersigned *(reverse)* offers to lease all or any of the lands in Item 2 that are available for lease pursuant to the Mineral Leasing Act of 1920, as amended and supplemented (30 U.S.C. 181 et seq.), the Mineral Leasing Act for Acquired Lands of 1947, as amended (30 U.S.C. 351-359), the Attorney General's Opinion of April 2, 1941 (40 Op. Atty. Gen. 41), or the

READ INSTRUCTIONS BEFORE COMPLETING

1. Name
   Street
   City, State, Zip Code

2. This application/offer/lease is for: *(Check only One)* ( ) PUBLIC DOMAIN LANDS ( ) ACQUIRED LANDS (percent U.S. interest _____)
   Surface managing agency if other than BLM: _____ Unit/Project _____
   Legal description of land requested: *Parcel No.: _____ *Sale Date (m/d/y): ____ / ____ / ____
   ***SEE ITEM 2 IN INSTRUCTIONS BELOW PRIOR TO COMPLETING PARCEL NUMBER AND SALE DATE.**
   T. R. Meridian State County

Total acres applied for _____

Amount remitted: Filing fee $ _____ Rental fee $ _____ Total $ _____

DO NOT WRITE BELOW THIS LINE

3. Land included in lease:

T.	R.	Meridian	State	County

Total acres in lease _____

Rental retained $ _____

This lease is issued granting the exclusive right to drill for, mine, extract, remove and dispose of all the oil and gas *(except helium)* in the lands described in Item 3 together with the right to build and maintain necessary improvements thereupon for the term indicated below, subject to renewal or extension in accordance with the appropriate leasing authority. Rights granted are subject to applicable laws, the terms, conditions, and attached stipulations of this lease, the Secretary of the Interior's regulations and formal orders in effect as of lease issuance, and to regulations and formal orders hereafter promulgated when not inconsistent with lease rights granted or specific provisions of this lease.

NOTE: This lease is issued to the high bidder pursuant to his/her duly executed bid or nomination form submitted under 43 CFR 3120 and is subject to the provisions of that bid or nomination and those specified on this form.

Type and primary term of lease:

[ ] Noncompetitive lease (ten years)

[ ] Competitive lease (five years)

[ ] Other _____

THE UNITED STATES OF AMERICA

by _____
(Signing Officer)

_____ _____
(Title) (Date)

EFFECTIVE DATE OF LEASE _____

(Continued on reverse)

4. (a) Undersigned certifies that (1) offeror is a citizen of the United States, an association of such citizens, a municipality, or a corporation organized under the laws of the United States or of any State or Territory thereof; (2) all parties holding an interest in the offer are in compliance with 43 CFR 3100 and the leasing authorities; (3) offeror's chargeable interests, direct and indirect in either public domain or acquired lands do not exceed 246,080 acres in Federal oil and gas leases in the same State, of which not more than 200,000 acres are held under option, or 300,000 acres in leases and 200,000 acres in options in either leasing District in Alaska; (4) offeror is not considered a minor under the laws of the State in which the lands covered by this offer are located; (5) offeror is in compliance with qualifications concerning Federal coal lease holdings provided in sec. 2(a)(2)(A) of the Mineral Leasing Act; (6) offeror is in compliance with reclamation requirements for all Federal oil and gas lease holdings as required by sec. 17(g) of the Mineral Leasing Act; and (7) offeror is not in violation of sec. 41 of the Act.

(b) Undersigned agrees that signature to this offer constitutes acceptance of this lease, including all terms, conditions, and stipulations of which offeror has been given notice, and any amendment or separate lease that may include any land described in this offer open to leasing at the time this offer was filed but omitted for any reason from this lease. The offeror further agrees that this offer cannot be withdrawn, either in whole or in part, unless the withdrawal is received by the proper BLM State Office before this lease, an amendment to this lease, or a separate lease, whichever covers the land described in the withdrawal, has been signed on behalf of the United States.

This offer will be rejected and will afford offeror no priority if it is not properly completed and executed in accordance with the regulations, or if it is not accompanied by the required payments. 18 U.S.C. Sec. 1001 makes it a crime for any person knowingly and willfully to make to any Department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Duly executed this _____ day of _____, 19 _____.

_____
(Signature of Lessee or Attorney in-fact)

LEASE TERMS

Sec. 1. Rentals—Rentals shall be paid to proper office of lessor in advance of each lease year. Annual rental rates per acre or fraction thereof are:

(a) Noncompetitive lease, $1.50 for the first 5 years; thereafter $2.00;
(b) Competitive lease, $1.50; for primary term; thereafter $2.00;
(c) Other, see attachment; or
as specified in regulations at the time this lease is issued.

If this lease or a portion thereof is committed to an approved cooperative or unit plan which includes a well capable of producing leased resources, and the plan contains a provision for allocation of production, royalties shall be paid on the production allocated to this lease. However, annual rentals shall continue to be due at the rate specified in (a), (b), or (c) for those lands not within a participating area.

Failure to pay annual rental, if due, on or before the anniversary date of this lease (or next official working day if office is closed) shall automatically terminate this lease by operation of law. Rentals may be waived, reduced, or suspended by the Secretary upon a sufficient showing by lessee.

Sec. 2. Royalties—Royalties shall be paid to proper office of lessor. Royalties shall be computed in accordance with regulations on production removed or sold. Royalty rates are:

(a) Noncompetitive lease, 12½%;
(b) Competitive lease, 12½%;
(c) Other, see attachment; or
as specified in regulations at the time this lease is issued.

costs claimed as manufacturing, preparation, and/or transportation costs. All such records shall be maintained in lessee's accounting offices for future audit by lessor. Lessee shall maintain required records for 6 years after they are generated or, if an audit or investigation is underway, until released of the obligation to maintain such records by lessor.

During existence of this lease, information obtained under this section shall be closed to inspection by the public in accordance with the Freedom of Information Act (5 U.S.C. 552).

Sec. 6. Conduct of operations—Lessee shall conduct operations in a manner that minimizes adverse impacts to the land, air, and water, to cultural, biological, visual, and other resources, and to other land uses or users. Lessee shall take reasonable measures deemed necessary by lessor to accomplish the intent of this section. To the extent consistent with lease rights granted, such measures may include, but are not limited to, modification to siting or design of facilities, timing of operations, and specification of interim and final reclamation measures. Lessor reserves the right to continue existing uses and to authorize future uses upon or in the leased lands, including the approval of easements or rights-of-way. Such uses shall be conditioned so as to prevent unnecessary or unreasonable interference with rights of lessee.

Prior to disturbing the surface of the leased lands, lessee shall contact lessor to be apprised of procedures to be followed and modifications or reclamation measures that may be necessary. Areas to be disturbed may require inventories or special studies to determine the extent of impacts to other resources. Lessee may be required to complete minor inventories or short term special studies under guidelines provided by lessor. If in the conduct of operations, threatened or endangered species, objects of historic or scientific interest, or substantial unanticipated environmental effects are observed, lessee shall immediately contact lessor. Lessee shall cease any operations that would result in the destruction of such species or objects.

Lessor reserves the right to specify whether royalty is to be paid in value or in kind, and the right to establish reasonable minimum values on products after giving lessee notice and an opportunity to be heard. When paid in value, royalties shall be due and payable on the last day of the month following the month in which production occurred. When paid in kind, production shall be delivered, unless otherwise agreed to by lessor, in merchantable condition on the premises where produced without cost to lessor. Lessee shall not be required to hold such production in storage beyond the last day of the month following the month in which production occurred, nor shall lessee be held liable for loss or destruction of royalty oil or other products in storage from causes beyond the reasonable control of lessee.

Minimum royalty in lieu of rental of not less than the rental which otherwise would be required for that lease year shall be payable at the end of each lease year beginning on or after a discovery in paying quantities. This minimum royalty may be waived, suspended, or reduced, and the above royalty rates may be reduced, for all or portions of this lease if the Secretary determines that such action is necessary to encourage the greatest ultimate recovery of the leased resources, or is otherwise justified.

An interest charge shall be assessed on late royalty payments or underpayments in accordance with the Federal Oil and Gas Royalty Management Act of 1982 (FOGRMA) (30 U.S.C. 1701). Lessee shall be liable for royalty payments on oil and gas lost or wasted from a lease site when such loss or waste is due to negligence on the part of the operator, or due to the failure to comply with any rule, regulation, order, or citation issued under FOGRMA or the leasing authority.

Sec. 3. Bonds—A bond shall be filed and maintained for lease operations as required under regulations.

Sec. 4. Diligence, rate of development, unitization, and drainage—Lessee shall exercise reasonable diligence in developing and producing, and shall prevent unnecessary damage to, loss of, or waste of leased resources. Lessor reserves right to specify rates of development and production in the public interest and to require lessee to subscribe to a cooperative or unit plan, within 30 days of notice, if deemed necessary for proper development and operation of area, field, or pool embracing these leased lands. Lessee shall drill and produce wells necessary to protect leased lands from drainage or pay compensatory royalty for drainage in amount determined by lessor.

Sec. 5. Documents, evidence, and inspection—Lessee shall file with proper office of lessor, not later than 30 days after effective date thereof, any contract or evidence of other arrangement for sale or disposal of production. At such times and in such form as lessor may prescribe, lessee shall furnish detailed statements showing amounts and quality of all products removed and sold, proceeds therefrom, and amount used for production purposes or unavoidably lost. Lessee may be required to provide plats and schematic diagrams showing development work and improvements, and reports with respect to parties in interest, expenditures, and depreciation costs. In the form prescribed by lessor, lessee shall keep a daily drilling record, a log, information on well surveys and tests, and a record of subsurface investigations and furnish copies to lessor when required. Lessee shall keep open at all reasonable times for inspection by any authorized officer of lessor, the leased premises and all wells, improvements, machinery, and fixtures thereon, and all books, accounts, maps, and records relative to operations, surveys, or investigations on or in the leased lands. Lessee shall maintain copies of all contracts, sales agreements, accounting records, and documentation such as billings, invoices, or similar documentation that supports

Sec. 7. Mining operations—To the extent that impacts from mining operations would be substantially different or greater than those associated with normal drilling operations, lessor reserves the right to deny approval of such operations.

Sec. 8. Extraction of helium—Lessor reserves the option of extracting or having extracted helium from gas production in a manner specified and by means provided by lessor at no expense or loss to lessee or owner of the gas. Lessee shall include in any contract of sale of gas the provisions of this section.

Sec. 9. Damages to property—Lessee shall pay lessor for damage to lessor's improvements, and shall save and hold lessor harmless from all claims for damage or harm to persons or property as a result of lease operations.

Sec. 10. Protection of diverse interests and equal opportunity—Lessee shall: pay when due all taxes legally assessed and levied under laws of the State or the United States; accord all employees complete freedom of purchase; pay all wages at least twice each month in lawful money of the United States; maintain a safe working environment in accordance with standard industry practices; and take measures necessary to protect the health and safety of the public.

Lessor reserves the right to ensure that production is sold at reasonable prices and to prevent monopoly. If lessee operates a pipeline, or owns controlling interest in a pipeline or a company operating a pipeline, which may be operated accessible to oil derived from these leased lands, lessee shall comply with section 28 of the Mineral Leasing Act of 1920.

Lessee shall comply with Executive Order No. 11246 of September 24, 1965, as amended, and regulations and relevant orders of the Secretary of Labor issued pursuant thereto. Neither lessee nor lessee's subcontractors shall maintain segregated facilities.

Sec. 11. Transfer of lease interests and relinquishment of lease—As required by regulations, lessee shall file with lessor any assignment or other transfer of an interest in this lease. Lessee may relinquish this lease or any legal subdivision by filing in the proper office a written relinquishment, which shall be effective as of the date of filing, subject to the continued obligation of the lessee and surety to pay all accrued rentals and royalties.

Sec. 12. Delivery of premises—At such time as all or portions of this lease are returned to lessor, lessee shall place affected wells in condition for suspension or abandonment, reclaim the land as specified by lessor and, within a reasonable period of time, remove equipment and improvements not deemed necessary by lessee for preservation of producible wells.

Sec. 13. Proceedings in case of default—If lessee fails to comply with any provisions of this lease, and the noncompliance continues for 30 days after written notice thereof, this lease shall be subject to cancellation unless or until the leasehold contains a well capable of production of oil or gas in paying quantities, or the lease is committed to an approved cooperative or unit plan or communitization agreement which contains a well capable of production of unitized substances in paying quantities. This provision shall not be construed to prevent the exercise by lessee of any other legal and equitable remedy, including waiver of the default. Any such remedy or waiver shall not prevent later cancellation for the same default occurring at any other time. Lessee shall be subject to applicable provisions and penalties of FOGRMA (30 U.S.C. 1701).

Sec. 14. Heirs and successors-in-interest—Each obligation of this lease shall extend to and be binding upon, and every benefit hereof shall inure to the heirs, executors, administrators, successors, beneficiaries, or assignees of the respective parties hereto.

Appendix D

Detailed Description of Notice of Staking, Application for Permit to Drill, and Approved Drilling Plan Procedures, as Delineated in Figure 6.4*

* SOURCE: Bureau of Land Management and Forest Service. 1989. Surface Operating Standards for Oil and Gas Exploration and Development. January.

NOTICE OF STAKING PROCEDURES GUIDELINES (NOS OPTION)

	Step I Staking Notice	Step II Onsite Inspection	Step III APD Review and Processing
Operator Action:	1. Contact SMA prior to staking for potential conflicts and concerns. (Operator's option) 2. File Notice of Staking with BLM and SMA.	1. Arranges participation of drilling and dirt contractors, and if necessary, surveyors and archaeologist at inspection. To be scheduled by the BLM or Forest Service. 2. Participates in inspection, secures information for surface-use program or develops program onsite.	1. Prepares surface use & drilling programs, incorporates onsite inspection information. 2. Files complete APD with BLM. 3. If necessary, files private surface agreement & archaeological report with SMA. 4. Files application for offlease permit with SMA, if other than BLM. APD serves as formal ROW application for BLM lands.
Federal Action:	1. Upon initial contact, SMA apprises operator of conflicts and concerns. 2. Upon receipt of NOS, schedules onsite inspection with operator. 3. BLM and SMA initiates environmental review. Posts notice of proposal action.	1. BLM/FS schedules and conducts inspection with operator, contractors and SMA. 2. BLM/FS apprises operator of requirements for a complete APD at onsite or within 5 days. 3. Identifies offlease ROW or other permit needs.	1. BLM & FS upon receipt of APD, reviews surface use and drilling programs for completeness. Returns incomplete APDs. 2. Completes environmental analysis and completes necessary documentation. 3. BLM consults with or obtains FS/SMA approval of surface-use program. 4. Completes conditions of approval. 5. APD and permits approved or rejected. 6. Ensure adequate bonding or surety to cover approved operations.
Field Activities:	1. Operator surveys and stakes well, access road and ancillary facilities prior to inspection.	1. Conduct onsite inspection. 2. Stake location of well site, roads, and ancillary facilities as agreed at onsite. 3. Operator secures cultural resource inventory, if required.	
Timeframe:	1. Onsite inspection to be scheduled within 15 days of NOS receipt.	1. Onsite inspection conducted within 15 days of receipt of NOS. 2. Furnish operator with additional requirements at the onsite or within 5 working days of inspection.	1. Operator submits complete APD within 45 days of inspection. 2. BLM advises operator within 7 days as to completeness of APD. 3. BLM processes complete APD and either approves or rejects within 10 days of receipt.

APPLICATION FOR PERMIT TO DRILL PROCEDURES GUIDELINES (APD OPTION)

	Step I Application for Permit to Drill	Step II Onsite Inspection	Step III Final APD Review and Processing
Operator Action:	1. Contacts SMA for potential land-use conflicts, areas of concern and permit needs. (Operator's option.)	1. Arranges participation of drilling and dirt contractors and others, as applicable.	1. Corrects, revises and/or amends APD and permit applications, as needed.
	2. Prepares APD (surface-use and drilling programs) and files with BLM.	2. Participates in the onsite inspection.	2. Files revised and completed APD with BLM and permit application amendments with the SMA.
	3. Files for permits required by SMA. On BLM lands APD serves as rights-of-way (ROW) application.		3. If necessary, files private surface agreement & archaeological report with SMA.
			4. Files application for off-lease permit with SMA, if other than BLM. APD serves as formal ROW application for BLM lands.
Federal Action:	1. Upon initial contact, SMA apprises operator of conflicts or concerns and other permit needs.	1. BLM/FS conducts onsite predrill inspection with operator, contractors and SMA.	1. Upon receipt of any APD revisions, reviews for completeness and approvability.
	2. Upon receipt of APD, BLM conducts preliminary review for completeness.	2. Location of well, access road and facilities and construction standards agreed upon.	2. Completes environemntal analysis and prepares necessary documentation.
	3. Posts Notice of Proposed Action.	3. Additional permit needs identified.	3. Consults with SMA or obtains FS approval of SUP and conditions of approval.
	4. BLM sends surface-use plan to SMA.	4. Operator advised of any deficiencies in surface use or drilling programs and provided with additional requirements.	4. Completes conditions of approval.
	5. Upon receipt of APD, BLM/FS schedules onsite inspection.		5. APD and permits approved or rejected.

	6. BLM/SMA initiates environmental analysis.		6. Ensure adequate bonding or surety to cover approval operations.
Field Activities:	1. Operator surveys and stakes well, access road and ancillary facilities for onsite inspection.	1. Conducts inspection.	
		2. Operator secures cultural resource inventory, if required.	
Timeframe:	1. BLM advises operator within 7 working days as to completeness of APD.	1. Onsite inspection conducted within 15 days after receipt of complete APD.	1. Operator submits complete APD within 45 days of inspection.
	2. Onsite inspection to be scheduled within 15 days after receipt of complete APD.	2. Operator furnished with additional requirements onsite or within 5 working days of onsite inspection.	2. BLM advises operator within 7 days as to completeness of APD.
			3. BLM processes APD and either approves or rejects within 30 days of receipt of a complete APD.

APPROVED DRILLING PLAN

	Step IV Operations Conducted Under Approved Plan	Step V Producer/Dry Hole Actions	Step VI Abandonment
Operator Action:	1. Conducts operations in accordance with approved plan etc. (See Chapter 3.) 2. Files necessary reports and Sundry Notices. 3. Files monthly report of operations.	1. Files Well Completion Report (WCR) and, if needed, proposed modification to the surface-use plan if well is productive. (See Chapter 3). 2. Files Notice of Intent to Abandon (NIA) if well is dry hole or well no longer productive. Prepares abandonment plan for wells which do not have an approved abandonment plan. 3. Participates in onsite inspection, if requested. 4. Files required reports & applications related to production operations (e.g., 5 day start up notice: site security diagrams, etc.)	1. Files Subsequent Report of Abandonment (SRA) following plugging of well. 2. Files FAN (Final Abandonment Notice) upon completion of reclamation and site is ready for inspection. 3. Applies for release of the period of bond liability, if appropriate.
Federal Action:	1. Conducts Compliance Inspections. 2. Reviews, and when applicable, approves Sundry Notices.	1. Reviews WCR/NIA and proposed plans. 2. Conducts field review or requests joint field exam with operator and SMA, if needed. Develops conditions of approval or additional reclamation measures for abandonment. 3. Requests information/revision of plans, as needed. 4. Prepares environmental documentation, if necessary. 5. Consults with SMA as to approvability of plan or obtains FS approval. 6. Approves or rejects plan.	1. Performs compliance checks of final reclamation. 2. Obtains FS approval of abandonment on FS lands. 3. Approves final abandonment and release of bond liability, as appropriate.
Field Activities:	1. Operator begins construction and drilling operations. 2. Federal agencies conduct compliance inspections.	1. Field review or joint field exam conducted. 2. Operator beings construction, completes well and installs production facilities. 3. Operator plugs well.	1. Operator completes all work and well site, road, etc., are reclaimed and ready for inspection. 2. Field inspection conducted by BLM and SMA.

		4. Operator initiates reclamation of well site, etc., in accordance with abandonment plan.		
Timeframe:	1. APD approval is valid for 1 year.	1. Required timeframes for various production related reports and applications are detailed in Chapter 3. 2. Review, approve or reject plans or applications normally within 30 days.	1. Files SRA within 30 days following completion of plugging. 2. Final abandonment approval timeframe variable, usually 1 to 2 years, depending on acceptable revegetation. 3. Inspection and bond release normally completed within 30 days (if final abandonment approved).	