Patterns and Trends in Federal Coal Lease Ownership, 1950-80

April 1981

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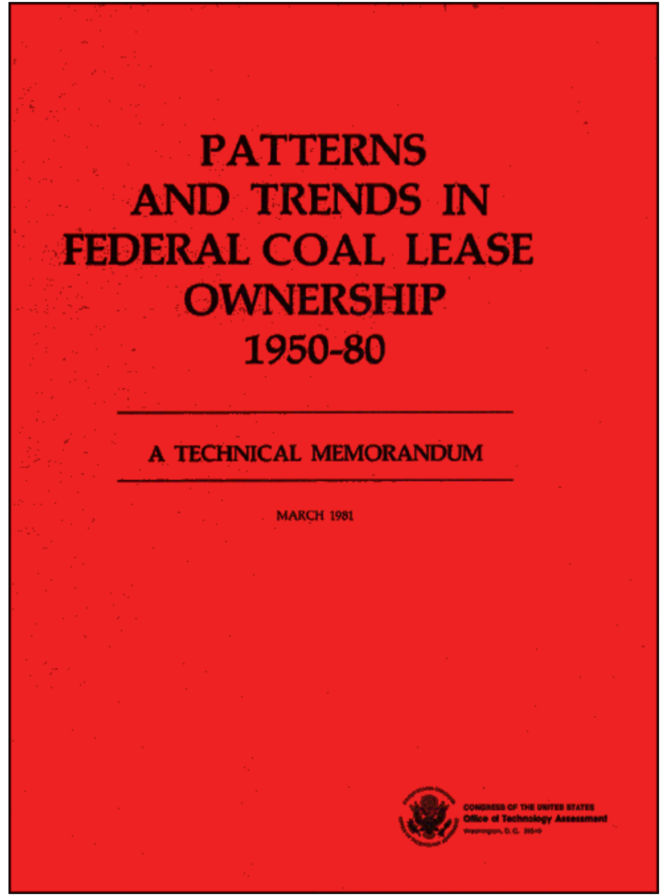

PATTERNS AND TRENDS IN FEDERAL COAL LEASE OWNERSHIP 1950-80

A TECHNICAL MEMORANDUM

MARCH 1981

CONGRESS OF THE UNITED STATES
Office of Technology Assessment
Washington, D.C. [illegible]

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Preface

The Office of Technology Assessment is carrying out an assessment on current Federal coal leases. The assessment is in response to Public Law **94-377** which required OTA to perform a complete analysis of all activities on current Federal coal leases. The final assessment report, which will focus on the development and production potential of these leases, is in preparation.

This technical memorandum on the patterns and trends in Federal coal lease ownership between **1950** and 1980 was prepared prior to the full Federal coal lease assessment at the request of Sen. James McClure, Chairman of the Committee on Energy and Natural Resources.

This memorandum traces the history of the 538 Federal coal leases in existence at the end of 1979. It focuses on the coal lessees themselves: who they are, what they do, how and when they acquired Federal coal leases, and what they have done with those leases. It identifies the participants in the Federal coal leasing program between 1950 and 1980, traces the ownership on a lease-by-lease basis, and discusses the business activities and organizational structures of the lessees.

This memorandum does not discuss anticipated production from Federal coal leases, nor does it discuss factors, including Federal policies, that could affect development of and production from Federal coal leases. These topics will be covered in the final report.

John H. Gibbons

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Contents

List of Tables

List of Figures

CHAPTER 1

Introduction and Findings

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Introduction and Findings

This technical memorandum is part of the Office of Technology Assessment's congressionally mandated study of outstanding Federal coal leases. This report traces the history of the 538 Federal coal leases in effect at the end of 1979.[1] It focuses on the coal lessees themselves: who they are, what they do, how and when they acquired Federal coal leases, and what they have done with these leases. More specifically, it identifies the participants in the Federal coal leasing program between 1950 and 1980, traces the history of ownership on a lease-by-lease basis, and discusses the business activities and organizational structures of the lessees.

The study is the first to analyze the component of the restructuring of the national coal industry as reflected in changing ownership patterns on Federal coal lands leased to the private sector. This study examines trends and developments in ownership patterns of leased Federal coal land and provides new information concerning the types of companies holding coal leases and the organizational structures used to manage their activities related to coal leases.

[1]This report does not analyze leases previously issued which have been relinquished or the few leases issued in 1980.

FEDERAL COAL: OVERVIEW

According to a 1977 mineral industry survey by the U.S. Bureau of Mines, approximately 54 percent of the demonstrated coal reserve base in the United States lies west of the Mississippi. The U.S. Department of Interior's final environmental statement for the Federal Coal Management Program (April 1979) states:

> Federal coal is expected to have a growing importance in national coal production. Of overall Western coal reserves, approximately 60 percent is owned by the Federal Government and an additional 20 percent is dependent on the availability of complementary Federal coal for its production.

Since 1920, the Department of Interior has conducted a leasing program through which the private sector gains permission to mine coal in Federal lands. During the past 60 years, about 17 billion tons of coal on 790,000 acres have been leased. Land currently under lease represents about 12 percent of the total coal reserves managed by the Federal Government. In fiscal year 1978, total production from leased land amounted to about 60 million tons.

No mining of Federal coal is possible without a lease. Issuance of a lease grants to the lessee the exclusive right to mine coal subject to conditions set forth in the lease by the Department of Interior and by Federal and State laws. Historically, leases have been issued by two methods; competitive bidding at lease sales and noncompetitively through an application process called preference right leasing. About half of all existing leases have been issued by each method, but the Federal Coal Leasing Amendments Act of 1976, which abolished the preference right system, requires competitive leasing of Federal coal.[2]

Coal mines on land currently under lease contribute an increasing share of the industry's total production. Output from mines on leased land provided 9 percent of the industry's total production in 1979 as contrasted with 1 percent in 1970. Coal is currently mined on 18 percent of the outstanding leases. The remaining 82 percent are in various stages of mine plan development or have experienced no development activity. The Department of Interior estimates that production of coal from land currently under lease will more than triple by 1985 from the 59 million tons produced in 1978 (1979 Federal Coal Management Program Report). Total national production, according to numerous fore-

[2]Unlike the oil and gas leasing program, no coal leases are issued through the lottery system.

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casts, is predicted to increase from 689 million tons in 1977 to approximately 1 billion tons by 1985.[3] The Department commenced issuing new leases under the new coal management program in January 1981, after a 10-year moratorium on most leasing. Given the 5- to 12-year leadtime required to develop a coal mine, production from presently unleased land will be relatively small during most of the 1980's.

[3] *The Direct Use of* Coal, OTA-E-86 (Washington, D. C.: Office of Technology Assessment, U.S. Congress, April 1979).

LEASE ACQUISITION

There are four ways for private parties, corporations, or individuals to obtain Federal coal leases. They are:

- de novo leasing from the Federal Government;
- assignment of an existing lease;
- segregation of an existing lease into two or more leases; and
- acquisition of a leaseholding company.

De novo leasing is used in this report to describe the original issuance by the Federal Government of a lease through competitive bid or a preference right lease application. Although every lease has a de novo origin, only 117, or 22 percent of all outstanding leases, are now owned by the de novo leasing party.

Under the Mineral Leasing Act, lessees are permitted to sell or transfer coal leases to other parties; this is called lease assignment. Seventy-five percent of all outstanding coal leases have been obtained by their current owner after assignment from earlier lessees. In many cases, lease ownership histories show several lease assignments: 146 leases (27 percent) have been assigned once in their history; 124 (23 percent) have been assigned twice; 133 leases have been assigned three or more times. One lease has been assigned six times.

Lease assignments are essentially private transactions. Under the Mineral Leasing Act, all assignments must be approved by the Department of Interior, but any cash, property, service agreement, or overriding royalty involved as part of the lease assignment is, with few limitations, a matter of negotiation between the assignor and assignee.

Lease segregation, also called partial assignment, involves the splitting by a lessee of an existing lease into two or more units with a new lease (or leases) being issued for a portion of the acreage. This study found that the current owners of 18 leases (3 percent of the total) obtained them from previous lessees by the segregation process.

The following table summarizes the lease acquisition routes used by the present owners of the 538 outstanding coal leases.

LEASE TITLE TRANSACTIONS

Means of lease acquisition	*Number of leases*	*Percent of leases*
De novo	117	22
Segregation	18	3
Assignment	403	
One	(146)	(27)
Two	(124)	(23)
Three or more	(133)	(25)
Total	538	100

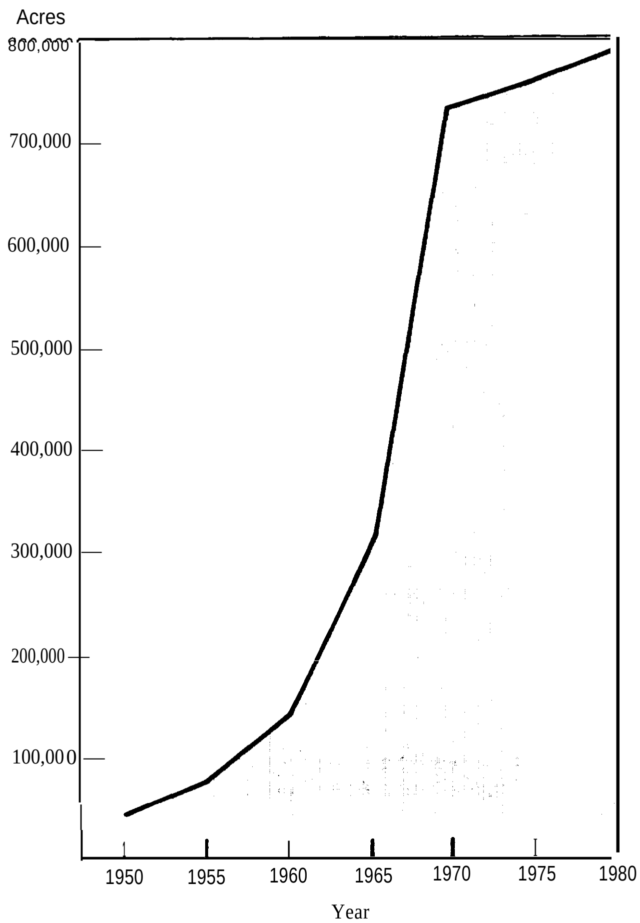
De novo leasing, assignments, and segregation are three methods through which a party can gain direct *ownership* of a Federal coal lease. Corporate acquisition is a method by which a company can gain *control* of a coal lease without necessarily obtaining ownership title to the lease itself. Scores of mergers and acquisitions affecting the control of hundreds of leases have occurred throughout the history of the leasing program. At least 10 of the 36 wholly owned coal mining companies now owning leases once held them as independent mining companies, including three companies acquired by major energy companies in 1980. [1]

Each of the four methods to acquire ownership or control of leases has been used by the largest leaseholders. This study has noted the tendencies of different companies or industries to use different acquisition methods to different degrees. Most individuals and steel companies, for example, obtained their leases de novo. On the other hand, only 16 of the 110 leases acquired by energy majors were obtained de novo. Half were obtained by assignment, at least 31 percent by the purchase of the leaseholding company, and 2 percent by segregation.

Figure 1 shows the total number of acres under Federal coal lease from 1950-80.

[1] Since corporate acquisitions do not necessarily result in a transfer of title of a coal lease, it is impossible in this survey to quantify precisely the number of corporate acquisitions involving leases.

Figure 1.—Total Acres of Federal Coal Under Lease 1950-80



SOURCE Office of Technology Assessment.

THE BUSINESS ORGANIZATION OF COAL LESSEES

Changes in the organization and management of coal mining enterprises is one measure of restructuring within the industry. This study examines trends in business reorganization reflected by changes in Federal coal lease ownership between 1950 and 1980. Four types of organizational structures were analyzed. They are:

- unincorporated individuals—persons, including sole proprietorships, partnerships, and estates;
- independent corporations—companies not wholly owned by one or more other companies;
- *subsidiary corporations-companies* wholly owned by a single other company; and
- *multicorporate* entities—companies wholly owned by two or more companies (such as joint ventures) and two or more companies sharing ownership interests in leases.

Distinct and important trends in business reorganization of the coal mining industry can be seen in the changes in coal lease ownership patterns between 1950 and 1980. The early dominance of small, single business, independent lessees has shifted to large, diversified, complex business entities. Historically, the coal leasing program has not served as a policy instrument through which the Government has influenced business organization trends in the coal industry. Leasing patterns have been the outcome of nongovernmental decisions and factors, specifically the business priorities of the lessees themselves and marketplace economics.

Table 1 and figure 2 trace the history of lease ownership by the four types of business organizations examined in this survey. The table and figure show that unincorporated individuals have held a steadily decreasing percentage of the Federal land under coal lease between 1950 and 1980. They reveal the dominant role of independent corporations as lessees through 1970 and their decline in relative importance since then. They show that lessees which are subsidiaries of parent corporations have increased their holdings to a position of dominance today. And they show that multicorporate entities are the newest type of business organization to attain significance in Federal coal leasing,

Unincorporated Individuals

In the early decades of the leasing program, most leases were held by individuals in their own name. In 1950, individuals held 27 percent of all acres under lease, collectively constituting the second largest category of lessee identified in the survey. The role of individuals has steadily declined in relative importance so that today they hold only 5 percent of all land under lease. There has been little new leasing by individuals in the past decade and there is little likelihood of substantial production on most leases held by individuals.

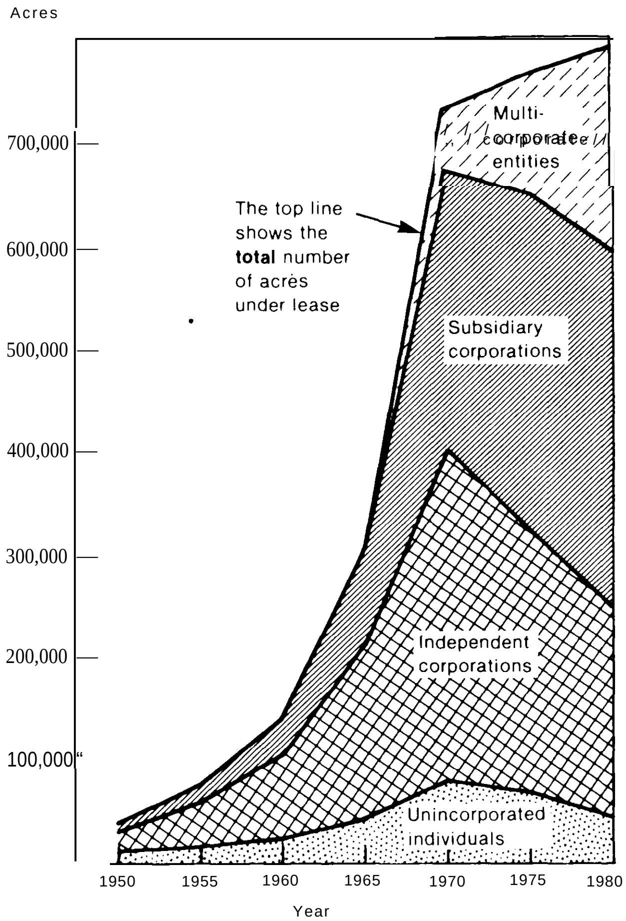
The decline in leasing by unincorporated individuals reflects the decreasing use of the "sole proprietorship" business organization by small

Table 1 .—Number of Acres Under Lease and Percent of Total Leased Land by Type of Business Organization, 1950-80

	Unincorporated individuals		Independent corporations		Subsidiary corporations		Multi corporate entities		Uncategorized companies	
Year	Acres (#)	Total land leased (%)	Acres (#)	Total land leased (%)	Acres (#)	Total land leased (%)	Acres (#)	Total land leased (%)	Acres (#)	Total land leased (%)
1950	11,129	27%	18,504	45%	10,824	26%	—	0%	1,035	2%
1955	17,618	23	40,495	53	15,921	21	—	0	1,915	3
1960	25,678	18	79,715	55	36,058	25	–	0	2,453	2
1965	41,475	13	169,402	55	91,690	30	640	<1	5,147	2
1970	78,935	11	319,847	44	271,329	37	60,504	8	2,643	<1
1975	66,515	9	257,637	34	321,576	42	112,418	15	6,848	1
1980	43,215	5	204,612	26	343,865	43	197,491	25	1,845	<1

SOURCE Office of Technolony Assessment

Figure 2.—Number of Federal Coal Acres Under Lease by Type of Business Organization, 1950-80



SOURCE Off Ice of Technology Assessment

mining interests in favor of some form of incorporated business structure. Incorporation provides increased protection over sole proprietorships for mine operators against personal liability for corporate actions as well as other business advantages.

Other reasons for the decline in leaseholdings by unincorporated individuals include the abolition of the preference right leasing program, a popular lease acquisition route for individuals, including land speculators and land acquisition agents operating under contract to corporations; the leasing moratorium which increased the value of existing leases and induced some individuals to sell their holdings; and the diligent development requirements defined in the 1976 coal leasing regulations which may have acted as an incentive for some individuals to sell leases that they could not mine.

Corporations and Subsidiaries

Various types of corporate structures control 94 percent of all outstanding leases. The largest share, 69 percent of all leases, are owned either by independent corporations or companies that are wholly owned subsidiaries of one parent company.

In 1950, 45 percent of all leased land was held in the name of independent corporations and 26 percent of all land under lease was held by subsidiaries. By 1980, the figures had almost exactly reversed, as 26 percent of all land was held by independent companies and 43 percent by subsidiaries.

The shift in leaseholdings from independent to subsidiary companies is particularly notable among those corporate lessees whose principal business activity is coal mining. In 1950, 18 independent coal mining companies comprised the largest single leaseholding category identified in the survey. At that time, only three coal mining subsidiaries of noncoal parents held leases. By 1980, however, 36 lessees were categorized as wholly owned coal mining subsidiaries. Together these companies hold 36 percent of all land under lease. In contrast, the share of leased land held by independent coal companies decreased over the last 30 years from 35 to 7 percent.

In many cases, there is a direct link between the decline of independent coal companies and the growth of subsidiaries. At least 10 of the wholly owned coal mining subsidiaries holding leases today previously operated as independent companies. A larger number of independent coal companies went out of business after sale of their assets—including coal leases—to noncoal companies which have since organized coal mining subsidiaries to which the leases were then assigned.

Landholding companies provide another example of the trend towards leasing by subsidiary rather than independent companies. In 1960, 8 percent of all land under lease was controlled by independent landholding companies which hoped to profit from the eventual assignment of their leases to coal development companies. Today the independent landholding companies hold less than 1 percent of all land under lease. On the other hand, starting in the early 1960's, leaseholdings by companies which are subsidiaries of companies with principal business activities other than coal mining has increased steadily and today nine landholding subsidiaries control more acreage than the independents ever did.

The two leasing trends among landholding companies noted above appear to be unrelated. Most independent landholding companies acquired leases as speculators and they have gradually liquidated their holdings over the past decade. Many of the companies now holding leases—most notably the energy companies and utilities—have formed landholding subsidiaries to which leases have been assigned. These subsidiary landholding companies are legal entities through which large corporations hold land, normally not for speculation, but for future development.

Multicorporate Entities

OTA has defined multicorporate entities as companies wholly owned by two or more companies (such as joint ventures) or two or more companies sharing ownership of leases.

In the past 15 years, 17 multicorporate entities have acquired Western coal leases. These include two companies completely owned by two or more corporations. One of these, Peabody Coal Co., has been owned since 1977 by the Peabody Holding Co., which in turn is owned by six corporations. The second company is Ark Land Co., which is a subsidiary of Arch Minerals Corp. Arch Minerals in turn is owned by three companies: 50 percent by Ashland Oil Corp., 25 percent by Hunt Industries (partnership of five Hunt family trusts) and 25 percent by Hunt Petroleum Corp. (a partnership of six Hunt trusts, including the five owners of Hunt Industries).

In addition to these two companies, the multicorporate entities category of business organizations includes eight joint ventures, each of which is owned by two companies. The joint ventures and their parent companies are listed in the following table.

Joint Venture	*Participating corporations*
Colowyo Coal Co.	W. R. Grace & Co. and Hanna Mining Co.
North Antelope Coal Co.	Peabody Coal Co. and Panhandle Eastern Pipeline co.
Black Butte Coal Co.	Peter Kiewit Sons and Union Pacific Corp.
Medicine Bow Coal Co.	Arch Minerals Corp. and Union Pacific Corp.
Bridger Coal Co.	Pacific Power & Light Co. and Idaho Power Co.
Stansbury Coal Co.	Ideal Basic Industries and Union Pacific Corp.
Cumberland Coal Co.	Peter Kiewit Sons and Union Pacific Corp.
Western Coal Co.	Public Service Co, of New Mexico and Tucson Electric co.

Finally, ownership of seven blocks of leased land is 'shared by two or more corporations which hold an undivided interest in the leases. The largest group of leases in this category includes a block of southern Utah leases held by resource development subsidiaries of three utilities. Secondly, Consolidation Coal Co. and Kemmerer Coal Co. share the ownership of 10 leases in Utah.[5] Consolidation Coal also shares ownership of a Wyoming lease with Mobil Oil Corp.[6] In addition, a subsidiary of The Coastal Corp. and Equipment Rental Services share two Utah leases. Next, subsidiaries of Texas Eastern Transmission Corp. and Eastern Gas & Fuel Associates hold a lease in New Mexico as do Peabody Coal Co. and Thermal Energy Co. Finally, four Montana leases are owned by subsidiaries of Pacific Power & Light Co. and Peter Kiewit Sons.

[5]In 1980, Consolidation was assigned a SO-percent share of three leases in Colorado held by Kemmerer Coal Co.

'In 1980, Consolidation applied for approval of assignment to Mobil of its share in the Wyomin, lease.

COAL LEASE OWNERSHIP DISTRIBUTION BY BUSINESS ACTIVITY CATEGORY

The appearance of different types of companies in the coal industry besides the traditional independent, single interest, mining company is the most obvious aspect of the restructuring taking place within the industry and the development which has received the most attention of public policy makers and industry analysts. This study examined leasing patterns and trends among lessees grouped into 13 business categories.[7] The 13 categories are:

Electric utilities;
Energy companies;
Peabody Coal Co.;
Steel companies;
Independent coal companies;
Oil and gas (minor) companies;
Unincorporated individuals;
Natural gas pipeline companies;
Nonresource-related diversified companies;
Kemrnerer Coal Co.;
Metals and mining companies;
Landholding companies; and
"Other" lessees.

Table 2 summarizes the findings of this study with regard to the relative growth and decline in leaseholdings by the members of each of the 13 categories. The table shows the steady increase in lease ownership by the electric utilities and by the major energy companies and the recent involvement of nonresource-diversified companies and natural gas companies. It shows the impact on coal lease ownership patterns of the 1977 sale of Peabody Coal Co. to a six-firm holding company. It shows the early dominance of leasing by independent coal companies and unincorporated individuals and their steady

'The *categories* include 10 industries, two individual companies that were classified as distinct business categories for various reasons and an other category for the remaining lessees. Each of the 13 business categories controlled or controls at least 5 percent of all land under lease at some time between 1950 and 1980. (See ch, 2, sec. M, *Methodolgy*)

Table 2.—Number of Acres and Percent of Total Leased Land Held by Business Activity Category

	1950		1955		1960		1965		1970		1975		1980	
	Acres held (#)	Land leased (°/0)	Acres held (#)	'Land leased (°/0)	Acres held	Land leased	Acres held	Land leased	Acres held	Land leased	Acres held	Land leased	Acres held	Land leased
Electric utilities.	0	0	2000	3%			45,363	15%	132,038	18%	142,077	19%	163,259	21%
Energy companies	**0**	**0**	**0**	**0**	**0**	**0**	9,491	3	132,274	18	138,409	18	155,024	20
Peabody Coal Co.	0	0	0	0	0	0	(6,251)	(2)	(59,121)	(8)	(68,923)	(9)	62,009	8
Steel companies	4,993	12	14,817	19	19,888	14	34,158	11	46,114	6	49,448	6	60,015	8
Independent coal companies	14,584	35	25,022	33	41,557	29	77,273	25	78,297	11	58,837	8	55,410	7
Oil and gas (minor) companies	0	0	0	0	0	0	2,080	1	26,911	4	42,193	6	45,926	6
Unincorporated individuals	11,129	27	17,618	23	25,678	18	41,475	13	78,995	11	66,515	9	43,215	5
Natural gas pipeline companies	0	0	0	0	0	0	0	0	0	0	32,522	4	36,317	5
Nonresource-related diversified companies	0	0	0	0	0	0	4,610	1	10,015	1	12,580	2	35,675	5
Kemmerer Coal Co.	475	1	1,752	2	6,849	5	18,504	6	33,793	5	33,988	4	32,191	4
Metals and mining companies	5,009	12	5,009	7	9,266	6	17,708	6	107,504	15	118,300	15	17,620	2
Landholding companies.	1,360	3	4,576	6	11,504	8	13,411	4	43,581	6	26,225	32	4,661	<1
"Other" lessees.	2,907	7	3,240	4	18,288	13	39,134	13	41,153	6	37,051	5	77,861	10

NOTE Uncategorlzed lessees hold less than 2 percent of land under lease at any analysis date
Numbers might not add to 100 percent because of the holdings of uncategorized lessees
Numbers in ( ) tabulated in metals and mining category (1970 and 1975) or in independent coal company category (1965)

	1950	1955	1960	1965	1970	1975	1980
Uncategorized Lessees	1,035 2%	1,915 3./0	2,453 2%	5,147 2%	2,643 <1 %	6,848 1%	1,845 < 1 %

SOURCE Off Ice of Technology Assessment

decline in relative importance over the past 30 years. It shows the early participation of the steel and metals and mining industries and Kemmerer Coal Co. and the gradual reduction in the relative position of the steel industry, the swings in metals and mining company leasing, and the continuing involvement of Kemmerer. It shows the rise of the independent landholding company in the active leasing periods of the late 1950's and early 1960's when many leases were let, followed by the liquidation of their holdings in the lease-tight moratorium era of the 1970's.

Table 2 and figure 3 also summarize the absolute changes in leaseholdings that have occurred over the past 30 years. They show the steady rise in acreage held by the steel companies, independent coal companies and unincorporated individuals through 1970, followed by the slow decline in the holdings of the latter two categories since then. Table 2 and figure 3 also illustrate how the significant but relatively modest increases in the holdings of these three groups during the 1960's compare to the more substantial acquisitions of some new entrants to leasing in that period.

Electric Utilities

Electric utilities currently own more Federal coal land than any other industry group. Increasing their holdings from 8,263 acres in 1960 to 163,259 acres in 1980, utilities now control 21 percent of all land under lease. Seventeen utilities now hold leases.

More than any other industry group examined in this survey, utilities have undergone complicated internal restructuring related to coal lease management. Several utilities now hold leases in the name of one or more wholly owned coal mining companies, multifuel resource development companies, landholding companies, or corporate entities without employees or business activities. Also, utilities have been very active in joint venture leasing and multicorporate development projects. The internal restructuring of utilities and their involvement in multicorporate leasing ventures appear to indicate a policy decision by some utility managements that coal leasing and mining activities should be separate from electrical generation activities because of the difference in management skills required. Furthermore, this division enables utilities, as a regulated industry, to distinguish clearly among totally regulated, partially regulated and unregulated business activities.

Utilities are now a major producer of coal. The industry's output totaled 11 percent of the Nation's entire coal production in 1979 compared to just 2.2 percent in 1961. Most of this coal is "captive" production, destined for powerplants owned by the utility operating the mine, although the industry is increasingly selling coal on the open market. Utilities play a unique role in the coal industry because of their growing status as a major producer of coal as well as their more long term position as the country's major coal consumers. Utilities burned 77 percent of all domestically used coal in 1979.

Energy Companies

This study examined the leaseholdings of the 18 largest private energy companies based on total worldwide petroleum production. Eleven of the 18 companies now own Federal coal leases. Together they control 155,024 acres, 20 percent of all land under lease.

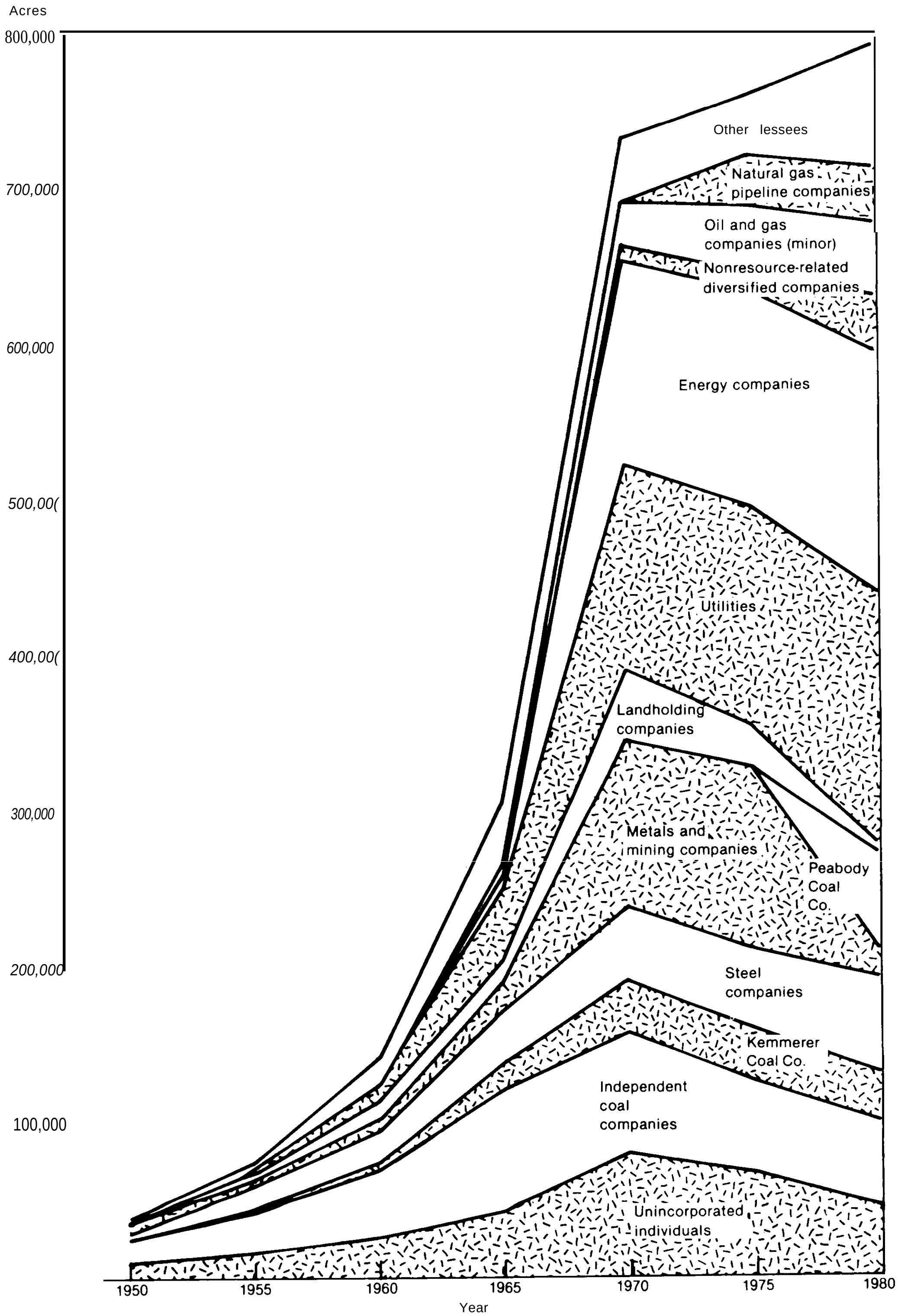
The late 1960's marked the period of largest growth in lease holdings by energy majors, well before the Arab oil embargo and the energy conscious 1970's. Most leases acquired by energy majors have remained under their control, though many have been assigned to newly formed subsidiaries within the companies' respective management structures.

Most Western coal leases have been obtained by the energy companies through lease assignment or through the purchase of a leaseholding company, rather than by de novo leasing from the Government. This kind of merger and acquisition activity is a component of the strategy begun by the oil majors in the 1960's to gain their initial coal reserves in the East.

Peabody Coal Co.

Peabody Coal Co. is the largest single company holding leases in the West. It owns 62,009 acres of Federal coal leases, 8 percent of the total land under lease. Once an independent compa-

Figure 3.— Number of Federal Coal Acres Under Lease by Business Activity Category, 1950-80



SOURCE Office of Technology Assessment

ny, it was acquired by Kennecott Copper Corp. in 1968. In 1977, Kennecott divested the company to the Peabody Holding Co., comprised of six corporations with business interests as diverse as aerospace, mineral extraction, and life insurance. Peabody now holds leases in five Western States,

Steel Companies

Steel companies were among the earliest participants in Federal coal leasing, owning 12 percent of the land under lease in 1950, Their holdings have steadily grown, but the percentage of total leased acreage controlled by the industry has dropped to 8 percent today. Most steel industry coal production, like that of utilities, is for "captive" use.

Unlike most other coal lessees, steel companies have leased primarily metallurgical grade coals in Utah, Colorado, and Oklahoma.

Independent Coal Companies

In **1950, 18** independent coal companies constituted the largest single group of lessees, controlling 35 percent of all land under lease, or nearly 15,000 acres, From 1950 to 1970, leaseholdings by independent coal companies grew steadily to over 78,000 acres, but their share of total leased acreage dropped to 11 percent. Today, independent coal companies control nearly 56,000 acres, which is, however, only 7 percent of total leased acreage. Over 60 independent coal companies have held leases, though none of the **18** leaseholding independents in 1950 is among the list of 21 independents in 1980.

Independents are still the fifth largest leaseholding group and several present lessees—notably Garland Coal Mining Co., North American Coal Co., and Energy Fuels Co.—have used the leasing program to build large coal reserve bases. Nonetheless, small independent coal companies in the West are in a precarious position today. Rising mining costs, the reference of the utilities for large long-term supply contracts, and slow growth in local domestic or industrial coal use in the West have restricted the business opportunities of independent coal companies.

Oil and Gas Companies (Minor)

Several oil and gas companies not appearing in the energy or natural gas pipeline categories have acquired coal leases in the past 15 years, Eight such companies now control 45,926 acres, 6 percent of the total. The lessees in this category include small companies, such as the Hiko Bell Mining and Oil Co., and very large companies, such as Kerr-McGee Corp. and Quaker State Oil Refining Corp. Holdings by these companies have grown steadily since 1965.

Unincorporated Individuals

The role of unincorporated individuals in the leasing program, at one time second only to the independent coal companies, has greatly declined in relative importance. From 1950 to 1970, acreages held by unincorporated individuals grew from over 11,000 to nearly 79,000 acres, but their share of the total leased acreage dropped from 27 to 11 percent. Today, individuals hold over 43,000 acres, or 5 percent of the total. (See *Business Organization of Coal Lessees*, pp. 6-8.)

This study identified three categories of individual coal lessees: bona fide coal miners operating "sole proprietorship" mines; persons working directly and primarily in the coal industry, such as officials at coal companies and coal brokers or salesmen; and land agents, who do not specialize in coal properties, acting either on their own behalf or under contract to corporations interested in acquiring coal reserves.

Natural Gas Pipeline Companies

Natural gas pipeline companies are among the most recent entrants to coal leasing. All 27 leases now held by the industry were acquired in the 1970's. Six natural gas companies control 36,317 acres, about 5 percent of the land under lease. All but two of the leases were obtained by assignment during the leasing moratorium of the past decade—i.e., there was a substantial change in the pattern of lease ownership even during this period when opportunities to acquire leases de novo were limited.

Nonresource-Related Diversified Companies

The nonresource-related diversified business category includes companies with principal lines of business which are not energy or mineral resource related, but which complement or could be integrated with resource development. It includes —e. g., General Electric Co., which sells electric generation equipment—and chemical companies, which might use coal as a chemical feedstock.

The companies in this category are latecomers to Western coal leasing. They controlled just 1 percent of all land under lease in 1970. Their holdings grew to 35,675 acres by 1980—5 percent of the total land under lease.

Kemmerer Coal Co.

Kemmerer Coal Co. is one of the oldest Western coal producers and among very few surviving companies in the coal industry founded and headquartered in the West. Since 1926, it has been owned by the Lincoln Corp., a holding company of Kemmerer family interests.

Kemmerer Coal now owns 32,191 acres of leased land, 4 percent of the total, down from its peak of 33,988 acres in 1975. The company reached a peak of relative importance in 1965, with 6 percent of the total land under lease, or 18,504 acres. The company has mined coal in the southwestern Wyoming coalfields for many decades.

In September 1980, the Kemmerer family announced its intention to sell Kemmerer Coal Co. If completed, this transaction will cause the largest single shift in coal lease ownership since Peabody was purchased by its holding company in 1977.

Metals and Mining Companies

Metals and mining companies, like steel companies, entered Western coal leasing early. Total relative holdings declined from 12 percent of all leased land in 1950 to 6 percent in 1965, they then grew steadily to 15 percent in 1970, only to drop over the past 5 years to 2 percent today. During the period from 1950 to 1975, their holdings increased steadily in absolute terms from just 5,000 acres to over 118,000 acres, then decreased sharply to about 18,000 acres in 1980.

The major reasons for the rise in leaseholdings by metals and mining companies in the late 1960's were the acquisition of Peabody Coal Co. by Kennecott Copper Corp. and the land acquisition programs of Amax, Inc., and Utah International, Inc. The principal reasons for the decline of leaseholdings over the past 5 years have been the acquisition of Utah International by General Electric Co. and Kennecott's divestiture of Peabody.

Landholding Companies

Independent landholding companies, like individual land agents, figured prominently in the early history of the leasing program but have largely liquidated their holdings. Their relative importance peaked in 1960 when they controlled 8 percent (11, 504 acres) of all land under lease. Their holdings continued to rise until 1970, when they owned over 43,000 acres or 6 percent of leased land. The seven companies in this category now control only 4,661 acres, less than 1 percent of the total land under lease.

Independent landholding companies acquired most of their leases de novo or by assignment from individuals in the 1950's and 1960's when leases could be easily and inexpensively obtained. The leasing moratorium of the 1970's and the abolition of the preference right leasing program restricted new leasing opportunities thereby increasing the assignment value of land already under lease. As a result, most independent land companies sold their leases in the 1970's.

"Other" Lessees

This last category includes lessees which do not fit into one of the other 12 groups established during this survey. The percentage of acres held by lessees in this category has varied from 4 percent in 1955 to 13 percent in 1960 and 1965. They presently hold about 10 percent of all land under lease. The following table lists some of the lessees currently falling in the "other" category.

Controlling interest of "other" lessees	*Principal activity of controlling interest*
Peter Kiewit Sons, Inc.	Construction and mining
Union Pacific Corp.	Railroad holding company
Ideal Basin Industries, Inc.	Cement
Mountain States Resource Co.	Resource development
Carbon Emery Bank.	Bank
Geo Resources Exploration, Inc.	Petroleum industry materials
Church of the Latter Day Saints	Religious institution

IMPLICATIONS OF COAL LEASE OWNERSHIP PATTERNS

More lessees are participating in the coal leasing program in 1980 than in 1950, but the list of lessees is increasingly dominated by large multi-interest companies and, on the average, the lessee of today controls considerably more acreage than its predecessors. The number of lessees has nearly doubled during the past 30 years from 84 to 159, but the total acreage of land under lease has jumped eighteenfold during the same period. While the average lessee controlled 494 acres of leased land in 1950, the average lessee controls 4,975 acres in 1980. On the other hand, the number of distinct industries holding major shares in Federal leasing is increasing. In 1950, only four business activity categories identified in this survey held at least 5 percent of all land under lease. By 1980, nine such categories were identified. These leasing patterns are summarized in tables 3 and 4.

Three trends resulting from increased leasing by widely different types of companies, each of which controls large acreages of leased land, can be noted. The first trend is toward involvement in leasing by horizontally integrated companies. The energy companies, natural gas pipeline companies, and smaller oil and gas companies together own 31 percent of all outstanding coal leases. For these companies, involvement in coal leasing is part of a strategy to branch into several energy resource fields.

Table 3.—Average Number of Leases and Average Number of Acres Held per Lessee, 1950-80

Year	Average number of leases held per lessee	Average number of acres held per lessee
1950	1.04	494
1960	2.69	1,198
1970	2.69	4,073
1980	3.38	4,975

SOURCE Office of Technology Assessment.

Growing involvement of companies for which coal reserve acquisition represents a vertical integration of business activities is a second trend in **lease** ownership patterns. Steel companies and electric utilities—which together own 29 percent of all land under lease today—are the two principal examples of leasing by vertically integrated companies. Steel companies have for decades mined significant quantities of coal and have participated in the leasing program since its inception. The growth of utility involvement in Western leasing since 1965 to its position as the largest leaseholding business activity category in 1980 represents a new and significant type of vertical integration among lessees. The coal leasing program has provided an important avenue for utility entry into the coal industry. Utilities provided 11 percent of the Nation's coal output in 1979. They own 21 percent of all Federal coal land under lease and produced 30 percent of all coal mined on Federal land. Approximately one-fourth of **all** utility "captive" coal production was mined from leased Federal reserves.

A third trend reflects the growing involvement of large, already diversified companies in coal leasing. These include metals and mining companies—e.g., which are diversifying their mineral extraction skills to include coal. In addition, it includes chemical and high-technology companies for which entry into the coal industry represents a diversification not integrated with existing business activities.

Table 4.— Business Activity Categories Holding at Least 5 Percent of All Leased Land, 1950-80

1950	1965	1980
Independent coal companies	Independent coal companies	Electric utilities
Unincorporated Individuals	Unincorporated individuals	Energy companies
Metals and mining companies	Kemmerer Coal Co.	Peabody Coal Co.
Steel companies	Metals and mining companies	Steel companies
	Steel companies	Independent coal companies
	Electric utilities	Oil and gas (minor) companies
		Unincorporated individuals
		Natural gas pipeline companies
		Non resource diversified companies

SOURCE Office of Technology Assessment

The shift in leaseholdings to large, diversified and integrated companies suggests several observations. First, lease development decisions are increasingly shaped by priorities which reflect business opportunities and capital availability unrelated to coal development. Secondly, these lease ownership changes can cause a relocation of final decisionmaking authority affecting coal development from local managers to those sometimes working hundreds or thousands of miles from lease sites. Thirdly, the internal business arrangements established by large companies to manage coal leases result in complex coal development decisionmaking processes. While all three of these trends might contribute to increased efficiency in the coal industry, they make understanding coal industry priorities an increasingly difficult task.

Another result of lease ownership changes is the appearance of more lessees with the financial resources available for coal development that far exceed the resources available to the earlier, smaller coal leasing companies, Increasing participation by larger and more complex corporate entities is not surprising considering the larger capital requirements posed by today's coal development.

Next, the increasing tendencies of the large, diversified companies holding leases to establish multicorporate development projects could raise competition concerns not posed when leasing was dominated by many small independent companies. Multicorporate lease development ventures provide a means for corporations to distribute the risks involved in undertaking large-scale coal development projects. They also increase the capital generating capacity of the project as a whole. At the same time, they increase the level of intercorporate information exchange and communication. Finally, joint venturing through subsidiaries far removed structurally from the parent organization has recently provided indirect entry into leaseholding by railroads. ' (Railroads are prohibited by the Mineral Leasing Act of *1920* from direct lease ownership.)[9]

Several recent studies have pointed to the potential importance of Federal coal leasing policies as a determining factor in the organization and development of the coal industry over the next several decades. The Harvard Business Study, Energy Future-e. g., observes that "competition can be protected by methods short of horizontal divestiture, such as existing antitrust laws, setting limits on the share of reserves any single firm can control, and innovative leasing policies. The last can be especially effective. " The present study shows that over the past *30* years, ownership patterns on leased public coal land have generally been similar to the pattern of industry restructuring typical for private land. Indeed, some developments on Federal coal leases—such as the growing role of utilities as "captive" coal producers—seem to be lead indicators rather than causes of the changing character of the American coal industry.

'See ch. 2, sec. M, *Other Leaseholders*, for further Information.

[9]A recent Justice Department report recommends striking from Federal law prohibitions against the issuance of Federal coal leases to railroads or their affiliates. (*Competition in the Coal Industry*, report 01 the U.S. Department of Justice, pursuant to sec. 8 of the Federal Coal Leasing Amendments Act of 1976 for fiscal year 1979; U.S. Department of Justice, Antitrust Division; November 1980,)

CHAPTER 2

Lease Ownership by Business Category

CHAPTER 2

Lease Ownership by Business Category

In this report, lessees are grouped into 10 industries. Leasing patterns and trends are then examined separately for each industry. In addition, the leasing histories of two companies are analyzed. Each of the 12 lessee categories have controlled at least 5 percent of all land under lease at one or more of the seven dates selected for analysis between 1950 and 1980. In addition, a 13th group, called other was formed, from 1essees that did not fall into 1 of the 10 group categories.

The 13 business categories are:

- Electric utilities;
- Energy companies;
- Peabody Coal Co.;
- Steel companies;
- Independent coal companies;
- Oil and gas (minor) companies;
- Unincorporated individuals;
- Natural gas pipeline companies;
- Nonresource-related diversified companies;
- Kemmerer Coal Co.;
- Metals and mining companies;
- Landholding companies; and
- Other lessees.

Table 5 summarizes the relative growth and decline in leaseholdings by each of the 13 categories. The table shows the steady increase in lease ownership by the electric utilities, the major energy companies, and the oil and gas (minor) companies since the mid-1960's. It shows the recent involvement of nonresource-related diversified companies and natural gas pipeline companies. It shows the effect of the sale in 1977 of Peabody Coal Co. to a six-firm holding company (The Peabody Holding Co.) on coal lease ownership patterns. It shows the early dominance of leasing by independent coal companies and nonincorporated individuals and their steady decline in relative terms over the past 30

Table 5.—Number of Acres and Percent of Total Leased Land Held by Business Activity Category

	1950		1955		1960		1965		1970		1975		1980	
	Acres held (#)	Land leased (°/0)	Acres held (#)	Land leased (°/0)	Acres held (#)	Land leased (°/0)	Acres held (#)	Land leased (%)	Acres held (#)	Land leased (%)	Acres held (#)	Land leased (%)	Acres held (#)	Land leased (%)
Electric utilities	0	0	**2,000**	**3%**	**8,263**	6 %	45,363	15%	132,038	18°/0	142,077	19%	163,259	2170
Energy companies	**0**	**0**	**0**	**0**	**0**	**0**	9,491	3	132,274	18	138,409	18	155,024	20
Peabody Coal Co. . .	**0**	**0**	**0**	**0**	**0**	**0**	(6,251)	(2)	(59,121)	(8)	(68,923)	(9)	62,009	8
Steel companies	4,993	12	14,817	19	19,888	14	34,158	11	46,114	6	49,448	6	60,015	8
Independent coal companies	14,584	35	25,022	33	41,557	29	77,273	25	78,297	11	58,837	8	55,410	7
Oil and gas (minor) companies	0	0	0	0	0	0	2,080	1	26,911	4	42,193	6	45,926	6
Unincorporated individuals . .	11,129	27	17,618	23	25,678	18	41,475	13	78,995	11	66,515	9	43,215	5
Natural gas pipeline companies	0	0	0	0	0	0	0	0	0	0	32.522	4	36.317	5
Nonresource-related diversified companies .	0	0	0	0	0	0	4,610	1	10,015	1	12,580	2	35,675	5
Kemmerer Coal Co.	475	1	1,752	2	6,849	5	18,504	6	33,793	5	33,988	4	32,191	4
Metals and mining companies	5,009	12	5,009	7	9,266	6	17,708	6	107,504	15	118,300	15	17,620	2
Landholding companies. .	1,360	3	4,576	6	11,504	8	13,411	4	43,581	6	26,225	32	4,661	<1
"Other" lessees.	2,907	7	3,240	4	18,288	13	39,134	13	41,153	6	37,051	5	77,861	10 .

NOTE Uncategorlzed~essees hold less than 2 percent of land under lease at any analysis date
Numbers might not add to 100 percent because of the holdings of uncategorized lessees
Numbers in ( ) tabulated in metals and mining category (1970 and 1975) or in independent coal company category (1965)

	1950	1955	1960	1965	1970	1975	1980
Uncategorized	1,035	1,915	2,453	5,147	2,643	6848	1,845
Lessees	2°0	3.,0	2%	2°0	< 1 %	100	< 1%

SOURCE Off Ice of Technology Assessment

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years. It shows the early participation of the steel and metals and mining industries and Kemmerer Coal Co. and the gradual reduction in steel industry influence, the swings in metals and mining company leasing, and the continuing involvement of Kemmerer. It shows the rise of the independent landholding company in the late 1950's and early 1960's followed by the liquidation of their holdings in the lease-tight moratorium era of the 1970's.

Each of the following sections discusses the history of leasing by 1 of these 13 groups. Each section is divided into two parts. The first summarizes the relative and absolute changes in leaseholdings by category and presents general observations and conclusions about the leasing patterns and trends in that category. The second section contains a detailed history of lease acquisitions by individual companies in the group.

Table 6 presents a list of companies holding leases in 1980.

Table 6.—1980 List of Lessees

A. Electric utilities	
American Electric Power Co.	(Franklin Real Estate Co.)
Arizona Public Service Co.	(Resources Co.)
Black Hills Power & Light Co.	(Wyodak Resources Development Co.)
Idaho Power Co.	(Bridger Coal Co. 33.3 percent)
Iowa Public Service Co.	(Energy Development Co.)
Montana-Dakota Utilities	(Knife River Coal Co.)
Montana Power Co.	(Western Energy Co.) (Northwestern Resources co.)
Moon Lake Electric Association	
Nevada Power Co.	(Nevada Electric Investment co.)
Pacific Gas & Electric Co.	(Eureka Energy Co.)
Pacific Power & Light Co.	(Bridger Coal Co. 66.6 percent) (Western Minerals Co.) (Eden Ridge Coal Co.) (Spring Creek Coal Co.) (Resources Development Co., Inc.)
Public Service of New Mexico co.	(Western Coal Co. 50 percent
San Diego Gas & Electric Co,	(New Albion Resources Co.)
Southern California Edison Co.	(Mono Power Co.)
Tucson Electric Power Co.	(Western Coal Co. 50 percent)
Utah Power & Light Co.	
Washington Water Power Co.	(Washington Irrigation & Development Co.)
B. Energy companies	
Atlantic-Richfield Co.	(Swisher Coal Co.) (Thunder Basin Coal Co.)
Conoco, Inc.	(Consolidation Coal Co.)
Exxon Corp.	(Carter Oil Co.) (Carter Mining Co.)
Getty Oil Co.	(Plateau Mining Co.)
Gulf Oil Corp.	
Mobil Corp.	(Mobil Oil Corp.)
Occidental Petroleum Corp.	(Sheridan Enterprises, Inc.)
Shell Oil Corp.	
Standard Oil of Indiana Co.	(Empire Energy Co.)
The Sun Co.	(Sunoco Energy Development Co.)
Texaco, Inc.	
C. Peabody Coal Co.	
Peabody Holding Co.	(Peabody Coal Co.) (North Antelope Coal Co. 50 percent)
D. Steel companies	
Armco Steel Corp.	(Evans Coal Co.)
Kaiser Steel Corp.	
Republic Steel Corp.	
Sharon Steel Corp.	(U.S. Fuel Co.)
U.S. Steel Corp.	
E. Independent coal companies	
Amca Resources	(Amca Coal Leasing, Inc.)
Baukol-Noonan, Inc.	
Belden Enterprises	
Cameron Coal Co.	
Cimarron Coal Co.	
Cravat Coal Co.	(Conotton Land Co.)
Divide Coal Mining Co.	
Energy Fuels Co.	
Garland Coal & Mining Co.	
General Exploration, Inc.	(Cambridge Coal Co.) (GEX Colorado)
James Bros. Coal Co.	
Mid Continent Coal & Coke Co.	
National King Coal, Inc.	
North American Coal Corp.	(Coteau Properties, Inc.) (The Helen Mining Co.)
The Pacola Co.	
Reliable Coal & Mining Co.	
Ryan's Creek Coal Co.	
Sewanee Mining Co.	
Usibelli Coal Mine, Inc.	
Wasatch Coal Co.	
Westmoreland Coal Co.	(Colorado Westmoreland, Inc.)
F. Oil and gas (minor) companies	
Anschutz Corp.	
Ashland Oil and Hunt Interests	(Ark Land Co.) (Medicine Bow Coal Co. 50 percent)
Belco Petroleum Corp.	
Consolidated Gas & Oil Corp.	(Sunland Mining Corp.)
Hiko Bell Mining & Oil Co.	
Kerr-McGee Corp.	(Kerr-McGee Coal Corp.)

Table 6.— 1980 List of Lessees (continued)

Petroleum International, Inc.	
Quaker State Oil Refining Co.	(Kanawha & Hocking Coal & Coke Co.)
G. **Unincorporated individuals**	
59 individuals.	See pp. 46-48.
H. Natural gas pipeline companies	
The Coastal Corp.	(Coastal States Energy Co.) (Southern Utah Fuel Co.)
The El Paso Co.	(El Paso Natural Gas Co.)
Internorth Corp.	(Northern Minerals Co.)
Northwest Energy Corp.	(Western Slope Carbon, Inc.)
Panhandle Eastern Pipeline Corp.	(North Antelope Coal Co. 50 percent)
Texas Eastern Transmission Corp.	(Fannin Square)
1. **Nonresource-related diversified companies**	
FMC Corp.	
General Dynamics Corp.	(Material Service Corp.) (Freeman United Coal Mining Co.)
General Electric Co.	(Utah International, Inc.)
Monsanto Co.	(Sweet water Resources, Inc.)
W. R. Grace & Co.	(Colowyo Coal Co. 50 percent)
J. Kemmerer Coal Co.	
Lincoln Corp.	(Kemmerer Coal Co.)
K. **Metals and mining companies**	
Amax, Inc,	(Amax Coal Co.)
Asarco, Inc.	
Hanna Mining Corp.	(Colowyo Coal Co. 50 percent)
Intermountain Exploration Co.	
Phelps Dodge Corp.	Western Nuclear, Inc.)
Pitkin Iron Corp.	
St. Joe Minerals Corp.	Anchor Coal Co.)
L. **Landholding companies**	
Ametex Corp.	
Cari International Mining Corp.	
Carroll County Coal Co.	
Kinq Cannel Coal Co.	
Smith-Holliday and Associates, Ltd.	
Thermal Energy Co.	
Thompson Creek Coal & Coke co.	
M. "Other" lessees	
The Alaska State Bank	
American Colloid Co.	
California Portland Cement Co.	
Carbon Emery Bank	
Cooperative Security Corp.	
Crane Co.	(CF&I Steel Co.)
Eastern Gas & Fuel Associates	(Eastern Associated Properties Corp.
Energy Reserves Group, Inc.	
Equipment Rental Service	
Geo Resources Exploration, Inc.	
Ideal Basic Industries, Inc.	(Stansbury Coal Co. 50 percent)
Kaneb Services Inc.	(Leeco, Inc.)
Midcontinent Limestone Co.	
Monolith Portland Cement Co.	
Mountain States Resource Corp.	
Northwest Industries, Inc.	(Lonestar Steel Co.)
Peter Kiewit Sons, Inc.	(Rosebud Coal Sales) (Big Horn Coal Co.) (Wytana, Inc.) (Cumberland Coal Co. 50 percent) (Black Butte Coal Co. 50 percent)
Standard Equipment, Inc.	(Mining Systems Corp.)
Texas Industries, Inc.	
Union Pacific Corp.	(Black Butte Coal Co. 50 percent) (Cumberland Coal Co. 50 percent) (Stansbury Coal Co. 50 percent) (Medicine Bow Coal Co. 50 percent)
N. Uncategorized lessees	
Granite Creek Coal & Uranium co.	
Mandrones Mining Co.	
Ruby Construction Co., Inc.	
Vitro Minerals, Inc.	

NOTE Subsidiary leaseholders noted in parentheses

SOURCE Off Ice of Technology Assessment

A. ELECTRIC UTILITIES

The electric utilities industry has been an important participant in the Federal coal leasing program for the last 20 years. Its importance derives from its role as both consumer and producer. Utilities are the largest users of coal. In 1979, 77 percent of the coal consumed domestically was burned in utility company boilers. Utilities are also a major producer of coal, either for "captive" use at powerplants owned by the coal mining utilities or for sale to other consumers. Utilities mined about 11 percent of the coal produced nationwide in 1979.

Coal burning plants produced 48 percent of the Nation's electricity in 1979, compared to 19 percent in 1950. The importance of utilities both as consumers and producers of coal is likely to increase in the next several decades, and increases in captive production by utilities may well proceed faster than the increases in national coal production. The Federal Energy Regulatory Commission estimates that utility coal production will provide 19 percent of the total coal production in 1985, compared to 7 percent in 1975 and 2 percent in 1961.

Utility interest in coal mining is reflected in their increasing holdings of Federal coal. Since the late 1950's, utilities have steadily increased their coal leaseholdings. By 1975, utilities held the most acreage under lease of the 12 categories examined in this survey, a position they hold today. In January 1980, 17 utilities controlled 163,259 acres of leased land, 21 percent of the total. (See table 7 and figures 4 and 5.) Utilities with service areas as far apart as Ohio and southern California or Washington State and Texas are now neighbors in Western coalfields.

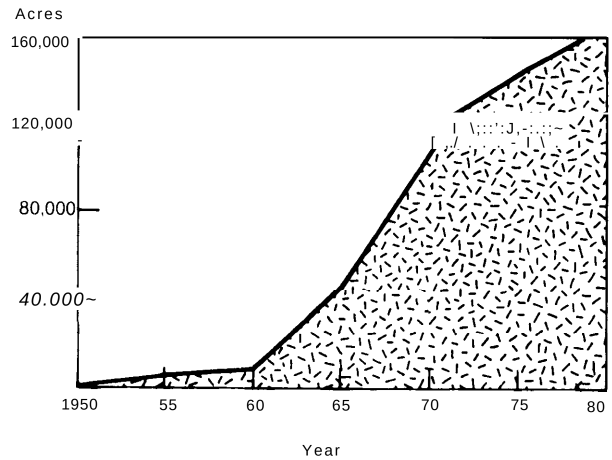
More than any other business group examined in this study, utilities have undergone internal corporate restructuring in response to their entry into the coal industry. Most early utility lease acquisitions were made by the parent company which was principally involved in power generation. As these companies have developed specific coal development plans they increasingly have organized specialized subsidiaries to handle various tasks. Four distinct types of utili-

Table 7.—Utility Company Leaseholdings

Year	Number of leases held	Number of acres held	Percent of total acreage under lease
1950	0	0	0
1955	1	2,000	30/0
1960	8	8,263	6
1965	29	45,363	15
1970	67	132,038	18
1975	80	142,077	19
1980	106	163,259	21

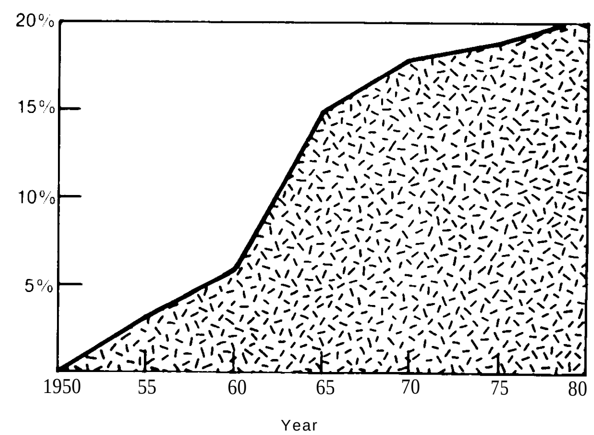
SOURCE Office of Technology Assessment

Figure 4.—Acres Leased by Utility Companies



SOURCE Off Ice of Technology Assessment

Figure 5.—Percent of Total Leased Acres Held by Utility Companies



SOURCE Office of Technology Assessment

ty subsidiaries holding leases today are identified in this survey. They include wholly owned coal mining companies, general resource development companies (involved in multifuel supply acquisition), landholding companies, and passive companies without employees created as legal entities to hold percentage interests in coal properties being mined by other joint ventures. Table 8 shows the percentage of total utility acreage held by the various subsidiary categories and parent companies throughout the

Table 8.—Percent of Utility Owned Leases Held by Industry Subcategory

Year	Utility parent company	Coal mining subsidiary	Landholding subsidiary	Resource development subsidiary	Passive subsidiary
1950	—	—	-	—	—
1955	—	1000/0	—	—	—
1960	64%	36	—	—	—
1965	42	36	220/0	—	—
1970	32	25	17	25%	–
1975	30	20	11	30	4%
1980	13	26	20	33	7

SOURCE Office of Technology Assessment

history of utility leasing. The table shows the increased use of resource development and passive subsidiaries in this past decade and the intermittent employment of land subsidiaries since the mid-1960's. Leaseholding by parent companies has steadily declined, while that of wholly owned coal mining companies have remained relatively constant. It is not uncommon for a single utility to own subsidiaries falling into several different categories and to maintain leaseholdings in all their names.

This internal restructuring appears to be a recognition by utilities that more complex management organizations are necessary if they are to diversify successfully into resource development businesses such as coal mining. The management skills, planning needs, and decisionmaking structure needed to run a coal company are different from those historically required by the utility industry. Furthermore, this division enables utilities, as a regulated industry, to clearly differentiate among totally regulated activities (such as power generation), partially regulated actions (such as captive coal purchases), and unregulated business practices (such as sales of utility produced coal on the open market).

Utilities are important in the coal industry in general and for coal lease ownership patterns in particular, not only because of their substantial leaseholdings and operation of "captive" mines, but also because of their coal purchasing decisions. Over the past 20 years, for technical reasons, utilities have increasingly depended on suppliers capable of providing large quantities of coal from single deposits under long-term contracts (up to 35 years). Over 90 percent of the coal produced in several Western States, most significantly Wyoming (93 percent), is now sold under contract rather than on the spot market. These purchasing preferences, coupled with the large decreases in residential and commercial markets have made it more difficult for small coal producers to find markets. As their markets have dwindled, many small companies have sold their holdings, including their coal leases, to larger companies, including the utilities.

History of Leasing

From modest beginnings in the 1950's, utilities made their largest lease acquisition gains in the 1960's. Utility company leaseholdings rose from 6 percent of all land under lease in 1960 to 18 percent in 1970. Despite the leasing moratorium of the 1970's, utilities increased their holdings from 132,038 acres to the present total of 163,259 acres. The lease acquisition programs of the individual utilities listed in table 9 are described below.

Montana-Dakota Utilities Co.

Two North Dakota leases were acquired by a Montana-Dakota Utilities Co. subsidiary, Knife River Coal Co., in the 1950's, one in 1951 and the other in 1957. In 1961, the company added a third lease and in 1967 it completed its lease acquisition to date with the addition of two more leases. All five of the company's leases were acquired de novo. A coal mining company, Knife River has mined lignite from these Federal leases for more than 20 years.

Table 9.—Utility Company Leaseholders

1950.	None
1955.	Montana-Dakota Utilities (Knife River Coal Co.)
1960.	Montana-Dakota Utilities (Knife River Coal Co.)
	Montana Power Co.
	Pacific Power & Light Co.
	Black Hills Power & Light Co. (Wyodak Resources Development Co.)
1965.	Montana-Dakota Utilities (Knife River Coal Co.)
	Montana Power Co.
	Pacific Power & Light Co.
	Black Hills Power & Light Co. (Wyodak Resources Development Co.)
	Public Service of New Mexico Co. (Public Service Coal Co.)
	Washington Water Power Co. (Washington Irrigation & Development Co.)
	Moon Lake Electric Association
	Nevada Power Co. (Nevada Electric Investment Co.)
1970	Montana-Dakota Utilities (Knife River Coal Co.)
	Montana Power Co. (Western Energy Co.)
	Pacific Power & Light Co.
	Black Hills Power & Light Co. (Wyodak Resources Development Co.)
	Public Service of New Mexico Co. (Public Service Coal Co.)
	Washington Water Power Co. (Washington Irrigation & Development Co.)
	Moon Lake Electric Association
	Southern California Edison Co. (Associated Southern Investment Co.)
	Arizona Public Service Co. (Resources Co.)
	San Diego Gas & Electric Co. (New Albion Resources Co.)
	Nevada Power Co. (Nevada Electric Investment Co.)
	Iowa Public Service Co. (Energy Development Co.)
1975	Montana-Dakota Utilities (Knife River Coal Co.)
	Montana Power Co. (Western Energy Co.) (Northwestern Resources Co.)
	Pacific Power & Light Co. (Bridger Coal Co. 66.6 percent) (Western Minerals Co.)
	Black Hills Power & Light Co. (Wyodak Resources Development Co.)
	Public Service of New Mexico Co. (Western Coal Co. 50 percent)
	Washington Water Power Co. (Washington Irrigation & Development Co.)
	Moon Lake Electric Association
	Southern California Edison (Mono Power Co.)
	Arizona Public Service Co. (Resources Co.)
	San Diego Gas & Electric Co. (New Albion Resources Co.)
	Nevada Power Co. (Nevada Electric Investment Co.)
	Iowa Public Service Co. (Energy Development Co.)
	Tucson Gas & Electric Co. (Western Energy Co. 50 percent)
	Idaho Power Co. (Bridger Coal Co. 33.3 percent)
	American Electric Power Co. (Franklin Real Estate co.)
	Wisconsin Electric Power Co. (Badger Service Co.)
	Utah Power & Light Co.
1980	Montana-Dakota Utilities (Knife River Coal Co.)
	Montana Power Co. (Western Energy Co.) (Northwestern Resources Co.)
	Pacific Power & Light Co. (Bridger Coal Co. 66.6 percent) (Western Minerals Co.) (Eden Ridge Coal Co.) (Spring Creek Coal Co.) (Resource Development Co., Inc.)
	Black Hills Power & Light Co. (Wyodak Resources Development Co.)
	Public Service of New Mexico Co. (Western Coal Co.)
	Washington Water Power Co. (Washington Irrigation & Development Co.)
	Moon Lake Electric Association
	Southern California Edison Co. (Mono Power Co.)
	Arizona Public Service Co. (Resources Co.)
	San Diego Gas & Electric Co. (New Albion Resources Co.)
	Nevada Power Co. (Nevada Electric Investment Co.)
	Iowa Public Service Co. (Energy Development Co.)
	Tucson Electric Power Co. (Western Coal Co. 50 percent)
	Idaho Power Co. (Bridger Coal Co. 33.3 percent)
	American Electric Power Co. (Franklin Real Estate co.)
	Utah Power & Light Co.
	Pacific Gas & Electric Co. (Eureka Energy Co.)

NOTE Subsidiary leaseholders are noted in parentheses
SOURCE Off Ice of Technology Assessment

Pacific Power & Light Co.

Pacific Power & Light (PP&L) was the second utility to begin leasing Federal coal land in the West. It has acquired the largest coal leaseholdings of any utility and is the second largest "captive" producer in the country. The company has made use of coal-related subsidiaries more than any other utility in this survey.

The company's first move into leasing occurred in May 1956, when the company acquired prospecting permits by assignment from two individuals. These were later converted into Wyoming coal leases. Two months later the company added a third Wyoming lease de novo. All three are still held in the name of the parent company.

Next, in 1956, PP&L acquired a prospecting permit in Oregon from an individual. It added a second lease in Oregon de novo in 1962. Title to both leases remained in the name of the parent company until assignment to a subsidiary, Eden

Ridge Coal Co.,[1] in 1977. Eden Ridge was formed to investigate the mining potential of these two Oregon leases, but a NERCO official told OTA in an interview for this survey that PP&L views development prospects as slim.

PP&L next acquired a Montana lease. In 1964, the parent company acquired de novo a large tract. In 1971, the Decker joint venture agreement between PP&L and Peter Kiewit *Sons* Inc., was initiated. Shortly thereafter, PP&L assigned 50 percent of the lease to a Peter Kiewit subsidiary called Wytana, Inc., and transferred its remaining 50-percent interest to a newly formed PP&L subsidiary, Western Minerals, Inc. Western Minerals, like Eden Ridge, has no employees. All coal mining is done by Peter Kiewit Sons, Inc.

Three other Montana leases eventually were added to the Decker mining unit. The first was obtained by PP&L in 1966. In 1971, a portion of the lease was segregated to form a new lease owned jointly by the Decker partners. The second lease was initially issued de novo to Peter Kiewit Sons, Inc., in 1966 and assigned to the joint venture subsidiaries in 1971. The third lease was initially issued in 1963 to Rosebud Coal Sales Co., a Peter Kiewit Sons subsidiary assigned to PP&L in 1966, and reassigned to the joint venture subsidiaries in 1975.

PP&L controls three other Montana leases not currently connected to the Decker ventures. Two were issued to this utility de novo, one in 1963 and one in *1965;* both are held in the name of the parent company. In *1966,* PP&L acquired the third, a 2,347-acre tract, from its original lessee, Peter Kiewit Sons. In 1977, the parent company assigned the lease to a landholding subsidiary, Resource Development Co., Inc. (The subsidiary was originally incorporated in 1969 as Western Resources Inc.; it changed its name to Resource Development in October 1970.) One year later Resource Development reassigned the lease to another PP&L subsidiary, Spring Creek Coal Co. Spring Creek is a bona fide wholly owned coal mining subsidiary responsible for the development of a mining operation in Montana. The mine is currently under construction.

PP&L also acquired a second Wyoming lease package. Five leases were issued de novo to PP&L, two in 1960, two in *1965,* and one in *1966.* A sixth was obtained in 1968 after assignment from an individual. PP&L assigned all six of the leases to Resource Development Co. in 1977. The seventh lease was obtained directly by Resource Development Co. in May 1979 by assignment from Gulf Oil. The lease was originally issued in 1932 and, prior to acquisition by Gulf in 1977, had been owned by five different individuals.

In a third Wyoming project, PP&L owns two-thirds interest in Bridger Coal Co., a joint venture formed in 1974 to mine coal for the Jim Bridger powerplant in Wyoming. PP&L's interest is held by another NERCO subsidiary, Pacific Minerals Co., formed, like Spring Creek, to run a specific mining project. The other one-third interest is owned by Idaho Power Co. (see p. *27).*

The Bridger Coal Co. owns three Wyoming coal leases. All three leases were originally issued de novo to PP&L, one in 1965 and two in 1967. The three were reassigned to Bridger in 1974. Under the terms of the assignment, Idaho Power must pay PP&L an overriding royalty of *2.66* cents/ton of coal mined. PP&L's own subsidiary, Pacific Minerals, is also required under the same agreement to pay an overriding royalty to its parent of 5.33 cents/ton.

PP&L acquired two leases in 1971 in Washington. This is the fourth State in which the company holds Federal coal leases. Today, it owns two leases jointly with Washington Irrigation and Development Co., a subsidiary of Washington Water Power Co. Both of the companies obtained one of the leases de novo in 1971. Also in 1971, PP&L was assigned **W-per**cent interest in the second lease which was originally issued to Washington Irrigation in *1961.*

Black Hills Power & Light Co.

In 1956, Black Hills Power & Light Co. obtained a lease originally issued to an individual in 1944. The lease was acquired in the name of Wyodak Resources Development Corp., a utili-

[1]Eden Ridge is one of several subsidiaries established by Pacific Power & Light in the 1970's. None are subsidiaries directly of the parent company. All are owned directly by NERCO, Inc., a resource development subsidiary established by PP&L to coordinate and direct fuel acquisition and development activities. NERCO itself holds no leases.

ty subsidiary founded in 1956 to develop a coal fuel supply for the parent's generating plants. The subsidiary added three leases de novo to this Wyoming land package, one each in 1959, 1961, and 1965.

Montana Power Co.

Two subsidiaries of Montana Power currently hold leases. Two Montana leases, part of the Colstrip mining project, are held by Western Energy Co. One lease which includes abandoned Burlington Northern Railroad coal mine and is one of the oldest leases in the Federal program, was originally issued to an individual in 1921. In 1923, the lease was assigned to a railroad subsidiary which operated the mine for several decades. Montana Power Co. acquired the lease in 1959 and assigned it to Western Energy Co. in 1966. The second Montana lease was acquired de novo by the parent company in 1966 and reassigned 1 month later to Western Energy.

Northwestern Resources Co., another Montana Power subsidiary, acquired a single Wyoming lease in 1975. Originally issued in 1944, this lease had previously been owned by six individuals. Both Western Energy and Northwestern Resources are involved in coal and uranium fuel supply projects, the former within the borders of Montana and the latter out of the State.

Public Service Co. of New Mexico and Tucson Electric Co.

Seven New Mexico coal leases are now owned by Western Coal Co., a joint venture of Public Service Co. of New Mexico and Tucson Electric Co[2]. Prior to 1973, the leases were owned in entirety by the New Mexico utility. The parent utility acquired two leases de novo in 1958. Both were assigned to a wholly owned coal mining subsidiary, Public Service Coal Co., in 1962. Three other leases were obtained de novo by the coal subsidiary in 1961.

In 1971, Public Service Coal Co. changed its name to Western Coal Co. In 1973, Tucson Gas and Electric Co. (name changed to Tucson Electric Co. in 1979) joined the company as coventurer. Western Coal obtained the final two leases in 1977 by assignment by individuals.

Moon Lake Electric Association

Moon Lake Electric Association was founded in 1956 and supplies electricity to the Uinta basin in central Utah. It currently purchases all power for its customers from Utah Power & Light Co. In 1958, Moon Lake Electric acquired a large Colorado coal lease de novo in hopes of building its own generating equipment to be supplied with captive coal.

Washington Water Power Co.

Washington Water Power Co. today owns two Washington leases jointly with PP&L. Washington Water Power is a utility supplying the Spokane area and is the active mining partner in the Centralia mine. Its leaseholdings are in the name of Washington Irrigation & Development Co., a bona fide coal mining firm (see Pacific Power & Light pp. 24-25, for details).

Nevada Power Co.

Two large lease blocks in southern Utah are owned by utilities. One 10-lease group is owned by Nevada Power Co. through its Nevada Electric Investment Co. landholding subsidiary. Six were obtained de novo by the subsidiary, three in 1961, one in 1962, and two in 1963. A seventh was acquired in *1963* by assignment from an individual who had held, the lease since 1944. Another lease was added in 1971. It was originally issued in 1936 to an individual, assigned to Southern Utah Fuel Co. (then an independent coal company), and then assigned to Utah Construction and Mining Co. prior to acquisition by the Nevada utility. The final two leases were obtained in 1977, one by assignment from Peabody Coal and the other by segregation of a new lease from one owned by the Huntington Corp.

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[2] In December 1980, the two utilities announced their intention to liquidate Western Coal Co. They have sold their coal processing equipment to Utah International and are negotiating with several potential assignees for their leaseholdings.

Southern California Edison, San Diego Gas & Electric, and Arizona Public Service Co.

These three utilities also own a large block of coal leases in southern Utah. The 21 leases in this package were acquired jointly by the three utilities.

The original three participants in this utility venture were Resources Co. and New Albion Resources Co.—resource development subsidiaries of San Diego Gas & Electric and Arizona Public Service respectively, and Associated Southern Investment Co., a landholding subsidiary of Southern California Edison Co, Twenty of the 21 leases were acquired by these three ventures in 1964 or 1965 by assignment of prospecting permits initially issued to a total of six individual *land* agents. In 1972, Southern California Edison Co. assigned its one-third interest in these leases from Associated Southern Investment to a resource development subsidiary, Mono Power Co. The 21st lease was originally issued as a prospecting permit in 1963 to a seventh individual land agent, assigned to an eighth, converted to a lease, assigned to a landholding subsidiary of Peabody Coal Co., assigned to Peabody Coal Co. itself, and finally assigned to the utilities' three subsidiaries in 1974.

Iowa Public Service Co.

An 8,000-acre Wyoming coal lease was obtained de novo in 1969 by Energy Reserves, Inc., a wholly owned coal mining subsidiary of Iowa Public Service Coal Co. In *1970*, the subsidiary changed its name to Energy Development Co.

Idaho Power Co.

Through its subsidiary, Idaho Energy Resources Co., Idaho Power Co. owns one-third interest in Bridger Coal Co. Bridger is the developer of the coal mine which supplies the Jim Bridger powerplant in Wyoming. Bridger's three leases are discussed under the *Pacific Power & Light* section of this chapter (see pp. 24-25).

Wisconsin Electric Power Co.

Wisconsin Electric Power Co. is the only utility which has ever entered and left Federal coal leasing. In 1970, it acquired de novo a large Wyoming lease in the name of a subsidiary, Badger Service Co. In 1975, the utility assigned the lease to Stansbury Coal Co., a joint venture of the Union Pacific Corp. and Ideal Basic Industries.

American Electric Power Co.

American Electric Power, which has service areas in the Ohio Valley, came the greatest distance of any utility to acquire Federal coal leases. It acquired total or partial interest in 11 leases between 1974 and 1976, one in Colorado and 10 in Utah. All are held in the name of a landholding subsidiary, Franklin Real Estate co.

The single Colorado lease was originally issued in 1956 and owned previously by three individuals. Franklin acquired it by assignment in 1975. The 10 Utah leases include some of the oldest in the Federal coal leasing program. Nine were obtained from McCulloch Oil Corp. or *its* subsidiary, Bratzah Corp. Prior to control by the oil company, seven of these leases were owned by several independent coal companies. The tenth utility lease, originally issued in 1921, was owned previously by three independent coal companies prior to acquisition by Franklin Real Estate.

Utah Power & Light Co.

Although Utah has the largest number of outstanding Federal coal leases and the longest history of leasing activity, the State's largest utility is a relatively late entrant to leasing. Utah Power & Light Co., however, now owns 12 Utah leases, all in the name of the parent. In 1972, the company acquired its first lease by assignment from Cooperative Security Corp., owned by the Church of the Latter Day Saints, which had held it since *1957.* In *1976*, it added a second lease, which had previously been owned by five individuals in the course of its 43-year history. In *1977,* several more leases were added, one from an individual and four from Peabody Coal. Peabody's leases had previously been owned by several independent coal mining companies or individuals active in the coal mining industry. In December 197'9, Utah Power added its final five leases, all by assignment from Peabody. These leases had previously been owned, a few for several decades, by a succession of individuals and independent land agents.

Pacific Gas & Electric Co.

The San Francisco-based Pacific Gas & Electric Co. (PG&E) is the most recent utility entrant to Federal coal leasing. In the mid-1970's PG&E began looking for a coal supply for what will be, if it is built, the first coal burning generating facility in California. In 1977, PG&E acquired three leases from Heiner Coal Corp., an independent coal company which acquired the leases in the mid-1960's. In 1977, the utility obtained 50-percent interest in a fourth lease by buying Heiner Coal Co. 's share of a lease owned jointly with Equipment Rental Service. In 1979, it added two leases previously owned by Kennecott Coal Co. and before that by Knight Ideal Coal Co. Title of two of the six leases remains in the name of the parent utility. Ownership of the other four was assigned in 1979 to a newly formed resource development subsidiary, Eureka Energy Co.

B. ENERGY COMPANIES

Since 1965, the major energy companies have been increasing their Federal coal leaseholdings.[3] (See table 10.) All of the major energy companies initially confined their activities to oil. Petroleum and natural gas continues to provide most of their revenues and profits. The acquisition of coal reserves, however, has become a major component of their diversification programs. According to the 1980 Report of the President's Commission on Coal, oil and gas companies now own approximately 41 percent of the Nation's recoverable coal reserves (excluding nonleased Federal reserves).[4] The Department of Energy's Information Administration reports that 36 oil companies now own coal. These companies have been steadily increasing coal production. In 1967, according to DOE, oil companies accounted for 11 percent of all coal produced, in 1974 the figure rose to 19 percent; in 1979 it was approximately 23 percent. All recent surveys of coal expansion plans conclude that oil companies will continue to capture an increasing share of the coal market, at least through the next decade.

Table 10.—Energy Company Leaseholdings

Year	Number of leases held	Number of acres held	Percent of total acreage under lease
1950. , ...	0	0	0
1955	0	0	0
1960. , ...	0	0	0
1965. , ...	8	9,491	30/0
1970	67	132,274	18
1975. , ., . .	67	138,409	18
1980	86	155,024	20

SOURCE Office of Technology Assessment

The leasing of Federal coal land has provided the major route for energy companies to increase their coal reserve holdings in the West. This survey has found that 11 of the 18 largest energy companies now own coal leases (see table 11). Collectively they now control 155,024 acres of Federal coal land, 20 percent of the total land under lease (see table 10).

Energy companies made their initial entry into Western coal leasing in the mid-1960's and achieved their largest leasing gains between 1965 and 1970 (see figures 6 and 7). In 1970, energy companies held more land than any of the 12 business categories examined in this survey. They were passed by utilities in 1975. During the leasing moratorium of the 1970's, energy companies continued to add to their leaseholdings, although more slowly. Energy companies still rank as the second largest leaseholders among the 12 categories,

‘The 18 largest companies in terms of worldwide petroleum production are included in the energy company category in this survey. The 18 are Exxon, Mobil, Texaco, Standard Oil Co. of California, Gulf, Standard Oil Co. of Indiana, Shell, Arco, Conoco, Sun, Phillips, Union, Standard of Ohio, Cities Service, Marathon, Getty, Amerada Hess, and Occidental.

‘The oil and gas companies referred to in this reference include not only the companies in the energy company category of this section, but those in the oil and natural gas company (minor) category (see *Oil and Natural Gas Companies (Minor),* pp. 43-45).

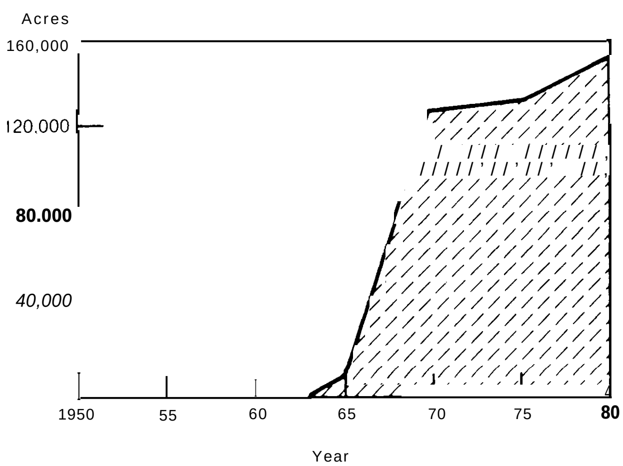
Table 11.—Energy Company Leaseholders

1950. . . .	None
1955. . . .	None
1960. . . .	None
1965. . . .	Gulf Oil Corp.
1970. . . .	Gulf Oil Corp.
	Atlantic-Richfield Corp.
	Sun Oil Corp.
	Continental Oil Corp. (Consolidation Coal Co.)
	Humble Oil & Refining Co. (Carter Oil Co.)
	Occidental Petroleum Corp. (Heiner Coal Co.)
1975. . . .	Gulf Oil Corp.
	Atlantic-Richfield Co.
	Sun Oil Corp.
	Continental Oil Corp. (Consolidation Coal Co.)
	Exxon Corp. (Carter Oil Co.)
	Occidental Petroleum Corp. (Heiner Coal Co.)
	Mobil Oil Corp.
	Texaco, Inc.
1980. . . .	Gulf Oil Corp.
	Atlantic Richfield Co. (Swisher Coal Co.) (Thunder Basin Coal Co.)
	The Sun Co. (Sunoco Energy Development Co.)
	Conoco, Inc. (Consolidation Coal Co.)
	Exxon Corp. (Carter Oil Co.) (Carter Mining Co.)
	Mobil Corp. (Mobil Oil Corp.)
	Texaco Inc.
	Shell Oil Corp.
	Standard Oil of Indiana Co. (Empire Energy Co.)
	Occidental Petroleum Corp. (Sheridan Enterprises, Inc.)
	Getty Oil Co. (Plateau Mining Co.)

NOTE Subsldiary leaseholders are noted in parentheses

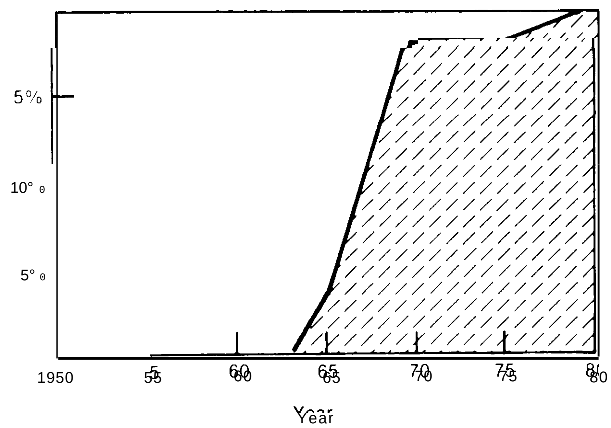
SOURCE Off Ice of Technology Assessment

Figure 6.—Acres Leased by Energy Companies



SOURCE Office of Technology Assessment

Figure 7.—Percent of Total Leased Acres Held by Energy Companies



SOURCE Office of Technology Assessment

The energy companies generally have not leased de novo. Only 16 of the 110 leases acquired by the energy majors were obtained by de novo leasing from the Department of Interior. Fifty-four leases were obtained by assignment of existing leases, including those held by many small miners and independent coal companies. Another five were acquired when existing leases not owned by an energy company were split, or segregated, into two leases with the newly created lease being issued to an energy company. Finally, 35 leases were obtained by energy companies when they purchased companies which held coal leases among their assets. The lease acquisition routes of the energy companies are summarized in the following table:

Lease acquisition path	*Number of leases so obtained*	*Percent of leases so obtained*
De novo	16	15%
Assignment	54	50
Lessee acquisition.	35	31
Segregation	5	4

During 1980, energy companies acquired ownership of at least three leaseholding companies. Swisher Coal Co., an independent coal producer until it was purchased in 1976 by another independent, General Exploration Co., **was** sold to a subsidiary of Atlantic Richfield. Getty Oil Co. purchased Plateau Mining Co. from UNC Resources. A Plateau lease was formerly owned by an independent coal company. Finally, a Standard Oil Co. (Indiana) subsidiary purchased Empire Energy Co. from Houston Natural Gas Corp. Empire was an independent company until its acquisition by Houston in 1976.[5]

History of Leasing

The remaining sections of this subchapter discuss the lease acquisition procedures used by the 11 leaseholding energy companies.

Gulf Oil Corp.

One of the earliest corporate mergers by a major oil company involving coal reserves was driven not so much by coal as by chemicals. In late 1963, Gulf Oil acquired Spencer Chemical Co. of St. Louis, the parent company of Pittsburg & Midway Coal Co. (P&M). Though P&M was already among the Nation's larger coal companies (16th largest producer in 1960, 11th largest in 1965), Spencer had significant noncoal assets that were attractive to Gulf.

The merger brought eight Western coal leases to Gulf. Four leases had been acquired by P&M as prospecting permits in New Mexico in 1959. They were assigned to Spencer in 1960 and assigned to Gulf in 1964 after the merger. Another four-lease package inherited by Gulf in Colorado had been obtained by Spencer in 1962 after assignment from independent coal companies—Hayden Brothers Coal Corp., Edna Coal Co., and Moffat Coal Co. They were assigned to Gulf in 1964.

Gulf added a Colorado lease **on its own in 1974.** The lease was originally issued to a cooperative, Paonia Farmers Coal Co., and was later owned by individuals.

Gulf completed its Western leaseholdings to date with the acquisition of five Wyoming leases in 1975. All five were originally issued to J. C. Karcher in the early 1960's and were assigned in 1968 in part to Concho Petroleum Co. of which Karcher was president.

Atlantic Richfield

In January 1966, the Richfield Oil Corp. and the Atlantic Refining Co. merged to form the Atlantic Richfield Co. Several years before the merger, Richfield had begun a major land acquisition program in southern Utah. Individual land agents acquired prospecting permits between 1962 and 1964 for 12 of the leases in what became a 14-lease block. Five of the 12 were assigned to Richfield in 1964 and 1965 and the remaining 7 permits were assigned to Atlantic Richfield directly from the land agents in 1966 and 1967. Richfield added two competitive leases on its own de novo in *1964.*

This lease block is one of the few multilease packages to change hands as a unit after acquisition by a major company. The company assigned the entire package to El Paso Natural Gas Co. in 1971. El Paso is currently proposing to open two mines on this land. (See *Natural* **Gas** *Pipeline,* pp. *48-51.*)

Atlantic Richfield has continued to be one of the most active of the energy majors in acquiring coal leases, despite the El Paso assignment. The company now holds three Colorado leases. One lease was acquired de novo in *1967*, and one was added by assignment from Reliable Coal & Mining Co. (an independent) in 1969. The third lease was acquired by assignment from the wife of the lease's original owner who mined the property from 1934 until his death,

Another three Atlantic Richfield leases in Wyoming cover part of the site of the Black Thunder coal mine. Atlantic Richfield acquired one of these leases de novo. A second lease was acquired by assignment from an individual in 1968. The third was obtained in *1972* by segregation of part of an existing lease owned by an individual. Two of the three leases were assigned in 1977 to the energy company's wholly owned coal mining subsidiary, Thunder Basin Coal Co.

Atlantic Richfield's most recent move in the West has been in Utah. In January 1980, the company purchased Swisher Coal Co. from the General Exploration Co. Swisher was an independent, Utah-based coal company until it was

[5]In addition to these acquisitions, energy companies in **1980** also increased leaseholding by obtaining leases on the assignment market and through segregation. Shell Oil–e.g., obtained a 1,920-acre lease by segregation. Cities Services, making its first move into leasing, filed an application to acquire three leases by assignment. These lease ownership changes occurred too recently to be included in the findings of this survey.

bought by General Exploration in 1976. (This company still holds Federal leases through another subsidiary, GEX Colorado.) Swisher is now a subsidiary of Arco Coal Co., which in turn is a subsidiary of Atlantic Richfield. With the purchase of Swisher, Arco Coal gained control of four leases. One was acquired by Swisher in 1976 by assignment from Ura Swisher, the company's founder. A second lease was acquired by assignment in 1976 as was a third in 1978. The fourth lease was acquired de novo by Swisher in *1978.*

Conoco, Inc.

In 1966, Continental Oil Co. (name changed to Conoco, Inc., in 1979) acquired Consolidation Coal Co., then and now the Nation's second largest coal producer.

Over the past 15 years, Conoco has acquired five coal lease packages in four States, though one package has been assigned by Conoco to another company. This latter group consists of five New Mexico leases acquired by Consolidation Coal Co. prior to acquisition by Conoco. In 1977, all five were assigned to Ideal Basic Industries, a large cement company.

In the early 1960's, the independent Consolidation Coal Co. acquired two large lease blocks in Utah. The first includes 10 leases acquired with the assistance of individual land agents and independent landholding companies. In 1963, individual land agents—six in total—acquired prospecting permits that were later converted to the 10 leases. In 1966, the permits were assigned to Midwestern Minerals, Inc. In 1968, the leases were assigned to Consolidation Coal, which by then was a subsidiary of Continental.

The second Utah package also contains 10 leases. Ownership of these leases is shared with Kemmerer Coal Co. Four of the leases were originally issued in 1962 to Kemmerer with a partial assignment to Consolidation in 1966. Another five leases, in contrast, were issued originally to Consolidation in 1962 and then partially assigned to Kemmerer in 1966. The tenth lease was acquired jointly in 1968.

In 1972, Consolidation moved into Colorado leasing with the acquisition of seven leases from Ember Mining Co., an independent landholding company. Ember had acquired the leases in 1967, five by assignment from individuals and two de novo. Consolidation retains ownership of six of the seven leases; one was assigned to Northern Minerals Co., a subsidiary of Internorth Corp., in 1979.

In its only leasing venture in Wyoming, Consolidation and Mobil Oil Corp. share ownership of a single lease. The lease was segregated to the two companies in 1977 from a lease owned by Mobil Oil since 1971.

Consolidation Coal Company also holds North Dakota's 16 leases. Truax-Traer Coal Co., a Consolidation division, acquired the oldest lease in 1965 and assigned it to Consolidation in 1966. Consolidation acquired two other leases de novo in 1971. The final lease was segregated in 1977 to Consolidation from an existing lease owned by North American Coal Corp.

Exxon Corp.

Exxon owns four Wyoming leases. Three were issued to Humble Oil & Refining Co. (name changed to Exxon Corp. in 1972) in 1967 and assigned 2 years later to Carter Oil Co. (a subsidiary of the energy company since 1959). The fourth lease was obtained by Carter Oil in 1975 by segregation of part of a lease owned by Amax, Inc. Three of the leases remain in the name of Carter Oil, while the fourth was assigned to a coal mining subsidiary, Carter Mining Co., in 1978.

Exxon is often cited as an example of an oil company that made a de novo entry into Western coal leasing. Some amplification of this statement, however, may be in order. While three of the four leases mentioned above were obtained de novo at competitive lease sales, all three sales were held in response to an application by either the Farmers Union Central Exchange or an individual, Paul Faust. In each case, Exxon outbid the original lease applicant at the lease sale.

Sun Co., Inc.

Sun Oil Co. (name of the parent until a reorganization in 1971 left the oil unit as the major subsidiary of Sun Co., Inc.) acquired a Wyoming lease de novo in 1968. Covering 14,680

acres, this lease is Sun Oil's largest lease among its seven Wyoming leases. A second lease, acquired de novo in 1971 by Cordero Mining Co., was assigned to Sun in 1973. Another three leases were acquired in 1975 by assignment from Humac Co. and L. A. Haneline. These leases were previously owned by American Humates, Inc., and J. C. Karcher. As mentioned above, Karcher participated in the Gulf Oil acquisitions as president of Concho Petroleum.

In 1974, the Sun Co., Inc., organized the Sunoco Energy Development Co., a resource development arm coordinating coal, uranium, and alternative energy activities. The five leases owned by Sun Oil were assigned to the subsidiary in 1976. The final two leases in the Sun package were acquired by Sunoco Energy Development later that year. Both had been originally issued to an individual, assigned to Summit Exploration and Development Co., and then assigned to two individuals prior to acquisition by the energy company subsidiary.

Occidental Petroleum Corp.

Occidental Petroleum was the last of the major energy companies to enter coal leasing in the 1960's. Occidental's entry into coal was via the purchase of a leaseholding company. Island Creek Coal Co. (then an independent coal company) purchased Heiner Coal Co., a Utah-based independent, family-run coal company in 1965. Heiner operated coal mines in Utah and Colorado, which Island Creek closed. Occidental obtained control of Heiner's leases when it acquired Island Creek in 1968. All of Heiner's coal leaseholdings were assigned a decade later to Pacific Gas & Electric Co.

Heiner Coal owned part or all of six Utah coal leases at the time of Occidental's acquisitions. One of the six was acquired de novo in **1962** and another in *1966*. One-third ownership of two other leases was acquired de novo in *1962*. A fifth lease was originally issued to Minerals Development Corp. (also run by the Heiner family) in *1962* and assigned to Heiner Coal 1 year later. The final lease was acquired originally by two companies and assigned to Minerals Development which assigned *50* percent to Heiner Coal and 50 percent to Equipment Rental Service in *1964*.

Although Occidental has sold the Heiner leases, it is still involved in leasing. In 1977, Sheridan Enterprises, Inc., an Occidental subsidiary, acquired seven leases by assignment. Six leases were originally issued to Irvin Neilson in 1965, assigned to Industrial Resources, Inc., in 1967 and sold to Sheridan. The seventh was previously owned by three individuals. Sheridan is developing a mining plan for the property as part of a joint venture with Colorado-Ute Electric Association.

Mobil Corp.

Mobil Oil Corp. was the first energy company to enter Federal coal leasing in the 1970's. In 1971, it acquired a 4,000-acre Wyoming lease. In 1977, it segregated 840 acres and created a second lease, the ownership of which it shares with Conoco's Consolidation Coal Co. subsidiary. In 1976, Mobil Oil was reorganized and the oil unit became the major subsidiary of a new holding company called Mobil Corp.

Texaco, Inc.

In 1974, Texaco entered coal leasing when it obtained by assignment five Wyoming leases from Reynolds Mining Corp., a subsidiary of Reynolds Metals Corp. Reynolds had obtained three of the leases de novo in the mid-1950's and two more in 1968 by assignment from an individual. (See *Metals and Mining*, pp. 54-48.)

Shell Oil Co.

In 1975, Shell acquired by assignment two leases, one in Montana and one in Wyoming. The Wyoming lease was originally issued to Farmers Union Central Exchange, Inc., in 1967.'

The Montana lease was originally issued to J. C. Karcher in 1965 and assigned three times in 1967—to Concho Petroleum, to Humic Acid Products of America, and back to Concho. Shell is the third energy major to receive leases previously owned by J. C. Karcher.

'In July 1980, Shell increased its Wyoming holdings when it obtained a 1,920-acre lease which was segregated from a Peabody lease. This transaction occurred too recently to be included in this survey.

Standard Oil Co. (Indiana)

In February *1980*, Standard Oil Co. of Indiana purchased Empire Energy Corp. from Houston National Gas Corp. Empire was an independent coal company from its formation in 1969-76. Empire operated a Colorado coal mine in the early **1970's.** Acquired by Houston Natural Gas in 1976, it is now owned by Amoco Minerals Co., a Standard of Indiana subsidiary. Through Empire, Standard now controls three Colorado leases. Two of the three were obtained by Empire when it acquired, upon its founding, the assets of Silengo Coal Co. The third was obtained in *1976* by assignment from Utah International, Inc.

Getty Oil Co.

Getty Oil Co. is the most recent entrant among the energy majors to coal leasing found in this survey. In June 1980, Getty outbid Eastern Gas and Fuel Associates and purchased Plateau Mining Co. from its previous owner, UNC Corp. Plateau owns three leases in Utah. Two were obtained in 1971 by assignment and the third was acquired de novo in 1974.

C. PEABODY COAL CO.

Peabody Coal Co. became the largest coal producing company in the mid-1960's. It also holds more Federal coal leases than any other company, a position it has held since 1970. The company ranks third among the 12 lessee categories studied in this survey.

Until 1968, Peabody Coal was an independent corporation. In 1968, it was purchased by Kennecott Copper Corp. The merger was opposed by the Federal Trade Commission (FTC). FTC argued that Kennecott was a potential de novo entrant to the coal industry—in other words, it was reasonable to think that Kennecott would eventually decide to acquire coal reserves and mining experience on its own. Therefore, FTC maintained the merger could reduce the future number of competitors in the coal industry. In 1971, FTC ruled that the merger violated section 7 of the Clayton Act and ordered Kennecott to divest Peabody. The decision was upheld by the U.S. Court of Appeals and certiori was denied by the Supreme Court.

In June 1977, Kennecott sold Peabody to a consortium called the Peabody Holding Co. The six participants in the holding company are:

Company	Business actitlity	*Percent ownership* of *Peabody*
Newmont Mining Corp.	Metals and mining	27.5 %
The Williams Co.	Chemicals	27.5
Bechtel Corp.	Engineering and construct ion	**15.0**

Company	Business *activity*	*Percent ownership* of *Peabody*
The Boeing Co.	Aerospace	**15.0**
Fluor Corp.	Engineering and construction	10.0
The Equitable Life Assurance Society.	Insurance	**5.0**

None of the companies participating in the Peabody group own leases on their own.

Table 12 and figures 8 and 9 show the pattern of coal lease holdings by Peabody Coal Co. The numbers in parentheses and the dotted lines indicate lease holdings when Peabody was owned by Kennecott Copper Corp. ' Between *1965 and 1970* Peabody acquired 59,121 acres of leased land, 8 percent of the total land under lease. Nearly all of these leases were obtained by Peabody, either through direct lease ownership or through individual land agents under contract to the company, when the company was independent.

Between *1970* and 1975, Peabody added 14 more leases totaling approximately 9,000 acres to its holdings and attained a leasing peak of 9 percent of total leased land. In the past 5 years, the company assigned 11 leases and added only

"Leases held when Peabody was a Kennecott subsidiary are tabulated in this survey with the metals and mining company leaseholdlngs. Because of the diverse business activities of the holdilng company members, the unique ownership structure of the holding company, and the tact that Peabody owns more than 5 percent of the leases, Peabody's leases are treated as a separate category in this survey beginning in 1980.

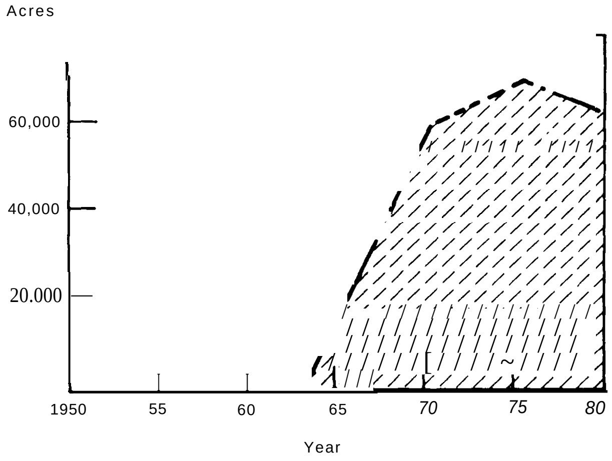
Table 12.—Peabody Coal Co. Leaseholdings

Year	Number of leases held	Number of acres held	Percent of total acreage under lease
1950	0	0	0
1955	0	0	0
1960			
1965a.	(4)	(6,251)	(2%)
1970[b]	(30)	(59,121)	(8)
1975[b]	(43)	(68,923)	(9)
1980	33	62,009	8

[a]Leases held when Peabody was an independent coal company These leases have been included in the independent coal company category for this date,
[b]Leases held when Peabody was owned by Kennecott Copper Corp. These leases have been included in the metals and mining company category for these dates

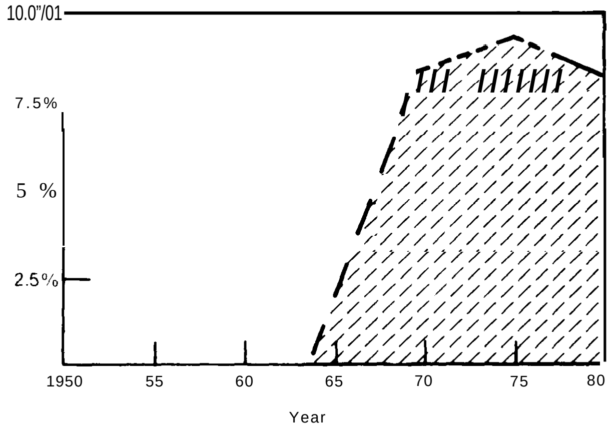
SOURCE Off Ice of Technology Assessment

Figure 8.—Acres Leased by Peabody Coal Co.[a]



SOURCE Office of Technology Assessment

Figure 9.–Percent of Total Leased Acres Held by Peabody Coal Co.[a]



[a]The dashed lines indicate that the Peabody holdings were Included in either the Independent coal company or the metals and mining categories

SOURCE Off Ice of Technology Assessment

one, thereby reducing its lease total to 62,009 acres.

The question of Kennecott's influence over the slowing and eventual reversal of Peabody's lease acquisitions after the merger was central to the divestiture debate. Evidence from this survey supports the argument that Kennecott had little or no influence over the leasing slowdown. Peabody had already become the largest Western leaseholder by the tirne of the merger, but it has yet to bring most of this land into production. Furthermore, other companies acquiring land packages at the same time also reduced their leasing activities in the late *1960's.* Finally, concern over excessive leasing by the Department of Interior limited leasing opportunities.[8]

History of Leasing

During the 1960's Peabody Coal acquired leases in five States—New Mexico, Colorado, Montana, Wyoming, and Utah. During the 1970's, it added and assigned leases in four of them.

New Mexico

In 1963, Sentry Royalty Co., a Peabody subsidiary until it was dissolved into the parent just before the Kennecott merger, acquired de novo a 2,045-acre lease in northwestern New Mexico. Peabody assigned it to Cimarron Coal Co., a Denver based independent, in 1978. Peabody is still active in New Mexico. In *1971,* it entered a joint venture with Thermal Energy Co., owned by a group of small oil companies, and 3 years

'An interesting aside t o the Peabody -Kennecot t history is provided by Kennecott's management of two other leases it obtained when it purchased Knight Ideal Coal Co.—an independent mining company in 1965. After acquisition the mine was shut down. The removal of a potential competitor to Peabody by Kennecott was seen as a significant action by those arguing for divestiture of Peabody by Kennecott.

later the venture obtained a lease by assignment from an individual.

Colorado

Peabody holds eight Colorado leases. Three leases were obtained by a land agent and assigned to Sentry in *1966*. Sentry obtained the remaining five Colorado leases de novo, two in 1963, and one each in 1964, 1965, and 1966.

Montana

Peabody's single Montana lease was acquired de novo in 1971.

Wyoming

Peabody owns nine leases in Wyoming. Four were obtained as prospecting permits by Sentry Royalty, three in 1963, and one in 1966. These were later converted to leases. Two leases were acquired by assignment from an individual in 1968. One lease, originally issued in *1965*, was assigned to Peabody by Kerr-McGee Corp. in 1973. The final two leases were created by segregation of part of the acreage contained in the 1966 lease mentioned above. One segregation of 40 acres occurred in 1972. Ownership of the second lease, segregated in 1977, is shared by a Peabody subsidiary and a subsidiary of Panhandle Eastern Pipeline Co. Title to the lease is held by Antelope Coal Co., the name of the joint venture.

Utah

Peabody has been especially active in Utah. The company has held title to **25** leases in Utah between 1965 and 1980, although 11 of these leases have been assigned to other companies.

One block of 13 leases in southern Utah was acquired by Peabody in the mid-1960's. All of the prospecting permits from which the leases were derived were acquired first by land agents, seven in all, and assigned simultaneously to Sentry Royalty in 1967. The company assigned one of these leases to three utilities in 1974 and still owns the others.

The remaining 23 Utah leases, once or now owned by Peabody, have complicated histories. Only one was acquired de novo by Peabody, a *1967* lease assigned to Utah Power and Light in 1977. Five other leases were acquired first by Huntington Corp. and assigned to Peabody in 1971. Peabody still owns two of them. Two were assigned to Nevada Electric Investment Co. and one to Utah Power & Light. The other six leases were initially owned by individuals. All six changed hands among individuals and independent companies before they were assigned to Peabody between 1967 and 1974. In 1977, Peabody assigned them to Utah Power & Light Co. '

"In 1980, Peabodv assigned several more of its leases in Utah, Wyoming, and Colorado. These transactions occurred too recently to be included in this study. Despite this assignment, Peabody remains a major leaseholder, but its rank among the top leaseholding categories might drop a notch or two as a result.

D. THE STEEL INDUSTRY

The steel industry is the second largest consumer of coal in the country, behind electric utilities. It is also second to the utilities in producing captive coal—i. e., *coal* produced for internal use rather than sale in the open market. About **60** percent of the steel industry's needs are supplied by captive mining operations owned by steel companies. Most major steel firms own substantial coal reserves. The industry produced 55.6 million tons of coal in 1979, about 7 percent of the country's total output and 37 percent of all coal mined from captive operation.

The steel industry's interest in coal mining is generally limited to metallurgical-grade coals. Most of this coal is converted into coke for use as a raw material in ironmaking; unlike steam coal (which provides over 80 percent of the total coal market), metallurgical coal is not used as a primary energy source. Hence, steel industry captive coal mining expands and contracts in response to the fluctuating demand for steel rather than in response to energy markets. The slow growth in domestic steel output in recent decades has thus been reflected by steel industry coal production. The percentage of total coal produced by the major steel companies has fallen from 11 to 7 percent between 1955 and 1979. This performance contrasts to the pattern of utilities, the other major industry currently producing captive coal, which has doubled its coal output between 1975 and 1979.

In its Western coal lease acquisition programs, the steel industry has focused its attention on metallurgical-grade coalfields in Oklahoma, Colorado, and Utah, largely ignoring the subbituminous coal regions such as the Powder River basin.

The steel industry was one of the earliest large-scale participants in the Federal coal leasing program. In 1955, its ownership share of Federal coal leases peaked as it controlled 19 percent of all acreage under lease. But even though total leasing by the industry has increased in the past *20* years, even faster growth by other industries has diminished its role (see table 13 and figures 10 and 11).

Five independent steel companies now hold Western leases covering 60,015 acres or 8 percent of all land under lease. Two other steel companies acquired coal land as independent corporations, but they have since been acquired as subsidiaries of diversified companies (see table 14).

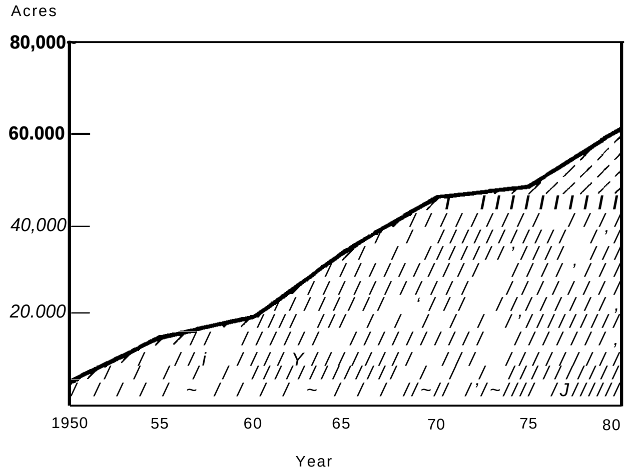
Unlike most other industrial participants in coal leasing, most steel companies obtained

Table 13.—Steel Company Leaseholdings

Year	Number of leases held	Number of acres held	Percent of total acreage under lease
1950	3	4,993	12%
1955	10	14,817	19
1960	16	19,888	14
1965	28	34,158	11
1970	36	49,114	6
1975	39	49,448	6
1980	44	60,015	8

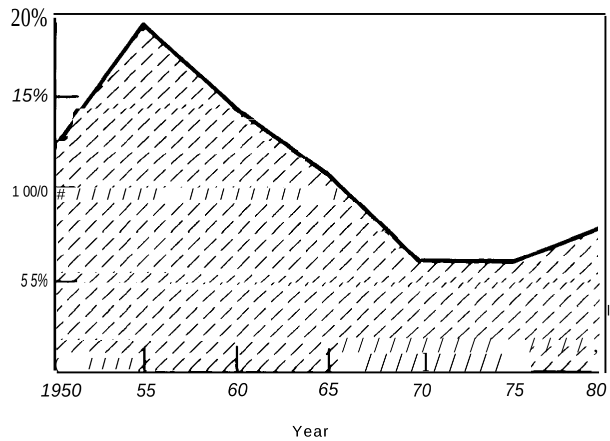
SOURCE Office of Technology Assessment.

Figure 10.—Acres Leased by Steel Companies



SOURCE: Off Ice of Technology Assessment.

Figure 11 .—Percent of Total Leased Acres Held by Steel Companies



SOURCE Off Ice of Technology Assessment.

their leases de novo and retain title in the parent company rather than in coal mining subsidiaries. The exception is Armco Steel which acquired its land through the purchase of two Oklahoma coal mining companies. The steel industry has assigned few leases, and it engages in no joint ventures with nonsteel companies.

The steel industry has been a major producer of coal from leased land, but there has been little growth of steel industry involvement in new coal lease acquisition in recent years. The in-

Table 14.—Steel Company Leaseholders

1950. . . .	U.S. Steel Corp. (Geneva Steel Co.)
	Kaiser Steel Corp.
1955. . . .	U.S. Steel Corp. (Geneva Steel Co.)
	Kaiser Steel Corp.
	Armco Steel Co. (Evans Coal Co.)
	Lone Star Steel Co.
	Colorado Fuel & Iron Co.
1960. . . .	U.S. Steel Corp.
	Kaiser Steel Corp.
	Armco Steel Corp. (Evans Coal Co.)
	Colorado Fuel & Iron Co.
1965. . . .	U.S. Steel Corp. (Geneva Steel Co.)
	Kaiser Steel Corp.
	Armco Steel Corp. (Evans Coal Co.)
	(Evelyn Coal Co.)
	Colorado Fuel & Iron Co.
	Pacific States Steel Corp.
1970. . . .	U.S. Steel Corp.
	Kaiser Steel Corp.
	Armco Steel Corp. (Evans Coal Co.)
1975. . . .	U.S. Steel Corp.
	Kaiser Steel Corp.
	Armco Steel Corp. (Evans Coal Co.)
	Republic Steel Corp.
1980. . . .	U.S. Steel Corp.
	Kaiser Steel Corp.
	Armco Steel Corp. (Evans Coal Co.)
	Republic Steel Corp.
	Sharon Steel Corp. (U.S. Fuel Co.)

NOTE Subsldiary leaseholders are noted in parentheses

SOURCE Office of Technology Assessment

dustry now controls far more leased reserves than can be mined for captive use in the next 10 years. The lack of growth in national steel production, the particularly severe impact of foreign steel on Western markets, and insufficient and aging domestic coking capacity combine to threaten further to reduce demand for this coal.

The Department of Interior's production regulations will probably require some action on the part of steel lessees holding nonproducing leases if they do not want to lose control of these coal reserves. The lessees could vigorously seek assignees for leases which will not be needed to supply captive needs by 1991. Alternatively, steel lessees could attempt to diversify their business activities and begin marketing coal. Finally, should they successfully challenge Interior's production requirements, steel lessees could continue their historic pattern of mining only to meet their own needs and retaining reserves for use in the long term.

History of Leasing

In 1950, the steel industry controlled 12 percent of all land under lease. Three Utah leases were held by Geneva Steel Co. (a division of U.S. Steel) and Kaiser Steel Corp.

By 1955, three other steel companies joined these two companies on the list of coal lessees. The Texas-based Lone Star Steel Co. acquired several Oklahoma leases de novo as part of a land package that grew into seven leases by the end of the decade. The company was acquired in 1959 by Northwest Industries, a diversified midwest corporation, and has remained a Northwest subsidiary since then. Its leaseholdings were dropped from the steel industry category beginning in *1960* and are now included in the other category.

Armco Steel Corp. moved into Western coal leasing in the early 1950's with the acquisition of Evans Coal Co. Evans had previously been an independent coal company, controlling several Oklahoma coal leases at the time of acquisition. Through Evans, Armco eventually acquired 11 leases. Several of the leases were obtained by Evans through assignments from other companies, several others were obtained de novo, and the remaining few were added when Armco purchased in 1964 another independent coal company called Evelyn Coal Co. Evelyn was dissolved in 1968 and Armco assigned the leases to Evans.

The final new steel entrant in the 1950's was Colorado Fuel & Iron Co. (name changed to CF&I Steel Corp. in *1966).* It acquired a single Colorado lease by assignment from an individual in 1952. Like Lone Star Steel, CF&I itself was acquired by a larger diversified corporation—in this case Crane Industries—in 1969. This lease was removed from steel industry holdings in this survey beginning in **1970** and is now included in the other category.

Despite the removal of Lone Star Steel and CF&I from the steel industry category, total steel industry holdings grew from 1955 to **1970.** Most of the growth can be attributed to land acquisition programs on the part of U.S. Steel and Kaiser Steel. Both companies sought during this time to acquire coal reserves for use well into the next century. Kaiser Steel organized two central Utah lease packages during this period. One package involves six leases, all obtained de novo; one in 1947, three in the early 1950's and two in 1963. A second, four-lease package includes a lease obtained when Kaiser purchased Utah Fuel Co. in 1951 (receiving a lease issued to Utah Fuel in 1941) and two leases acquired by assignment from pacific States Steel in 1965. A final lease was added de novo in 1979.

The U.S. Steel Corp. acquired three-lease blocks during this period to add to its previously obtained leases mentioned above. It obtained two Colorado leases de novo in 1960. A second, much larger Colorado lease package includes two leases obtained by assignment in 1956, four added de novo in the early 1960's, and six obtained between 1965 and 1971 by segregation of existing leases owned by Midcontinent Coal & Coke Co. The steel company added two leases in Montana de novo in 1967.

Pacific States Steel Co. of California briefly engaged in Western coal leasing in 1960 when it obtained two small Utah leases by assignment from Heiner Coal Co. Pacific States assigned them to Kaiser Steel in 1965 and has never returned to the Western coalfields.

Two new steel industry participants in coal leasing appeared in the 1970's, although the holdings of each are small. First, Republic Steel Corp. won a competitive lease in Alabama under the short-term leasing program in 1974. Second, in November 1979, Sharon Steel Co. entered Western coal leasing through its acquisition of UV Industries, a company involved in metals and mining (including coal) and brass manufacturing.[10] By this transaction Sharon gained several Utah coal leases held for decades by United States Fuel Co., a subsidiary of UV Industries. (See *Metals and Mining Company, pp. 54-58.)*

[10]Eighty-six percent Of the stock of Sharon Steel is owned by NVF Co. which is chaired by the Miami investor, Victor Posner. Because 83 percent of the total revenues of NVF Co. in 1979 were derived from Sharon Steel, the company is categorized in this survey as a steel company.

E. INDEPENDENT COAL COMPANIES

Independent coal companies[11] operating in the West were seriously hurt in the post-World War II era by the shrinking demand for coal on railroad, industrial, and home-use markets. They have been adversely affected since then by increasing health and safety regulation costs. They have had difficulty in obtaining a share of the utility market which, although growing, has become increasingly directed toward large volume suppliers. Since they own valuable coal reserves, many independents have been acquired by companies seeking to enter the Western coal market.

[11] Independent coal compan ies in this survey include lessees which did (or have) actually mined coal within a few years of the time they controlled (or control) leases (though not necessarily from leased land), which had (or have) inhouse expertise and financial capability to mine coal but were (or are) constrained from doing so by market conditions, or which are currently developing mining plans. It excludes companies whose principal line of business activity is (or was) noncoal at the time of lease ownership even if they otherwise met the above criteria.

The performance of small independent coal companies in Western coal leasing mirrors the changing conditions affecting independents nationwide.[12] In 1950, 18 independents controlled 21 leases, or 35 percent of all coal land under lease, (See table 15 and figures 12 and 13.) Independent coal companies then held more land than any other category in this survey. By 1955, *24* independent coal companies were lessees; by 1960, 26 companies held leases; and by 1965, 32 companies were involved, historically the industry's widest participation. The trend then reversed and there are now only 21 independents holding leases (only 3 more than in *1950),* although total land under lease has grown eighteenfold during the 30-year period. More than 60

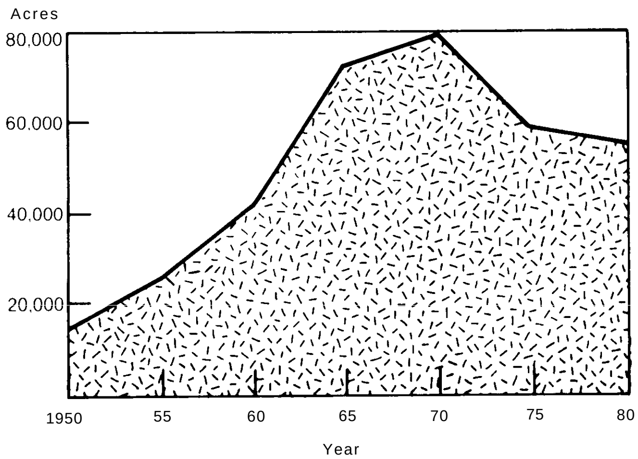
[12]In 1949, companies producing less than 100,000 tons Per Year contributed 17.8 percent of the country's coal; by 1964, their share had been reduced to 5.5 percent. Between 1963 and 1967, the number of mines producing less than **25,000** tons per year had declined 44 percent.

Table 15.—Independent Coal Company Leaseholdings

Year	Number of leases held	Number of acres held	Percent of total acreage under lease
1950 . . .	21	14,584	35 %
1955	30	25,022	33
1960	38	41,557	29
1965	64	72,273	25
1970	66	78,297	11
1975	57	58,837	8
1980	57	55.410	7

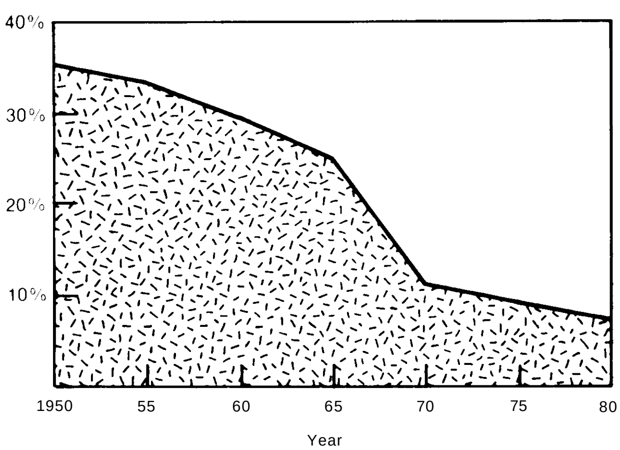
SOURCE Office of Technology Assessment

Figure 12.— Acres Leased by Independent Coal Companies



SOURCE Office of Technology Assessment

Figure 13. —Percent of Total Leased Acres Held by Independent Coal Companies



SOURCE Off Ice of Technology Assessment

independent coal mining companies have owned Federal coal leases at some time between **1950** and 1980, but none of the original 18 leaseholders are among the 21 present leaseholding independents. The number of acres under independent coal company lease, like the number of companies involved, grew during the 20-year period from *1950* to *1970.* Total acreage held by independent coal companies reached **78,297** by **1970.** This was followed by a decline.

In relative terms, the percentage of leased land held by independent coal companies has exhibited a steady decline over the entire *30*-year period—from 35 percent in *1950* to 7 percent today. The biggest drop occurred between *1965* and 1970—from 25 to 11 percent—at a time when utilities and the energy companies were achieving their biggest gains.

The shrinking role of independents is attributable both to the large number of leases assigned from independents to other corporations (with the assignor often going out of business entirely) and to the acquisition of many independent coal companies. At least 11 of the *32* wholly owned coal mining subsidiaries now owning leases were once independent leaseholders. Many other independents were dissolved or renamed upon acquisition. The attractiveness of independents as acquisition targets and the marketability of coal leases held even by bankrupt independents on the assignment market underscores the importance of independents historically in defining desirable coal reserves.

The independent coal mining industry in the West has been greatly reduced but still exists. The collective holdings of the 21 lessees in this category rank fifth among the 12 groups identified in this survey. Several medium-sized independent coal companies, such as Garland Coal & Mining Co., or MidContinent Coal & Coke Co., have effectively used the leasing program for decades and maintain a strong position within the industry, in part because of their leaseholdings. Also, in the past decade several new companies, such as Energy Fuels Co., have obtained coal leases and established themselves as important Western coal producers.

History of Leasing

Providing a company-by-company history of lease acquisition and disposition by independents is a complicated task because many small companies have been involved in Federal coal leasing, often holding just a single lease for a short time. The remainder of this section attempts to sketch the activities of independent coal companies and to derive leasing trends.

1950

Eighteen independent coal companies held leases on January 2, 1950. The Davis Coal Co. mined for years on a small New Mexico tract and the Paul Rees Coal Co. operated on an Oklahoma lease tract. The Rees lease was assigned in *1976* to Mining Systems Corp., 2 years after the Rees family retired. The Davis lease is still owned by the Davis family, but mining ceased decades ago.

Colowyo Coal Co. obtained a large Colorado lease by assignment from an individual in 1946 and operated it as an independent coal producer for decades until 1973 when the company was acquired by W. R. Grace & Co.

Edna Coal Co., a partnership of four Colorado mines, owned four Colorado leases when it operated as an independent. In the early 1960's, the company was acquired by Pittsburg & Midway Coal Co. which was in turn purchased by Gulf Oil. Two of the four leases ended up in Gulf's hands, and the other two have been assigned several times among individuals and small noncoal companies. Another lease owned in *1950* by an independent, Hayden Brothers Coal Corp., also became part of the Gulf holdings in the early 1960's. A lease acquired in 1923 by the Paonia Farmers Coal Co. also eventually became part of the Gulf holdings.

The Clark Coal Co., which changed names in the late 1950's to North Fork Coal Co., operated a small mine on a lease in Colorado. The lease is now controlled by Anchor Coal Co., a subsidiary of St. Joe Minerals.

Utah Fuel Co. owned four leases in 1950, and Calumet Fuel Co. owned one. Both companies were purchased by Kaiser Steel Corp. in 1951.

Champion Coal Mining Co. held a lease as an independent from 1932 to 1970 when it became part of the holdings of Western Slope Carbon, Inc., now a subsidiary of the natural gas company, Northwest Energy.

Dakota Collieries Co. owned a large North Dakota lease from 1922 to 1956. It mined coal for use in local sugar beet factories. In 1957, the mine was bankrupt and sold to North American Coal Co., itself an independent. Nugget Coal Co., a Wyoming-based independent, owned a Wyoming lease for 25 years that is now in the hands of a Peter Kiewit Sons subsidiary.

King Cannel Coal Co. operated a small mine on a southern Utah lease tract in the early 1950's. The company still exists but ceased mining in the mid-1950's and its lease was reassigned to the landholding company category starting in 1960. Vulcan Fuel Co., Royal Coal Co., and Lion Coal Corp. are other independent Utah coal companies which operated on leased land in *1950.* All are out of business and their leases are now owned by American Electric Power Co, and Getty Oil Co. subsidiaries.

The final two 1950 independent coal company lessees are now both subsidiaries of much larger companies. Independent Coal & Coke Co. held one Utah lease in 1950, added three more over the next half decade, and two others in the early 1960's. In 1968, the company was bought by North American Coal Corp. and dissolved in 1973. North American then assigned the leases to a Valley Camp Coal Co. subsidiary. Valley Camp, then an independent, was acquired by Quaker State Oil Refining in 1976. After acquisition by Quaker, the lease package was assigned again, this time to American Electric Power, the present owner. Finally, Southern Utah Fuel Co. owned one lease in 1950 and added three more in the early 1960's. Southern Utah was acquired by Coastal States Gas Corp. (now the Coastal Corp.) in 1973.

Early 1950's

Between *1950* and 1955, nine new independent coal companies entered coal leasing and three departed. Two of the entrants, Cameron Coal Co. and The Pacola Co., still hold their leases today, but neither is currently mining. Both companies were founded by members of the Porter family. The three Cameron leases adjoin the Pacola lease, and all four were acquired de novo. The companies plan joint development of the leases, probably with Garland Coal & Mining Co., if a market for the coal develops.

Peerless Coal & Coke Co. and Evelyn Coal Co. were other Oklahoma entrants to leasing in the early *1950's.* Both companies mined metallurgical-grade coals for steel mill use. Peerless, which shipped its coal to Kaiser's Fontana mill in southern California, went out of business, and after several assignments the lease now belongs to an Armco Steel subsidiary. Evelyn Coal Co. was brought outright by Armco in 1964. The company was dissolved and its three leases were assigned to Armco's Evans Coal Co. subsidiary.

In 1954, Thompson Creek Coal & Coke Co. acquired a small Colorado lease previously owned by three individuals and another independent. The company ceased mining in the 1960's but retains the lease as a landholding company. McNeil Coal Corp. was another small Colorado independent operating in the 1950's. Its single lease was assigned to two other independent operating coal companies, first to Kerr Coal Co. from 1956 to 1964 and then to Juanita Coal & Coke Co. from 1964 to 1975. Juanita then assigned the lease to GEX Colorado, a subsidiary of General Exploration Co., an independent coal company still holding the lease.

The final early 1950's independent newcomers operated in Utah. Western Coal Mining Co. attempted to develop a small mine on three leases in central Utah but went bankrupt in the process. Its leases are now controlled by a bank. Knight Ideal Coal Co. operated a Utah mine on two leases prior to its acquisition by Kennecott Copper in the mid-1960's. Kennecott closed the mines and, in 1979, sold the two inactive leases to Pacific Gas & Electric Co. Finally, Paramount Coal Co. acquired a single Utah lease. Subsequent to the death of the company's founder, the lease was assigned several times and is now owned by Utah Power & Light Co.

The Late 1950's

Newcomers continued to outnumber departees among independent coal company lessees in the second half of the 1.950's and total leaseholdings nearly doubled between 1955 and 1960.

A key development in coal leasing at this time was the consolidation of many Oklahoma leases into assets of one of the largest independent coal companies operating in the area today —Garland Coal & Mining Co. Originally formed in 1955 by members of the Porter family, it merged in 1959 with three independent lessees; Garland remained as the surviving company. By this merger Garland inherited one lease from Fall River Mining Co., one from Canadian Mining Co., and three from Bokoshe Coal Co. In **1964,** Garland acquired Choctaw Coal Co. and the latter's two leases. In 1966, five other companies merged into Garland, including Ouachita Coal Co., holder of four Federal leases. In the mid-1960's, Garland acquired 11 leases on its own, 5 of them de novo, 1 by assignment from another family company—Southern Development Co. —and 5 by assignment from Mine Service Co., a coal accounting firm which eventually dissolved into Garland, Some of Garland's acquisitions were later assigned. In 1974, the Mine Service leases were assigned to American Smelting & Refining Co., two leases were assigned in **1977** to the Anschutz Corp. and in 1978 one lease was assigned to an Armco Steel subsidiary. The sequence of mergers and acquisitions in the 1950's and 1960's has left Garland with 14 leases today.

The Early 1960's

Four small Utah coal companies made brief appearances in Federal coal leasing in the early 1960's and all have since liquidated their holdings. Heiner Coal Co., a small family company with mines in Utah and Colorado, obtained part or total interest in six Utah coal leases. The company was bought in 1966 by Occidental Petroleum Corp.'s subsidiary, Island Creek. In 1976, the leases were assigned, most of them to Pacific Gas & Electric Co. Other leases held by Liberty Fuel Co., Spring Canyon Coal Co., and Castle Valley Mining Co. are now owned by utility companies.

The early 1960's saw five newcomer companies appear who remain among the list of present lessees. The largest was North American

Coal Corp., which acquired several leases in North Dakota. As discussed above, its leaseholdings later swelled with the acquisition of Independent Coal & Coke Co. In 1974, the large independent moved into Eastern coal leasing with the acquisition of two Pennsylvania leases by a subsidiary, Helen Mining Co. North American now holds leases in the name of the parent, Coteau Properties (a landholding subsidiary formed in 1972), and Helen Mining Co.

Mid-Continent Coal & Coke Co. is a small Colorado mining firm which began acquiring Federal leases in the early 1960's. The company has now expanded its holding to include nine leases—all in Colorado, five of which were obtained de novo, two by segregation of part of U.S. Steel Corp. leases, and two by assignment from U.S. Steel, The latter four lease transfers provide one of the few examples encountered in this survey of leases traveling from large, noncoal companies to smaller coal independents.

Wasatch Coal Co. obtained a single Utah lease in the 1960's. It assigned it temporarily but regained ownership, which it still holds today. Next, Usibelli Coal Mine, Inc., acquired a large Alaska lease by assignment late in 1960. Finally, Divide Coal Mining Co. obtained de novo in 1962 a small Montana lease tract which it continues to mine.

Several other independents entering in the early *1960's* were acquired by corporate mergers before the end of the decade. Consolidation Coal Co. obtained several leases de novo and in the name of land agents before its acquisition by Continental Oil Co. in 1966. (See Energy Com*panies*, pp. 28-33.) United Electric Coal Co. obtained an Oklahoma lease de novo in 1964. The company was acquired by General Dynamics Corp. in 1966. In 1974, it was merged with another General Dynamics subsidiary, Freeman Coal Co., to form Freeman-United Coal Co. Finally, the land acquisition programs of Peabody Coal Co., through a subsidiary, Sentry Royalty Co., were also initiated in the early 1960's when the company was an independent. In 1968, Kennecott Copper Corp. acquired Peabody and its leases, but the company was sold to six-firm holding company in 1977. (See Peabody Coal co., pp. 33-35.)

Several small independent companies made appearances in the Colorado leasing market in the early 1960's. Morgan Coal Co., based in Indianapolis, acquired three leases which were assigned in 1977 to Energy Fuels Corp. which now mines them. Reliable Coal & Mining Co., separate from Morgan but founded and managed by the same people, acquired a Colorado lease, but later assigned it to Cambridge Mining Corp. (see *The Late* 2960's). The Ohio-based James Brothers Coal Co., headed by two nephews of the company's founder, obtained a small Colorado lease in 1960. The company's current president stated in an interview for this survey that despite an investment of over $100,000 he has not succeeded in his attempts to enter the Western coal market. He argued against government red tape and the actions of large companies which he felt tended to squeeze small operators out of contention for coal contracts.

The Late 1960's

The fortunes of independent coal miners declined significantly in the second half of the 1960's. Although their total acreage under lease grew slightly, the percentage of total leased land controlled by independents was more than halved. Also, for the first time the number of departing companies outnumbered the newcomers, 15 to 8.

Colorado was the focus of independent coal company leasing activity. All eight newcomers appeared in this State. Cambridge Mining obtained a lease by assignment, operated a mine for several years, and sold out to General Exploration Co. Silengo Coal Co. mined in western Colorado on a lease it obtained by assignment, but the company was bought out by Empire Energy Co., an independent itself until it was acquired first by Houston National Gas in 1976 and then by Standard Oil of Indiana in 1980, Routt Mining, a small company run by the Steele family, mined on a small lease, but in 1976 the lease was assigned to Sunland Mining Corp., then an independent. Sunland was bought by Consolidation Gas & Oil Corp. of Denver in 1978. Belden Enterprises, Inc., acquired a lease in the 1960's which it still holds.

The lease is being mined, however, by a joint venture of Nicer and Eastern Gas & Fuel Associates. Finally, in the late 1960's two small leases were owned by three small companies—Partch Bros., Nu-Mine Coal Co., and Ohio Creek Coal Mine. They have been assigned to individuals.

The 1970's

From 1970 to 1980, the leaseholdings of independent coal companies dropped significantly. Acreage under lease fell from 78,297 to 55,410 acres. Percentage of acreage under lease fell from 11 to 7 percent. The number of independents fell from 25 to 21.

Several independents survived the 1950's and 1960's as leaseholders. These include North American Coal Co., Garland Coal & Mining Co., and General Exploration Co. Also, Energy Fuels added four Colorado leases to its earlier holdings.

In addition, there were two major newcomers in the 1970's. Colorado Westmoreland, Inc., a subsidiary of Westmoreland Coal Co., obtained a Colorado lease de novo in 1978. Secondly, Amca Coal Leasing, Inc., a subsidiary of Kentucky-based Amca Resources, Inc., acquired two Colorado leases and three Utah leases by assignment.

Finally, several small companies have acquired Federal coal leases for the first time during the past decade. These include: Ryan's Creek Coal Co., which obtained a Kentucky lease de novo in 197'9; Cimarron Coal Co., which acquired a New Mexico lease by assignment in 1978; Sewanee Mining CO., which acquired two Colorado leases by assignment in 1977'; Cravat Coal Co., which acquired a Wyoming lease in 197'7 in the name of a subsidiary, Conotton Land Co.; National King Coal, Inc., which obtained a Colorado lease by assignment in 1978; and Baukol-Noonan, Inc., which acquired a North Dakota lease by assignment in 1970.

F. OIL AND NATURAL GAS COMPANIES (MINOR)

The oil and natural gas category in this survey includes coal lessees whose principal line of business activity is oil and/or natural gas exploration or production, excluding the 18 energy majors and the large natural gas production and distribution companies. (See Energy *Companies* and *Natural Gas Pipeline Companies,* pp. 28-33 and 48-51.) Companies ranging from one man oil wildcatters to very large corporations just beneath the size of the energy majors fall into the oil and gas category in this survey.

As shown in tables 16 and figures 14 and 15, oil and natural gas company leaseholdings have grown steadily since 1965. Eight companies now hold 30 leases covering 45,926 acres or about 6 percent of the total. Three of these companies hold leases in the name of the independent parent, two control land through coal mining subsidiaries and two employ landholding subsidiaries. One company is a joint venture (see table 17.)

Table 16.—Oil and Gas (minor) Company Leaseholdings

Year	Number of leases held	Number of acres held	Percent of total acreage u rider lease
1950	0	0	0
1955	0	0	0
1960	0	0	0
1965	2	2,080	10/0
1970	11	26,911	4
1975	27	42,193	6
1980	30	45,926	6

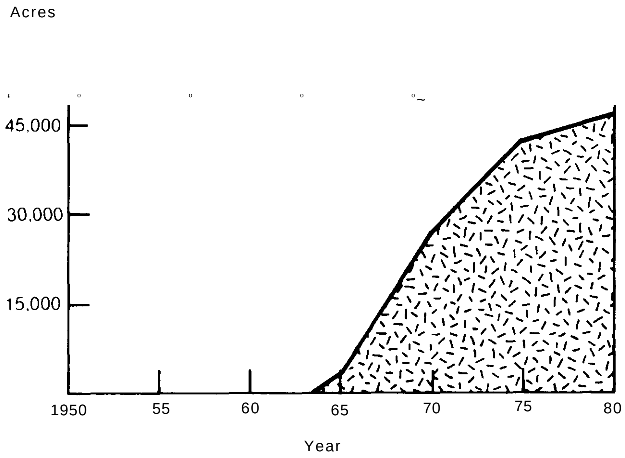
SOURCE Office of Technology Assessment

History of Leasing

The 1960's

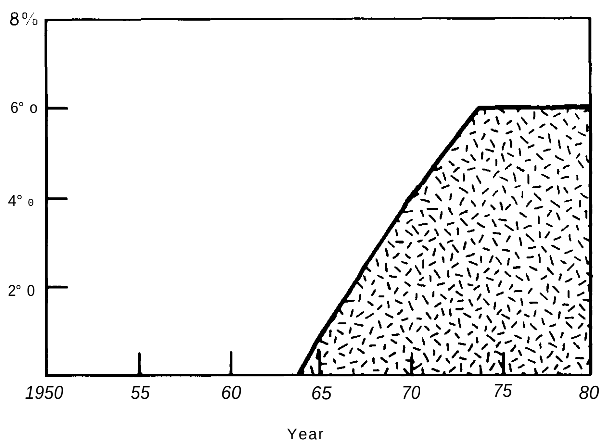
Richfield Oil Co. was the first oil and natural gas firm to enter the Western coal leasing program. It acquired de novo two Utah competitive leases in 1964. In 1966, Richfield Oil merged with Atlantic Refining Co. to form the Atlantic-

Figure 14.—Acres Leased by Oil And Gas (Minor) Companies



SOURCE Office of Technology Assessment

Figure 15.—Percent of Total Leased Acres Held by Oil and Gas (Minor) Companies



SOURCE Office of Technology Assessment

Richfield Corp. Richfield's leases were recategorized in this survey to the energy company group at that time. These leases eventually became part of a 14-lease block.

Four oil and gas companies acquired leases between 1965 and 1970 and total acreage under lease by this business category grew tenfold as a result. The four companies are North American Resources Corp., Hiko Bell Mining & Oil Co., Seneca Oil Corp., and Kerr-McGee Corp.

Table 17.—Oil and Gas (minor) Company Leaseholders

1950. . . .	None
1955. . . .	None
1960. . . .	None
1965. . . .	Richfield Oil Co.
1970. ..,	North American Resources Corp.
	Kerr-McGee Corp.
	Seneca Oil Corp.
	Hiko Bell Mining & Oil Co.
1975. . . .	Kerr-McGee Corp. (Kerr-McGee Coal Corp.)
	Belco Petroleum Corp.
	Hiko Bell Mining & Oil Co.
	Petroleum International, Inc.
	McCulloch Oil Corp. (Braztah Corp.)
	Ashland Oil & Hunt Interests (Ark Land Co.; Medicine Bow Coal Co.)
	Anschutz Corp.
1980.	Kerr-McGee Corp. (Kerr-McGee Coal Corp.)
	Belco Petroleum Corp.
	Hiko Bell Mining & Oil Co.
	Ashland Oil & Hunt Interests (Ark Land Co.; Medicine Bow Coal Co.)
	Petroleum International, Inc.
	Anschutz Corp.
	Consolidated Gas & Oil Corp. (Sunland Mining Corp.)
	Quaker State Oil Refining Co. (Kanawha & Hocking Coal & Coke Co.)

NOTE Subsidliry leaseholders are noted in parentheses
SOURCE Office of Technology Assessment

North American Resources Corp. (called Texota Oil Co. until 1969) acquired two leases in Oklahoma by assignment in the late 1960's. Ownership of one lease is shared with an individual. Both leases were reassigned in **1973** to another small oil and gas company, Petroleum International, Inc., their present owner.

Seneca Oil Corp. acquired a 6,337-acre lease in New Mexico in 1968 by assignment from the same individuals involved with the North American Resources leases mentioned above. The Oklahoma-based company assigned the lease in 1974 to another individual, It is now owned by Peabody Coal and Thermal Energy co.

Hiko Bell Mining & Oil Co. acquired three Utah leases by assignment in *1968.* Hiko Bell has retained ownership up to the present except for a brief period in 1978 when the leases were temporarily assigned to Au Mine, Inc., a Canadian mining company.

The Kerr-McGee Corp. (called Kerr-McGee Oil Industries, Inc., until *1965)* is the largest company falling into the oil and gas category in this survey. Kerr-McGee has acquired six Wyoming leases. One lease was obtained in 1968 by assignment from an individual, but the company assigned it to North American Coal Co. in 1975. Three other leases were obtained de novo in 1968, and two more were added in 1970. These five leases were assigned by the parent company to a newly formed coal mining subsidiary in 1974 called Kerr-McGee Coal Corp., the present lessee.

The 1970's

By 1975, North American Resources Corp. and Seneca Oil Corp. had retired from coal leasing (explained above), but four new entrants had acquired leases.

Petroleum International, a small company founded in 1962, acquired North American Resources' two leases in 1969 (see above). Secondly, Belco Petroleum Corp. acquired two Wyoming leases. One lease was acquired de novo in 1971, but the company sold it in 1976 to Ark Land Co. It still owns the other, which was obtained by assignment from an individual in 1970.

McCulloch Oil Corp. or its subsidiary, Braztah Corp., acquired and assigned nine Utah leases during this period. All were obtained by the oil company from independent coal companies and all are now controlled by American Electric Power Co. (AEP). In *1974,* McCulloch obtained four leases by assignment which were then assigned to AEP later that year. Two, obtained by McCulloch in the same fashion, were assigned in 1974 to Braztah and then assigned to AEP in *1976.* One was obtained by assignment directly by Braztah in 1972 and assigned to AEP in 1976. The remaining two were segregated in 1974 to McCulloch from leases owned by an independent coal company, assigned to Braztah in 1974 and assigned to AEP in 1976.

The largest land package controlled by oil and gas companies is a 10-lease unit acquired in the early **1970's** by Ark Land Co., the fourth new entrant to the coal leasing program in the 1970-75 period. Ark is a landholding subsidiary of Arch Minerals Corp. Arch Minerals, the business activity of which is limited to coal mining, is a joint venture formed in 1969 by Ashland Oil Co. and six Hunt family trusts operating through Hunt Petroleum Corp. and Hunt Industries. Ark acquired one of the leases de novo in 1971, Three others were acquired from a cement company, Monolith Portland Midwest Co., two by assignment (one in 1971 and one in 1974) and one by segregation in 1971. Five other leases were obtained by assignment in 1971 from Simplot Industries. A final lease in this package was added by assignment from Belco Petroleum in 1976.

Arch Minerals owns 50 percent of another lease by virtue of its participation in the Medicine Bow Coal Co. joint venture. Arch Mineral's share is held in the name of Dana Coal Co. The partner is a subsidiary of Union Pacific Corp. (See Other Leaseholders, p. 63.) Medicine Bow acquired a single Wyoming lease in 1974 by segregation of one of the Ark Land leases mentioned above.

The past 5 years have seen moderate growth in leaseholdings by oil and natural gas companies up to the present level of 6 percent of total acres under lease. The Anschutz Corp. acquired two leases by assignment in 1977. Sunland Mining Corp., which obtained one lease de novo in 1966 and one by assignment in 1977, was recategorized in this survey from an independent coal company to an oil and gas subsidiary in 1978 when it was acquired by Consolidated Gas & Oil Corp. of Denver.

Finally, Kanawha & Hocking Coal & Coke Co. was also recategorized into the oil and gas category from the coal company group. Kanawha obtained four leases in 1973, all by assignment. Three were obtained from North American Coal Co. and one from a North American subsidiary called Independent Coal & Coke Co. Kanawha was an eastern independent coal company until 1951 when it was acquired by Valley Camp Corp., a large independent coal mining firm in Cleveland. In 1976, Valley Camp was acquired by Quaker State Oil Refining Co. of Pennsylvania, its current owner and controlling interest in the four Utah coal leases.

G. UNCORPORATED INDIVIDUALS

If there is one aspect of the Federal coal leasing program reminiscent of the Wild West of old, it is the role of unincorporated individuals as lessees. Individuals have been attracted to the leasing program from its earliest days. The qualifications to hold a lease are easily met; the winning bids on competitive leasing have often been low; the filing fees required for preference-right leasing are low; and a lease can be held for some time without actual mining taking place.

Small miners, land speculators, land agents working for large corporations, inventors, and vacationers mingle among the list of individuals holding leases over the past **60** years. In **1950,65** individuals held 56 leases covering about 27 percent of all acreage under lease. Individuals comprised the second largest of the **12** categories defined for this survey, behind independent coal companies.

The total acreage under lease, the number of leases, and the number of participants falling into the individual category grew to a peak in **1970** (see table 18). Despite the growth in absolute terms, however, individuals, like independent coal companies, have since 1950 controlled a decreasing percentage of the total land under lease. Even as total holdings were growing in the 1950's and 1960's, their gains were dwarfed by de novo leasing on the part of other categories, and the percentage of all leased land held by individuals declined from 27 to 11 percent from 1950 to 1970 (see figures 16 and 17).

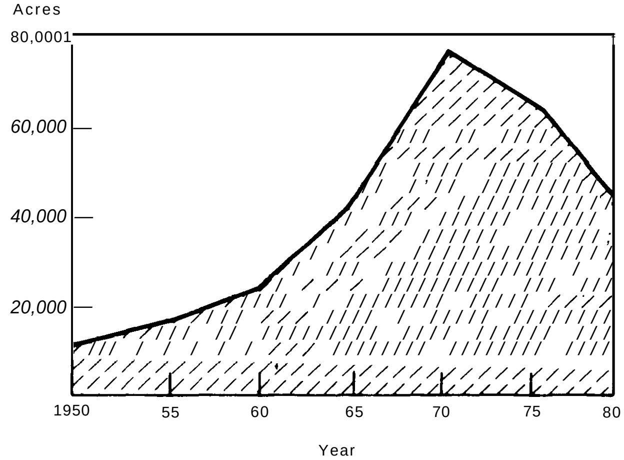
In the 1970's, the role of individuals declined both in absolute and in relative terms. The number of acres held by individuals was nearly halved between 1970 and 1980. Fifty-nine individuals now control 5 percent of total land under lease. The 1980 figures, although small compared to those of a decade ago, even so overstate the role of individuals today. Some leases are held by the wives, sons, or daughters of now deceased miners or by elderly miners no longer able to work on the mines. A few of the current individual titleholders have recently

Table 18.—Unincorporated Individual Leaseholdings

Year	Number of leases held	Number of acres held	Percent of total acreage under lease
1950	56	11,129	27%
1955	64	17,618	23
1960	68	25,678	18
1965	80	41,475	13
1970	84	78,995	11
1975	71	65,515	9
1980	43	43,215	5

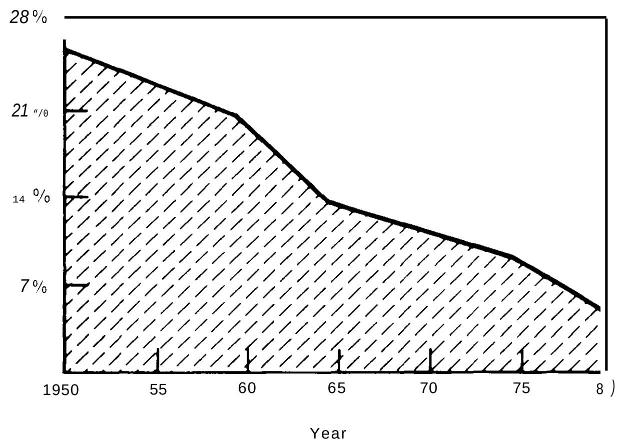
SOURCE Office of Technology Assessment

Figure 16.—Acres Leased by Unincorporated Individuals



SOURCE Office of Technology Assessment

Figure 17.— Percent of Total Leased Acres Held by Unincorporated Individuals



SOURCE Office of Technology Assessment

died, and the future of the leases are tied to the dispositions of their estates. Several other leases are the remnants from much larger lease packages that were assigned to corporations. Little development interest has been evinced in these remnants.

The majority of individuals involved in coal leasing entered de novo or by assignment from other individuals. The trend in ownership of leases acquired by individuals is towards their consolidation into properties held by corporations. The remainder of this chapter discusses, with examples, some of the roles played by individuals throughout the leasing program.

Coal Miners

Most of the early leases obtained by individuals were acquired to provide reserves for small mines operated by the lessees. The Bureau of Land Management (BLM) case files chronicle developments on scores of such small mining operations. They were often family run, and the death of a family member commonly marked the turning point in a lease's history. Coal was generally sold on local home-heating and industrial markets or to nearby powerplants. Many of these leases were located in central Utah, the mountains of west central Colorado, and the Raton basin in northeast New Mexico.

A New Mexico lease issued to Leo Warren in 1944 is typical. Mr. Warren mined on the small tract for 3 years and then sold the operation for $2,500 to Clayton Davidson who mined the seams until his death a decade later. The lease was then assigned by a Davidson heir back *to* Leo Warren, who sold it again 2 years later to George Simpson and Hollis Tate. Mr. Tate died in 1972, and his wife assigned the Tate interest in the lease back to Leo Warren. In 1977, both Simpson and Warren assigned the 1ease to its present owner, Floyd Ingraham.

Cyrus Wilberg, an oldtime Utah miner, provides another example. He obtained a Federal lease in 1945 which he mined until 1958. He then formed a partnership with his four sons, each of whom held 20 percent. One son, Ted, died in 1960, and Ted's wife sold his share to Cyrus and the remaining sons. Another son, Lamar, died in 1964, and his share, too, was divided amongst the survivors. Four years later, the family assigned the lease to Peabody Coal Co. which assigned it in 1977 to Utah Power & Light Co., the current owner. A second lease remains in the Wilberg family.

Some of the early coal mining families eventually acquired substantial holdings which ultimately became part of the coal reserve bases for mining companies which they founded —e. g., the Porter family of Kansas City at one time owned Oklahoma leases in the name of several individual family members and small companies established by them. In the 1960's, most of the family's holdings were merged with the assets of six or more nonfamily owned, independent coal companies to form Garland Coal & Mining Co. Garland is still controlled by the Porter family.

Ura Swisher, founder of the Swisher Coal Co. now owned by Arco, has held leases in his own name. Clara Howard Miller and Robert Davis both owned leases in their own names before founding smal1 companies to which they assigned them. John Kemmerer, Jr., head of Kemmerer Coal Co., held a lease in his own name before turning it over to the company. Many more examples of such leasings by bona fide coal miners could be cited.

Land **Agents**

Individuals whose principal business activity has been the acquisition and sale of coal land, coal companies, and coal leases, as opposed to the actual mining of coal, have dominated the roster of unincorporated lessees over the past 30 years, and have far outnumbered individual coal miners. These land agents, who were especially active during the *1960's,* include some miners who branched out into land and lease brokering, some nonaffiliated land speculators and lease packagers, and agents acting under contracts to gather coal reserves on behalf of , corporations.

The list of individual lessees falling into this category at some time in their careers includes many of the most experienced businessmen in the Western coal industry. Hardy Hall, Charles Silengo, and B. R. Noe are examples of men whose lease brokering work was an outgrowth of bona fide coal mining experiences. Hall, who still owns a lease in his name, is now a vice president at Garland Coal & Mining Co. and an official at Cameron Coal Co., the Pacola Co., and Ember Mining Co. Silengo owned leases with his brother and ran the Silengo Coal Co. and Cambridge Mining Co., two companies that held leases and mined coal. Silengo has had many other coal industry endeavors, some of which continue to this day. B, R. Noe owned and operated first the Clark Coal Co. and then the North Fork Coal Co. Both companies produced coal, but when the mine they operated was closed, the company was reorganized as B. R. Noe Coal Co., which exists today as an inactive lessee.

The list of individual lessees also includes people whose principal line of business activity was never related to coal but whose involvement in coal was an outgrowth of other business activities. One such notable individual lessee was Malcolm McKinnon, who acquired and sold numerous leases until his death in 1975, Although most of his leases had been sold on the assignment market prior to his death, several in his own name and the name of his wife remain.

The large increase in the number of individuals holding prospecting permits and leases in the 1960's reflects the increasing number of individual agents working under contract to assist corporations in their lease acquisition programs. Most of the preference-right lease packages put together in southern Utah in the mid-1960's occurred with the assistance of these agents. For example, the Rasmussen family obtained prospecting permits which eventually became part of a 10-lease block later owned by Consolidation Coal and a 21-lease block compiled by Peabody Coal. (See Energy *Companies* and Peabody Coal Co., pp. 28-33 and 33-35.) Donna and Bryan Archer also assisted in assembling the Peabody lease package. John Organ, who was former president of Midwestern Minerals, Inc., a mineral land sales company, also obtained prospecting permits which became part of the Peabody lease package. Many other examples could be cited.

The lines of demarcation between bona fide coal miners, general coal industry businessmen, land brokers, and agents under contract are difficult to draw. But it is clear that individuals have operated in all of these capacities throughout the history of the coal leasing program.

Other Individual Lessees

There are a few other individual lessees of note. Richard J. Bass **acquired** in 1967, and still owns with other members of his family in trusts, the largest Federal coal lease ever issued. No development has occurred on this 20,701-acre tract in Wyoming.

J. C. Karcher has owned Wyoming coal leases in his own name and in the names of companies he has headed, including Concho Petroleum and American Humates. All of the leases once owned by Karcher or his business interests have been assigned to three energy companies: Gulf, Sun, and Shell,

Finally, there is a small Montana lease now owned by the Bugni family of Butte. Originally issued in 1938, it has been owned by eight other individuals. The last year coal was mined from the lease was in 1946. Although the lease appears to be the site of some activity, it is generally agreed among knowledgeable observers that coal production prospects are slim.

H. NATURAL GAS PIPELINE COMPANIES

Major natural gas companies collectively are the most recent business group to acquire Western coal leases.[13] All of the 27 leases they own were acquired during the 1970's, 24 of them in the period between 1971 and 1974. (See table 19 and figures 18 and 19.) Six pipeline companies now control 36,317 acres of leased land, about 5 percent of the total under lease (see table 20.)

A logical reason for natural gas companies to acquire coal leases is their concern over gas supplies and the hope that coal will be a feedstock for substitute gas (synfuel). However, the involvement is also consistent with the general

[13] Companies included in this category are those lessees whose principal business activity is the production and distribution of natural gas. It does not include small gas exploration or production companies which sell to larger gas pipeline companies. (See *Oil and Natural Gas Companies*, pp. 43-45.)

Table 19.—Natural Gas Pipeline Company Leaseholdings

Year	Number of leases held	Number of acres held	Percent of total acreage under lease
1950	0	0	0
1955	0	0	0
1960 ., ...	0	0	0
1965	0	0	0
1970 . . . . .,	0	0	0
1975	24	32,522	40/0
1980	27	36,317	5

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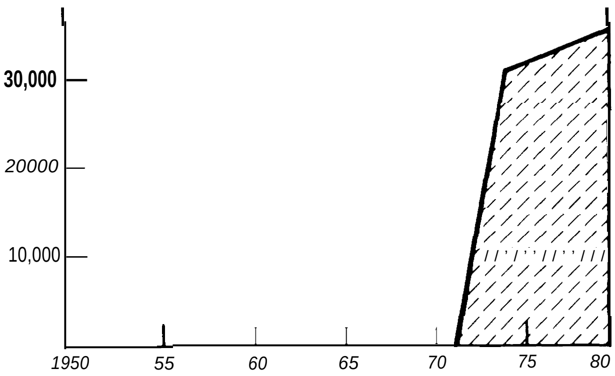
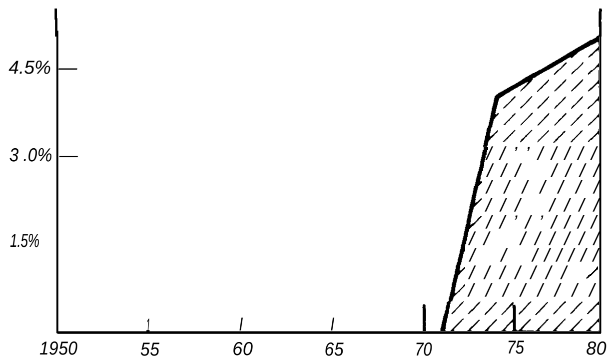
Figure 18.—Acres Leased by Natural Gas Pipeline Companies



SOURCE Off Ice of Technology Assessment

Figure 19.—Percent of Total Leased Acres Held by Natural Gas Pipeline Companies



SOURCE Off Ice of Technology Assessment

Table 20.—Natural Gas Pipeline Leaseholders

1950. None
1955. None
1960, None
1965. None
1970. None
1975. The El Paso Co. (El Paso Natural Gas Co.)
Texas Eastern Transmission Corp. (Fannin Square)
Coastal States Gas Corp. (Coastal States Energy Co.)
(Southern Utah Fuel Co.)
Northwest Energy Corp. (Western Slope Carbon, Inc.)
1980. The El Paso Co. (El Paso Natural Gas Co.)
Texas Eastern Transmission Corp. (Fannin Square)
The Coastal Corp. (Coastal States Energy Corp.)
(Southern Utah Fuel Co.)
Panhandle Eastern Pipeline Corp. (North Antelope Coal Co. 50 percent)
Northwest Energy Corp. (Western Slope Carbon, Inc.)
Internorth Corp. (Northern Minerals Co.)

NOTE Subsldlary leaseholders are noted In parentheses
SOURCE Off Ice of Technology Assessment

pattern of diversification within the industry. Following the pattern of the major oil companies a decade earlier, many natural gas companies in the 1970's have substantially diversified and now resemble multiresource development companies, although natural gas is still their chief business. Along with this diversification has been an internal restructuring of gas companies often accompanied by the creation of an overall holding company to manage several new operating units plus the traditional gas business. For example, El Paso Natural Gas Co. was reorganized in 1974 as the El Paso Co., and Northern Natural Gas Co. was renamed in May 1980 as Internorth Corp. Also, new subsidiaries such as Coastal States Energy Co. have been formed.

A few of the land packages acquired by pipeline companies were originally engineered for inclusion into major synfuel projects. These projects have generally suffered from economic, regulatory, and technical problems, but the industry has investigated other uses for their coal. Several are seeking long-term contracts to supply steam coal for new utility projects.

Only 2 of the 27 leases now owned by natural gas pipeline companies were acquired de novo from the Government; the rest were acquired by assignment from other lessees or were segregated from preexisting leases, For leases acquired by assignment, the former lessee frequently left the coal lease owning roster after the transaction and occasionally went out of business entirely.

It is impossible to ascertain whether the assignment lease acquisition route was a deliberate gas industry strategy or the only option available during the moratorium on de novo leasing. Whatever the rationale, the increase in ownership of leased Federal coal reserves by natural gas companies occurred during a time when little de novo leasing was permitted.

History of Leasing

El Paso Natural Gas Co. was the first pipeline company to enter Western coal leasing, and its holdings are by far the largest. The company obtained one of the largest blocks of leased land in the West by purchasing an already assembled package in toto and rounding it out with small pieces from two other development packages. In 1971, El Paso purchased 13 southern Utah leases from Atlantic Richfield Co., which had acquired the leases between 1964 and 1966. (See Energy Companies, pp. 28-33.) In 1973, El Paso added a 14th lease when Peabody agreed to split one of its nearby leases. The segregation portion of the Peabody lease was reissued to El Paso. One year later El Paso added a final lease also by segregation. In this case, the existing lease was owned by three California utilities, Like the Atlantic Richfield leases, the Peabody and utilities leases were originally issued in the mid-1960's. El Paso was reorganized in 1974 as a holding company, The El Paso Co., and El Paso Natural Gas Co. became its largest subsidiary (a situation which prevails today).

The second pipeline company to enter coal leasing was Texas Eastern Transmission Corp. which owns one New Mexico lease jointly with a subsidiary of Eastern Gas and Fuel Associates, Eastern Associated Properties Corp. The lease was acquired by assignment in 1972 from the Bisti Coalfield Joint Venture #2. It was issued to an individual originally in 1967.

Texas Eastern Transmission holds 50-percent interest in the lease in the name of Fannin Square Corp. Fannin Square is a passive corporation with no employees. The two companies also hold 10 pending preference-right lease applications covering more than 30,000 acres.

Coastal States Gas Corp. has, like El Paso, recently undergone reorganization as an energy resource holding company, The Coastal Corp. The company now holds Utah leases in the names of two subsidiaries, Southern Utah Fuel Corp. and Coastal States Energy Corp.

In 1973, Coastal States Gas purchased the assets of Southern Utah Fuel Co., formerly an independent Utah-based coal company. Southern Utah owned four leases at the time. One lease was originally issued in 1941 to an individual but was assigned to Southern Utah in 1945. This lease remains in the name of Southern Utah today. A second Southern Utah coal lease was obtained de novo in 1966 but assigned to Coastal States Energy Co. when the coal company was acquired. The other two Southern Utah Fuel Co. leases, issued in 1962, were jointly owned with Equipment Rental Service and Heiner Coal Co. In 1974, the Southern Utah share was assigned to Coastal States Energy Co. In 1977, Heiner Coal sold its one-third share to Coastal States Energy which now owns a two-thirds interest in each of the two leases with Equipment Rental holding the remaining third.

To these four leases, Coastal States Energy added a fifth lease de novo in 1979. Although only a single lease, it covers 2,632 acres, more than the combined acreage of the other four.

Northwest Energy Co. of Salt Lake City entered Western coal leasing after Coastal States and by the same route: purchasing a leaseholding independent coal company. In December 1974, Northwest bought Western Slope Carbon, Inc., and with this acquisition inherited three Colorado coal leases which it still controls. One lease, originally issued to an individual in 1949, was sold to Western Slope in 1970. A second lease dating back to 1931 was owned first by an individual, then by an independent coal company before assignment to Western Slope in *1970*. Western Slope attempted to modify one of its leases to include additional acreage but was denied by the BLM. In 1973, however, the land was offered for competitive leasing and Western Slope acquired it de novo.

The fifth natural gas pipeline company involved in Western coal leasing entered via a unique route for the industry. Panhandle Eastern Pipeline Co. formed a joint venture with a

Peabody Coal Co. subsidiary in the mid-1970's, North Antelope Coal Co. *(name* changed from Antelope Coal Co. in 1979). Panhandle's 50-percent interest is held in the name of Pan Eastern Coal Co., a subsidiary of the parent pipeline company. In 1977, North Antelope acquired a 320-acre lease in Wyoming by segregation from an existing Peabody lease.

Internorth Corp. (name changed from Northern Natural Gas Co. in May 1980) is the sixth natural gas pipeline company now holding Federal coal leases. In 1979, it acquired a Colorado lease by assignment from Consolidation Coal Co. Consol obtained title to the lease from Ember Mining Co., which had owned it for 5 years. The lease is held by Northern Minerals Co., a subsidiary of Internorth.

Houston Natural Gas Co. participated in leasing for 3 years, but it recently sold its coal subsidiary, [14] In 1976, Houston bought Empire Energy Corp., an independent coal mining company which owned three Colorado leases. In March 1980, the natural gas company sold Empire to Amoco Minerals Co., a subsidiary of Standard Oil Co. (Indiana). The acquisition represents Standard of Indiana's initial move into coal. Empire's leases are now categorized with energy company holdings in this survey.

Several lease transactions in 1980, too late to be included in this survey, suggest that natural gas companies will continue to increase their lease holdings. Northwest Coal Co., another subsidiary of Northwest Energy Co., agreed in March to purchase from Peabody Coal **5,000** acres of Utah coal land, including several Federal leases. Wyoming Fuels Co., a subsidiary of Kansas Nebraska Natural Gas Co., is developing a mining plan for its Colorado lease. Nicer, Inc., the parent company for Northern Illinois Gas Co., recently bought, through another subsidiary, a 49-percent interest in Snowmass Coal Co. and *50* percent of Grand Mesa Coal Co., which are separately developing mining plans for Colorado leases.

[14] Houston's leases were not included in any tabulation in this chapter because they were not owned b, the company a t any of the dates selected for ownership analysis.

L NONRESOURCE-RELATED DIVERSIFIED COMPANIES

The nonresource-related diversified business category includes those companies with principal lines of business activities which are not energy or mineral resource related, but which complement or could be integrated with resource development. It includes chemical companies, for which **coal** mining could provide a new source of feedstock for chemical production or the raw material for synfuel manufacturing processes which they may develop. It includes high technology companies such as General Electric and General Dynamic which have already entered the energy field and for which coal mining represents a related diversification.

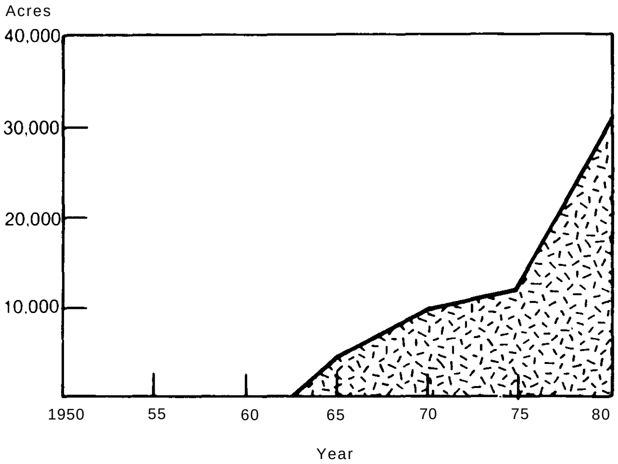
Table 21.— Leaseholdings of Nonresource-Related Diversified Companies

Year	Number of leases held	Number of acres held	Percent of total acreage under lease
1950	0	0	0
1955	0	0	0
1960	0	0	0
1965	3	4,610	10/0
1970	6	10,015	1
1975	7	12,580	2
1980	33	35,675	5

SOURCE: Off Ice of Technology Assessment

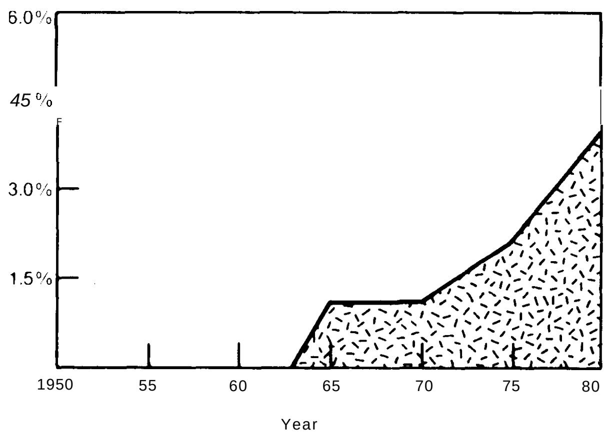
Nonresource-related diversified companies are latecomers to Western coal leasing. As shown in table 21 and figures 20 and 21, the companies falling into this category held no leases before 1963 and controlled a scant 1 percent of all land under lease in 1970. Holdings grew in the IWO's, however, from 10,015 to 35,675 acres. The major event causing this increase was the purchase of Utah International, Inc., by General Electric Co, and the transfer of Utah International's 26 leases from the metals and mining group to this category. Nonresource-related diversified companies now hold 5 percent of all land under lease.

Figure 20.—Acres Leased by Nonresource-Related Diversified Companies



SOURCE. Office of Technology Assessment

Figure 21. - Percent of Total Leased Acres Held by Nonresource-Related Diversified Companies



SOURCE. Office of Technology Assessment

History of Leasing

FMC Corp.

In 1959, the Food Machinery & Chemical **Corp. (name changed** to FMC Corp. in 1960) obtained three prospecting permits in Wyoming by assignment from individuals. In **1963, these permits were converted to leases. The chemical company still owns two of the leases but assigned the third to Cumberland Coal Co. in** 1977.

General Dynamics Corp.

United Electric Coal Co. acquired de novo three prospecting permits, two in Colorado and one in Oklahoma, between 1962 and 1964 as an independent coal company. The prospecting permits were converted to leases in 1965, In 1966, United Electric was acquired by General Dynamics. In 1974, the parent company merged United with another coal subsidiary, Freeman Coal Mining Co., to form Freeman United Coal Mining Co., which in turn was made a subsidiary of Material Service Corp., a division of General Dynamics. Two of the leases were assigned to Material Service Corp. in 1975 and the third was assigned to Freeman United in 1977.

W. R. Grace& Co.

W. R. Grace& Co. entered Western coal leasing when it bought Colowyo Coal Co., formerly an independent, in 1973. Colowyo held a Colorado lease it had obtained by assignment from an individual in 1946. The lease was assigned to W. R. Grace upon the acquisition of Colowyo. In 1976, Hanna Mining Co. joined the chemical company as a joint venture partner in the mining project run by Colowyo. W. R. Grace now has 50-percent interest in the coal lease by virtue of its participation in the joint venture.

Monsanto Co.

In 1977, Monsanto Co. acquired one Wyoming lease by assignment which had originally been issued in 1927, and then acquired by two coal mining companies. Monsanto holds this lease in the name of a subsidiary, Sweetwater Resources, Inc.

General Electric Co.

Twenty-six of the 33 leases now falling in the nonresource-related diversified category are held by Utah International, Inc., a subsidiary of General Electric Co. since 1976, All of the leases were acquired when Utah International was an independent metals and mining company. The histories of the leases now controlled by General Electric Co. are summarized under Metals and *Mining Companies,* pp. 54-58.

J. KEMMERER COAL CO.

Kemmerer Coal Co. is one of the oldest Western coal producers and among very few surviving companies in the coal industry founded and headquartered in the West. The company was started by members of the Kemmerer family in 1887, and has been mining coal steadily from southwestern Wyoming coalfields for nearly a *century.*

In 1926, the Kemmerer family reorganized its business interests and formed the Lincoln Corp., a holding company of which Kemmerer Coal became a subsidiary. The Lincoln Corp. holds an interest in several noncoal businesses in addition to its ownership of Kemmerer. This ownership structure is unique among lessees encountered in this survey. Kemmerer operates similar to an independent coal company and the family maintains local control, but technically it is a subsidiary of a corporation not otherwise involved in coal mining and not falling into one of the other business categories identified in this survey. For these reasons and because Kemmerer has held more than 5 percent of the outstanding acreage under Federal lease at least at one of the analysis dates (see appendix) it is analyzed separately in this report. The singling out of Kemmerer Coal Co. is appropriate not only because it meets the criteria established in this survey for such treatment, but also because the ownership structure of the company may change soon, In September 1980, the Kemmerer family retained Morgan Stanley & Co. to organize and conduct the sale of its coal holdings. If the coal company does sell, it will cause the greatest single event shift in Western coal lease ownership since Peabody Coal Co. was purchased from Kennecott Corp. in 1977. After such an acquisition, the principal business activity of a new parent might necessitate a recategorization of Kemmerer's holdings, a process simplified by its current separate status.

Kemmerer is currently the third largest holder of Federal coal leases. Beginning with a single lease obtained in 1927, Kemmerer has acquired 27 leases in 3 states—Wyoming, Colorado, and Utah. Only 1 of these leases has been assigned by Kemmerer; its remaining 26 leases include 32,191 acres or 4 percent of the land now under lease.

Kemmerer was one of the first of the major leaseholding companies to obtain large Western holdings. As of 1960, Kemmerer already owned 5 percent of the land under lease. Its holdings nearly quintupled in the 1960's to 33,793 acres and reached a peak of 33,988 acres in 1975. (See table 22 and figures 22 and 23.)

Unlike many of the major leaseholders, Kemmerer acquired most of its leases de novo, relying on its extensive knowledge and experience in Western coalfields to identify leasable reserves. It has sold little of its leased land by assignment although most of its leases are not currently in production.

History of Leasing

The first of the 27 leases obtained by Kemmerer Coal Co. is also the only lease the company has ever assigned in toto. In 1927, Gunn-Quealy Co. , a Kemmerer subsidiary since early this century, leased a 157-acre tract of Federal coal land in Wyoming. The company mined on the land and twice received acreage modifications, to 475 acres in 1929 and to 1,752 acres in 1950, thus expanding its reserves base. In 1975, the lease was assigned to Columbine Mining Co., which operated it for 2 years before closing. In September 1977, the lease was assigned to Sweetwater Resources, Inc., a Monsanto Corp. subsidiary.

Kemmerer's other leasing activity in Wyoming includes six leases acquired in the late

Table 22.—Kemmerer Coal Co. Leaseholdings

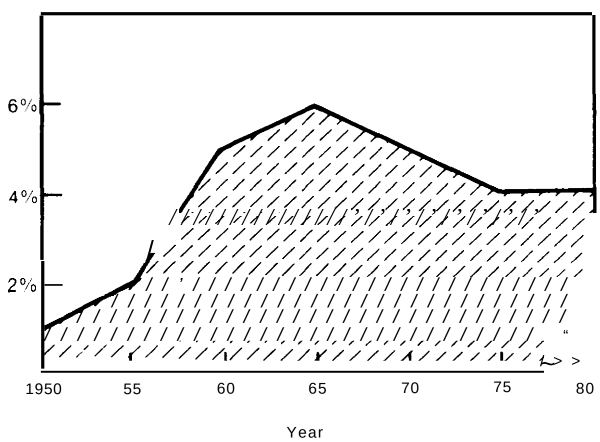
Year	Number of leases held	Number of acres held	Percent of total acreage under lease
1950	1	475	1%
1955	1	1,752	2
1960	4	6,849	5
1965	10	18,504	6
1970	26	33,793	5
1975	27	31,988	4
1980	26	32,191	4

SOURCE Off Ice of Technology Assessment

Figure 22.—Acres Leased by Kemmerer Coal Co.

SOURCE Offlce of Technology Assessment

Figure 23. —Percent of Total Leased Acres Held by Kemmerer Coal Co.



SOURCE Office Of Technology Assessment

1950's and early 1960's. Five of the leases were acquired de novo by Kemmerer. The sixth lease stemmed from a prospecting permit issued in 1958 to John Kemmerer, Jr., the company's chairman, who assigned the resulting lease to Kemmerer Coal in 1966.

Moving from Wyoming south into Colorado, Kemmerer Coal obtained lo leases in 2 units in the mid-1960's. Three leases were obtained de novo from prospecting permits issued to Kemmerer in 1964.[15] Six of the seven other leases stemmed from prospecting permits issued to individuals, John Wanner and A. Saterdal and assigned to Kemmerer. The final Colorado lease was issued to an individual in 1929. The lease was subsequently owned by four other individuals, a small company, and a sixth individual before being assigned to Kemmerer in 1966. Ownership of this lease has changed hands more times than any other lease examined in this survey.

Kemmerer's final package of leases is in central Utah. Ownership of the 10 leases involved is shared with Consolidation Coal Co. Four of the leases were originally obtained de novo by Kemmerer in *1962* with a 50-percent share assigned to Consolidation in 1966. Another five of the leases stem from prospecting permits originally issued to Consolidation in 1962, with a 50-percent share in the resulting leases assigned to Kemmerer in *1966.* The final lease was acquired de novo and jointly by the two companies in **1970.**

[15]In 1980, Kemmerer tiled an application to assign 50-percent interest in these three leases to Consolidation Coal Co.

K. METALS AND MINING COMPANIES

The metals and mining industry's involvement in Western coal leasing has been long, complicated, and frequently controversial. The industry involves some of the largest leaseholders in the West.[16]

Like the steel industry, metals and mining companies entered coal leasing early and had acquired considerable reserves by the mid-1960's. As shown in table 23[17] and figures 24

[16]The metals and mining category includes companies whose principal line of business activity includes the mining of one or more hard rock minerals, excluding uranium. It does not include companies primarily involved with coal, limestone, or trona extraction, nor does it include cement or construction companies.

[17]The total leaseholdings listed for 1980 in table 23 understate

and 25, the industry gradually increased its leaseholdings through the 1950's and 1960's. The increase in holdings accelerated during the first half of the *1970's.* By 1975, the industry controlled 118,300 acres, or 15 percent of all land under lease. From this peak, however, leaseholdings have dropped **90** percent in the past 5years.

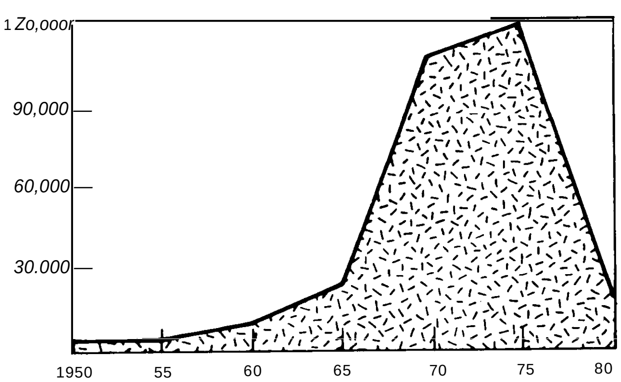
The sharp reduction in leasing by metals and mining companies has occurred primarily because several of the top leaseholding companies in this category have recently been acquired by firms from other industries. The list of present and past metals and mining companies owning Federal coal leases appears in table 24.

Table 23.—Metals and Mining Company Leaseholdings

Year	Number of leases held	Number of acres held	Percent of total acreage u rider lease
1950	2	5,009	12"%0
1955	2	5,009	7
1960	5	9,266	6
1965	11	17,708	6
1970	69	107,504	15
1975	87	118,300	15
1980	13	17,620	2

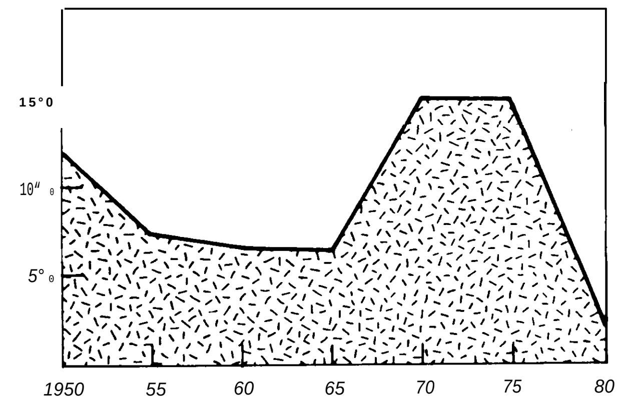
SOURCE Off Ice of Technology Assessment

Figure 24.—Acres Leased by Metals and Mining Companies



SOURCE Office of Technology Assessment

Figure 25.—Percent of Total Leased Acres Held by Metals and Mining Companies



SOURCE Office of Technology Assessment

The ownership of two Utah leases by United States Fuel Co., a subsidiary of U.S. Smelting & Refining Co. since World War I (name changed to UV Industries in *1972)* provided the sole stake of the metals and mining industry in Western leasing in 1950. U.S. Fuel obtained these leases de novo, and they have never been assigned. In November 1979, UV Industries was purchased by Sharon Steel Co. Consequently, the leases were reclassified in this survey in 1980 with steel industry rather than metals and mining company holdings.

The only new metals and mining industry entrant to leasing in the 1950's was Reynolds Mining Corp., a subsidiary of Reynolds Metal Corp. It acquired de novo three leases in Wyoming in the late 1950's and added a fourth by assignment in 1968 from a cattle company. Reynolds planned to build a large coal-fueled aluminum plant near the leases, but the project was abandoned. In 1974, it assigned the entire lease block to Texaco, Inc.; Reynolds has not reentered Federal coal leasing.

The 1960's

In the 1960's, several of the largest currently outstanding lease packages were organized by

(continued from p. 54)

the actual role of metals and mining companies in leasing. Peabody Coal Co., separately the third largest leaseholding category, is 27.5 percent owned by Newmont Mining Corp. through its participation in the Peabody Holding Co. If Newmont's share of Peabody's holdings were included, the total acreage held by metals and mining companies in 1980 would almost double. Since Newmont does not have direct or complete control of Peabody's activities, this land is deleted from the metals and mining total. (See *Peabody Coal Co.*, pp. 33-35.)

Table 24.—Metals and Mining Company Leaseholders

1950. . . .	U.S. Smelting & Refining Co. (U.S. Fuel Co.)
1955. . . .	U.S. Smelting & Refining Co. (U.S. Fuel Co.)
1960. . . .	U.S. Smelting & Refining Co. (U.S. Fuel Co.)
	Reynolds Metals Corp. (Reynolds Mining Corp.)
1965. . . .	U.S. Smelting & Refining Co. (U.S. Fuel Co.)
	Reynolds Metals Corp. (Reynolds Mining Corp.)
	Utah Construction & Mining Co.
1970. . . .	U.S. Smelting & Refining Co. (U.S. Fuel Co.)
	Reynolds Metals Corp. (Reynolds Mining Corp.)
	Utah Construction & Mining Co.
	Kennecott Copper Corp. (Peabody Coal Co.) (Kennecott Coal Co.)
	American Metals Climax, Inc. (Meadowlark Farms)
	Elena Mining Co.
	Ametex Corp.
1975. . . .	UV industries (U.S. Fuel Co.)
	Utah International, Inc.
	Kennecott Copper Corp. (Peabody Coal Co.) (Kennecott Coal Co.)
	Amax, Inc. (Meadowlark Farms)
	Elena Mining Co.
	Ametex Corp.
	American Smelting & Refining Co.
	Pit kin Iron Corp.
	American Fuels Corp.
	Intermountain Exploration Co.
1980. . . .	Amax, Inc. (Amax Coal Co.)
	Asarco, Inc.
	Pitkin Iron Corp.
	Intermountain Exploration Co.
	Hanna Mining Corp. (Colowyo 50 percent)
	Phelps Dodge Corp. (Western Nuclear, Inc.)
	St. Joe Minerals Corp. (Anchor Coal Co.)

NOTE Subsldiary leaseholders are noted in parentheses

SOURCE Office of Technology Assessment

metals and mining lessees. By the end of the decade total acreage under this industry's control had increased from 9,266 to 107,504 acres.

Utah International, Inc., was the first metals and mining company to undertake a lease acquisition program in the 1960's. The company, originally named Utah Construction & Mining Co. (its present name was adopted in 1971), initially undertook heavy construction projects, but by the mid-1960's, had established significant worldwide mineral exploration and production interests. In 1976, Utah International was purchased by General Electric Co. The company's 26 leases were recategorized in this survey from the metals and mining group to the nonresource-related diversified group as a result of the General Electric purchase.

The first and smaller of the two lease packages held by Utah International involves six leases in Colorado. Four leases were obtained de novo and two more were added by assignment. The second lease block, one of the largest in the West, was assembled by Utah International and several individual land agents employed by the company. Seventeen of the *20* leases eventually included in this group were first acquired by four land agents as prospecting permits, In 1966, the permits were assigned to Utah International, and the company converted them to leases in 1968. Three de novo leases were obtained by the company, one each in 1965, 1966, and 1971 to fill out the package.

Peabody Coal Co., now the largest holder of Federal coal leases, also made its major lease acquisitions in the 1960's. The company acquired leases in Colorado, New Mexico, Wyoming, Montana, and Utah. Peabody Coal now controls 62,009 acres of leased land.

Peabody initiated most of its leasing programs as an independent coal mining company. In 1968, however, the company was purchased by Kennecott Copper Corp. The Peabody leaseholdings were categorized with metal and mining company holdings in this survey for that time. Kennecott owned Peabody until, responding to a court order, it sold the company in 1977 to a six-firm holding company. Upon the divestiture, Peabody's leases were removed from the metals and mining company category.

The lease acquisition histories for Peabody's holdings are discussed under *Peabody Coal Co.*, p. *34*.

Kennecott Copper briefly held two Utah leases which were unrelated to Peabody Coal Co. In the mid-1960's, the company purchased the assets of Knight Ideal Coal Co., which included two leases obtained in the 1950's. The company was renamed Kennecott Coal Co. and reorganized as a subsidiary. Kennecott, unlike the independent coal operator Knight Ideal, never mined on the leases. In 1979, they were assigned to Pacific Gas & Electric Co.

Meadowlark Farms, Inc., was the third major new entrant in coal leasing in the 1960's. Meadowlark was originally organized as a land reclamation and postmining agricultural subsidiary to Ayshire Collieries Corp., an independent coal company. Meadowlark acquired two Wyoming leases in 1965. In 1969, Ayshire was acquired by American Metals Climax, Inc.

(name change to Amax, Inc., in *1974).*[18] As a result, Meadowlark became a subsidiary of its new parent and Ayshire was renamed Amax Coal Co. The leases were assigned from Meadowlark to Amax Coal Co. in *1977.*

The final two metals and mining companies to enter Western leasing in the 1960's were Elena Mining Corp. and Ametex Corp. Elena obtained a New Mexico lease with intentions of using the coal in a nearby copper-leaching plant it operated. The company went out of business in 1968. Ametex was formed in the late 1960's to mine silver deposits. In 1968, it branched into coal and bought a small lease near the Elena property which had been owned by two individuals since it was issued in 1925. When Elena went out of business Ametex acquired its lease also. In the mid-1970's Ametex ceased its mineral development projects, but continued to hold title to the coal leases. The original owners of the company sold to a Colorado businesswoman who resold it in March 1980 to an Oklahoma businessman.

The Ametex lease, along with two tracts owned by Florentine Padillo, have been the subjects of legal controversy since 1971. Between 1971 and 1976, a series of conflicting lease assignments were filed by various parties claiming to be bona fide lessees of record. A BLM investigation subsequently identified four possible true assignors and seven possible legal assignees. In April *1977,* the BLM denied all the assignments during the 5-year period. Several lawsuits contesting the actions of the BLM and various lease claimants are still pending.

The 1970's

Between *1970* and 1975, four new metals and mining companies appeared on the list of coal lessees. The American Smelting & Refining Co. (name changed to Asarco, Inc., in *1975)* purchased through assignment a five-lease package in Oklahoma from Garland Coal & Mining Co. All five had previously been owned by individuals and a coal brokerage company. (See *Independent Coal Companies,* pp. **38-43.** **)**

Pitkin Iron Co., a small iron ore mining firm, acquired partial interest in several Colorado leases in 1970. These leases, issued in 1958 to individuals, are still jointly held, although the ownership of the shares owned by individuals has changed several times.

American Fuels Corp., a small Albuquerque-based mining company with gold, silver, and fluorspar holdings, briefly entered coal leasing from 1973 to 1977. It bought a producing lease in western Colorado from Commonwealth Coal Co. and sold it to Sewanee Mining Corp.

Intermountain Exploration Co., a small gold and silver mining company, purchased on the assignment market one small Utah lease in 1973. Between the time of initial lease issuance in 1933 and assignment to Intermountain, the lease was owned by five individuals from two families.

Metals and mining industry leaseholdings dropped sharply between 1975 and **1980,** largely because of the purchase of metals and mining companies by outside interests. Peabody Coal Co., Utah International, and UV Industries were all acquired by nonmetals and mining companies. Also contributing to the decline was the recategorization of Ametex Corp. as a landholding company, and the assignment of the leases owned by American Fuels Corp. and Kennecott Coal Co. to companies from other industries.

This decline in the leaseholdings of the metals and mining industry was partially offset by the entrance of three new metals and mining lessees. Western Nuclear, Inc., a subsidiary of the metals and mining company, Phelps Dodge, Inc., acquired a small Wyoming lease in 1975 from an individual who had owned it for 21 years. Secondly, in **1978,** Anchor Coal Co. purchased through assignment a small Colorado **lease.** The tract had been owned previously by four independent coal mining companies and one individual. A subsidiary of A. T. Massey Coal Co., Anchor, was organized solely to develop this lease. A. T. Massey Coal Co., for-

[18] Several coal industry studies categorize Amax as an oil-controlled company because 20.6 percent of its stock was purchased by Standard Oil of California in 1975. Several others, including a recent National Coal Association report, consider it a metals and mining firm. Standard attempted to obtain additional Amax stock in 1978 and to merge the companies, but congressional and Department of Justice opposition prevented the action. The oil company reportedly maintains a hands off policy toward decisionmaking at Amax and, hence, it is treated as an independent metals and mining company in this survey.

[19] As a result Ametex was recategorized from metals and mining to the landholding group in this survey in 1980.

merly an independent coal company, was acquired by St. Joe Minerals Corp. in 1974.[20] St. Joe is involved in mineral extraction worldwide.[21]

[20]In March 1980, Massey signed a joint-venture agreement with Scallop Coal Corp., a member of the Royal Dutch/Shell Group, to develop Massey's coal reserves nationwide. Ownership of the Anchor lease was unchanged by agreement, however.

[21]In 1979, coal provided slightly more than half of the total revenues of St. Joe for the first time. Because of the historical dominance of metals and mining projects within the company, it is grouped in this category in this survey.

Finally, Hanna Mining Co. joined W. R. Grace & Co. as a joint owner of the Colowyo Coal Co. in 1976. The lease, one of the oldest in the West, was held by an individual from *1924* to 1946 when it was purchased by Colowyo. Colowyo was an independent coal mining company until it was purchased by Grace in 1973. The wholly owned subsidiary became a joint venture with the entry of Hanna.

L. LANDHOLDING COMPANIES

Dozens of companies with no capability to mine coal have played an important role in the leasing of Federal coal land. The landholding company category in this survey includes an assortment of such lessees .22

Landholding companies played an important role in the early days of Federal coal leasing. In *1960,* they controlled about 8 percent of all land under lease. Total acreage leased by land agents peaked a decade later in **1970 with 43,581 acres under 33** leases. In the **1970's,** however, landholding companies have almost completely disappeared from the leasing picture. Their total holdings are now less than 1 percent of land under lease (see tables **25 and 26, figure 26).**

The near elimination of independent land agents suggests an evolution toward lease ownership by companies with the capability to mine coal. Many land speculating and lease brokerage firms have taken their profits through assignment or relinquished their leases. The leasing moratorium of the **1970's is partly re-**sponsible for this development. By limiting access to new leases, the moratorium enhanced the value of existing leases on the assignment market. As the assignment price rose, many landholding companies sold. The diligent development regulations of 1976 may have provided another incentive for landholding companies to sell. Leases not acquired by bona fide coal mine developers by the early 1980's are likely to fail to meet the 1986 coal production requirements because of the leadtime needed to open a new mine. Their value on the assignment market, in theory, should diminish as the deadline draws near.

The decline in importance of independent landholding companies, however, has coincided with the rise in importance of landholding companies which are subsidiaries of other companies.[23] The relative growth rates can clearly

Table 25.—Independent Land Company Leaseholdings

Year	Number of leases held	Number of acres held	Percent of total acreage under lease
1950	1	1,360	3%.
1955	5	4,576	6
1960 . . .	10	11,504	8
1965	11	13,411	4
1970	33	43,581	6
1975	19	26,225	3
1980	8	4,661	< 1

SOURCE. Off Ice of Technology Assessment

[22]Landholding companies in this survey include firms with no coal mining capability and whose principal line of business activity is the holding of coal leases for eventual assignment to another party. While several companies are by their own definition land agents or landholding concerns, there is often a fine line between landholding companies and coal companies suffering from soft market conditions, or resource development companies. Small companies in this survey were categorized as bona fide coal mining companies if they had mined even minimal amounts of coal during the time they held leases. They were considered landholding companies if no record of mining activity could be found. Companies with no coal mining capability but with clearly distinguishable and dominant other lines of business activity—such as cattle and sheep companies, or reclamation and farming companies—were not included among landholding companies. Unincorporated individuals acting as land agents were also excluded from this category.

[23]Since subsidiary land agents are controlled by corporations whose principal line of business activity is not landbrokering, leases held in the name of these firms are discussed in the chapters of the controlling interests industry categories.

Table 26.—Independent Land Company Leaseholders

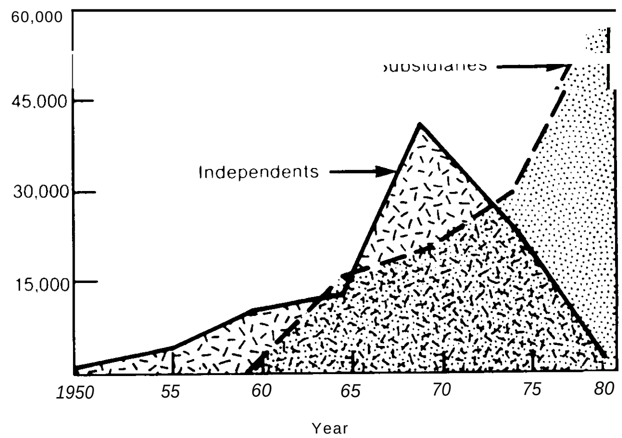
1950. . . .	Nancv Lee Coal Co.
1955.	. Minerals Development Corp.
	Utah Coking Coal, Inc.
1960.	Utah Coking Coal, Inc.
	King Cannel Coal Co.
	Huntington Corp.
	Choctaw Coal Co.
1965.	. King Cannel Coal Co.
	Huntington Corp.
	Utah Coking Coal, Inc.
	American Humates, Inc.
	Lignite Electric Power Cooperative
	Southern Development Co.
1970.	King Cannel Coal Co.
	Huntington Corp.
	Humac Co.
	Lignite Electric Power Cooperative
	Rilda Corp.
	Ember Mining Co.
	Concho Petroleum Co.
	B. R. Noe Coal Co.
	Industrial Resources, Inc.
	Thompson Creek Coal & Coke Co.
1975.	King Cannel Coal Co.
	Humac Co.
	Concho Petroleum Co.
	Industrial Resources, Inc.
	Thompson Creek Coal & Coke Co.
	Carroll County Coal Co.
	Thermal Energy Co.
1980.	King Cannel Coal Co.
	Thompson Creek Coal & Coke Co.
	Thermal Energy Co.
	Carroll County Coal Co.
	Cari International Mining Corp.
	Ametex Corp.
	Smith-Holladay and Associates, Ltd.

SOURCE Off Ice of Technology Assessment

be seen in figures *26* and 27. Subsidiary landholding companies now hold more acreage than the independents ever held. Three of the 10 land agent subsidiaries are owned by electric utility companies; two by oil and gas companies; one by a natural gas pipeline company; one by an independent coal company; and one from the other category. (See *Corporation and Subsidiaries* in ch. 1, p. *7.)*

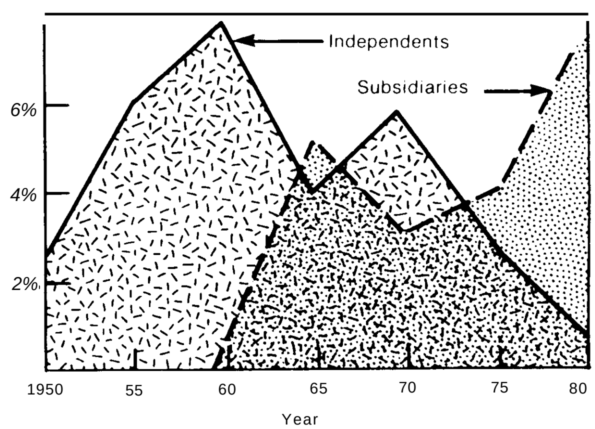
The two phenomena appear to have occurred independently, No independent land companies were purchased by other companies to emerge as subsidiaries. Independents simply sold their leases to other companies. Concurrently, new leasing entrants occasionally used landholding subsidiaries to gather leases and existing lessees created new landholding subsidiaries to which leases were assigned. Hence, the growth in lease

Figure 26.—Acres Leased by Independent and Subsidiary Land Companies



SOURCE Off Ice of Technology Assessment

Figure 27.— Percent of Total Leased Acres Held by Independent and Subsidiary Land Companies



Note The declIne in leaseholdings by Independent land companies and the rise in leaseholdings by subsidiary landholding companies appear to be Independent phenomena See discussion in the text

SOURCE Office of Technology Assessment

ownership by landholding subsidiaries is caused by the internal reorganization of coal leaseholding companies into more complex, decentralized business structures and does not reflect a swallowing of small, independent landholding companies by larger corporate interests.

Leases held by subsidiary land companies do not face a key barrier to development confronting leases owned by independents; they do not necessarily have to undergo assignment before mining can occur. Some parent companies routinely assign leases from landholding to coal mining subsidiaries prior to the initiation of mine development (e. g., Pacific Power & Light Co.), but such action is not obligatory. Several leases now in production are owned by land-agent subsidiaries but mined by outside designated operators or a nonlease titleholding mining subsidiary of the same parent company. Land-agent subsidiary roles in leasing must be analyzed on a company-specific basis with particular attention paid to corporate strategy behind the use of the land companies.

History of Leasing

The 1950's '

The Nancy Lee Coal Co. was the only 1950 lessee grouped in the landholding category, Named after Nancy and Lee Squire of Fort Smith, Ark., the company acquired a coal lease in 1949. It retained ownership for slightly more than a year, assigning the lease to Evans Coal Co. while retaining a 10 cents/ton overriding royalty on future strip mined coal.

By 1955, two other companies appeared in the landholding category. (See table **26** for a complete list of landholding companies.) Minerals Development Corp., headed by Andre Heiner, from a family prominent in Utah and Colorado coal and mineral development, obtained two Colorado leases by assignment from Kaiser Steel Corp. in 1953. Several years later the company assigned the leases to U.S. Steel Corp. The company obtained a third lease de novo in 1952 and assigned it in 1955 to Heiner Coal Co., a bona fide mining firm run by the Heiner family. The lease was later assigned to Pacific State Steel Corp. and is now again owned by Kaiser Steel.

Utah Coking Coal, Inc., appears in the complicated history of two Utah coal leases now owned by Utah Power & Light, One lease was originally issued in 1934 and was owned by five different individuals until assignemnt to Utah Coking Coal in 1953. The second lease was issued to an individual in 1953 and acquired by Utah Coking Coal 1 year later. Utah Coking Coal assigned both leases 12 years later to Rilda Corp., a California-based land company. Rilda assigned both leases to Peabody Coal in 1972, and in December 1979, Peabody sold them to Utah Power & Light.

Three new independent land companies entered coal leasing between 1955 and 1960. The Huntington Corp., founded by a mining engineer from the University of Utah, acquired five leases de novo in Utah in **1958.** In 1971 Huntington assigned its five leases to Peabody Coal Co. Peabody assigned one lease to Nevada Electric Investment Co. (a subsidiary of Nevada Power Co.), assigned two others to Utah Power & Light, and retains ownership of a fifth.

King Cannel Coal Co. operated a mine on a Utah lease tract acquired by assignment from an individual in 1941. The mine operated until the mid-1950's when it was closed. It has not operated since then, although the company retains ownership of the lease. Because it has not mined since then, the categorization of this company in this survey **was** changed from coal to land company in 1960.

Choctaw Coal Co., one of many small Arkansas companies established by the Gaither family, owned two Colorado coal leases from 1958 until 1964. Both were assigned to Choctaw from Larsen Mining Co. and then assigned by Choctaw to Garland Coal & Mining Co. in *1964.* They are now owned by the Anschutz Corp., an oil and gas company .[24]

The Early 1960's

Three new independent land agents entered coal leasing in the early 1960's. The first new independent agent at this time was Southern Development Co. which obtained de novo a 51.6-percent interest in an Oklahoma lease in 1962. The other owners included three members of the Porter family and Florence Loomis. Southern Development and its colessees assigned the lease to Garland Coal & Mining Co. (founded by the Porter family) in 1968. Although this lease was actually issued de novo by the BLM in 1962, the

[24]In 1980, one of these leases was assigned to Snowmass Coal Co., which is owned by subsidiaries of Eastern Gas and Fuel Associates, NICOR, Inc., and Anschutz Corp. This assignment is not reflected in the findings of this study.

land was previously covered by an Indian lease issued in 1940 to Paris Purity Coal Co. and later assigned to Coaldale Mining Co. The land was transferred into the Federal from the Indian domain in the late 1940's. As part of a land exchange, it and several other Indian leases were later reissued as Federal leases.

Another independent land agent, Lignite Electric Power Cooperative, acquired a large North Dakota lease de novo in 1962. This company, formed by several North Dakota businessmen, hoped to acquire fuel reserves to sell to several local rural electric companies. Eight years later the company assigned the lease to Baukol-Noonan, Inc., its present owner.

In 1961, a Texas company, American Humates, acquired three Wyoming leases. The company also operated under the names of Humic Acid Products of America, Inc., and Humac Co. It claimed to have developed a new chemical technique to extract humic acid, used in fertilizer manufacture, from oxidized outcropping of lignite coal. The company assigned the three leases to Sun Oil Co. in 1975. They are now owned by a Sun subsidiary, Sunoco Energy Development Co.

Subsidiary land companies entered the leasing field for the first time in the early 1960's. The subsidiaries include Sentry Royalty Co., which was wholly owned by Peabody Coal Co., and Nevada Electric Investment Co., which was and is wholly owned by Nevada Power Co. Sentry was active throughout the West (see Peabody *Holding CO.*, pp. 33-35), while the power corn-pany subsidiary has confined its leasing activities to Utah.

The Late 1960's

The independent land companies posted their largest leasing gains in the second half of the 1960's, obtaining 43,581 acres by 1970, more than three times their total. in 1965 and more than they have owned since. Although two companies dropped from the ranks, five new entrants appeared, including Rilda Corp., whose two Utah leases acquired in 1965 from Utah Coking Coal have already been discussed.

In 1968, B. R. Noe Coal Co. acquired a Colorado lease originally issued in 1945 and previously owned by an individual and an independent coal company which operated under two names. The B. R. Noe Coal Co. was a coal wholesaler and a landholding company. In 1971, the lease was assigned to Empire Energy Corp., then an independent coal company. In 1978, Empire assigned the lease to Anchor Coal Co., a subsidiary of St. Joe Minerals Co.

Industrial Resources, Inc., acquired in 1967 by assignment five Colorado leases which were originally issued to an individual. Until 1976, Industrial Resources was a subsidiary of Wolfe Ridge Minerals, Inc. Wolfe Ridge was then sold, and Industrial Resources became a parent company. The leases were then assigned to a newly formed subsidiary of Industrial Resources, called Industrial Assets, Inc. All three entities were landholding companies. In 1978, the entire five-lease package was assigned to Sheridan Enterprises, a wholly owned coal mining subsidiary of Occidental Petroleum Corp.

In 1967, Ember Mining Co. acquired a Colorado lease package containing six leases. Five were obtained by assignment from individuals and a sixth was obtained de novo. Ember never mined coal; it was formed as a landholding entity by the Porter family. In 1972, Ember assigned the lease package to Consolidation Coal Co.

A small Texas-based company, Concho Petroleum, acquired an 80-percent interest in six Wyoming leases in the late 1960's. All were originally issued earlier in the decade to J. C. Karcher, Concho's president. Five of the leases were reassigned to Gulf Oil Corp. in 1975. The sixth was acquired the same year by Shell Oil.

The final company to be added to the list of landholding lessees in the late 1960's was Thompson Creek Coal & Coke Co. Formerly an independent coal company, its mines shut down around this time. The company has been gradually liquidating its holdings since the late *1960's.* A 120-acre Colorado lease was assigned to the landholding category from the independent coal category beginning in 1970. (See lndependent *Coal Companies*, pp. 38-43.) Thompson Creek still owns the lease.

Subsidiary land companies made only modest increases in leaseholdings for the second half of the 1960's. Sentry Royalty's leases were all assigned to Peabody Coal when Sentry was dissolved into the parent company in 1968. Kanawha & Hocking Coal & Coke Co. (a landholding subsidiary of Valley Camp Co.), a newcomer, acquired one Utah lease at this time. The major new entrant was Associated Southern Investment Co., a landholding company owned by Southern California Edison Co., which obtained one-quarter interest in a large (19-lease) block in southern Utah now owned jointly by three utilities. In 1972, the utility assigned its share internally from Associated Southern to Mono Power Co., its resource development arm.

The Early 1970's

Lease acquisition efforts by independent land companies were cut short by the moratorium of 1971. Total leased acreage controlled by land agents dropped *40* percent during the first half of the **1970's.** Five companies sold all leaseholdings, and only two entrants appeared (see table **26).**

The first newcomer was Thermal Energy Co., a joint venture now owned by six companies. In 1964, it acquired partial interest in a New Mexico coal lease previously owned by an individual and one of the original venture organizers. This lease includes part of a block of coal reserves, which Chaco Energy Co.,[25] a subsidiary of Texas Utilities, plans to develop. Partial lease assignments between Chaco, Thermal, and Peabody Coal are pending.

The other newcomer was Carroll County Coal Co., a corporation which in **1970** obtained a 412-acre lease in Utah. Carroll was a subsidiary of Pickands Mather & Co. of Cleveland, Ohio at the time. The company outbid Malcolm McKinnon, an independent Utah landman, for a lease at a competitive sale. Shortly thereafter, McKinnon bought Carroll County from Pickands Mather and obtained the lease.

Late 1970's

Independent land company leaseholdings dropped another **80** percent between 1975 and 1980, down to less than 1 percent of total leased acreage today. Three companies liquidated assets, while three new smaller companies acquired leases.

The first new entrant, Ametex Corp., holds two New Mexico leases. Previously a small metals and mining company, it was moved to the land company category for the period when it ceased its metal operations (see Metals *and Mining Companies,* p. **54-58** for **lease** history).

Cari International Mining Corp. obtained a small Oklahoma lease in 1976 which had been owned by the Gaither family since 1962. Cari was originally organized as a subsidiary of Miranda International Mining Corp. which is in turn owned by Celso de Rocha Miranda, a Brazilian citizen living in Rio de Janeiro. Although it was involved in some coal mining in Georgia, today it is a land company. Miranda International was dissolved in 1977, making Cari the parent company today.

Finally, Smith-Holladay & Associates, Ltd., obtained a small Utah lease in 1978. Run by the previous titleholder of the lease, John Davidson Smith, the company is now seeking assignees or codevelopers for the lease tract.

While independent land company leaseholdings have dropped nearly *90* percent in the last decade, holdings by land subsidiary companies have more than doubled. They now own more than independents owned at their peak, about 7 percent of all acreage under lease. The new entrants of the **1970's** include: Franklin Real Estate, subsidiary of the utility American Electric Power Co.; Ark Land Co., subsidiary of Arch Minerals, which is in turn owned by oil companies; Coteau Properties, subsidiary of North American Coal Co., a coal independent; Northern Minerals, Inc., a subsidiary of Internorth Corp., a natural gas pipeline company; Resource Development Co., subsidiary of the Iowa Public Service Co.; Amca Coal Leasing, Inc., a subsidiary of Amca Resources, Inc., an independent coal company; and Eastern Associated Properties Corp., a subsidiary of Eastern Gas & Fuel Associates which is involved in shipping and oil and gas in addition to coal. The histories of leases acquired by these companies as well as those acquired by the subsidiary land companies mentioned earlier are discussed in the subchapters covering the business activity of their parents.

"Thermal is included as a land company because it will not actually be involved in coal mine development, It acquired the land and searched for bona fide developers.

M. OTHER LEASEHOLDERS

The other leaseholder category includes all present and past lessees whose principal line of business activity does not fall among the 12 groups previously discussed. As shown in table *27,* the percentage & acres held by companies falling in this category has varied over the past *30* years from a low of *4* percent in *1955* to a high of 13 percent in 1960 and 1965. About 10 percent of the land currently under lease falls into the other category.

The lessees in this category have a wide range of business activities and their lease acquisitions do not appear to follow any particular pattern. Nor are there any apparent distinguishing trends in the evolution of their leaseholding over time. In order to provide as comprehensive a picture of coal leasing as possible, the 1980 leaseholdings of other companies are described in detail below. Other companies holding leases earlier are then simply listed as the histories of those leases have been discussed in the subchapters of their present owners.

Peter Kiewit Sons, Inc.

Peter Kiewit Sons, Inc., a Nebraska-based construction and mining company, is currently the largest leaseholder in the other category. Kiewit's *17,875* acres of leased land are included in nine leases.

Three of Kiewit's leases are owned entirely by wholly owned subsidiaries, Rosebud Coal Sales Co. and Big Horn Coal Co. Big Horn obtained a Wyoming lease by assignment in 1959. Rosebud acquired one Montana lease de novo in 1964 and added a Wyoming lease by assignment 1 year later.

Ownership of Kiewit's other six leases is shared with other companies as part of joint ventures. Ownership of Kiewit's 50-percent share in each is held in the name of Wytana, Inc., a subsidiary. Four leases are part of the Decker Coal project in Montana. Pacific Power & Light Co. is the partner. (See *Electric Utilities,* pp. 21-28 for lease histories.) Kiewit also owns a 50-percent share in two joint ventures which hold Wyoming leases. Ownership of each is shared with a Union Pacific Corp. subsidiary. The first, Black Butte Coal Co., obtained a 14,903-acre tract by assignment from Kiewit's Rosebud Coal Sales Co. subsidiary in 1976. Rosebud had obtained the lease de novo only 4 months prior to the assignment. This is the second largest coal lease ever issued by the Department of Interior. In the second project, Kiewit holds a 50-percent interest in Cumberland Coal Co. which obtained a lease by assignment from FMC Corp. in 1977.

Table 27. —Leaseholdings of Companies in the "Other" Category

Year	Number of leases held	Number of acres held	Percent of total acreage under lease
1950	2	2,907	7%
1955	4	3,240	4
1960	15	18,288	13
1965	36	39,134	13
1970	38	41,153	6
1975 . ,	38	37,051	5
1980	50	77,861	10

SOURCE Off Ice of Technology Assessment

Union Pacific Corp.

Railroad leaseholdings are restricted by the Mineral Leasing Act as follows:

> NO company or corporation operating a common-carrier railroad shall be given or hold a permit or lease under the provisions of this chapter for any coal deposits except for its own use for railroad purposes. " **(30 U.S.C. 202)**[26]

Since railroads have virtually eliminated their use of coal as a boiler fuel for their locomotives, opportunities to mine for their own use are practically nonexistent.

Joint venturing through subsidiaries far removed structurally from the parent organization has recently provided indirect entry into

[26] Responsibility for the enforcement of this provision was transferred from the Department of **the>** Interior to the Department of Energy when DOE was organized in 1977. (See 91 Stat. 565 and 42 U.S.C. (7152(b)) A recent Justice Department report recommends striking from Federal law prohibitions against the issuance of Federal coal leases to railroads or their affiliates. (*Competition in the Coal Industry* report of the U.S. Department of Justice, pursuant to sec. 8 of the Federal Coal Leasing **Amend** ments Act of 1976 for fiscal year 1979; U.S. Department of Justice, Antitrust Division; November 1980.)

leaseholding by railroads. The Union Pacific Corp., parent company for the Union Pacific Railroad, has acquired a 50-percent interest in four joint ventures which hold large Wyoming leases and mine coal for nonrailroad use. As explained above, the Union Pacific Corp. is a partner, with Peter Kiewit, in the Black Butte Coal Co. and Cumberland Coal Co. lease development projects. The Union Pacific Corp. 's share in both is held in the name of Bitter Creek Coal Co. In a third project, Medicine Bow Coal Co., a joint venture with Arch Mineral Corp., acquired a lease in 1974 which was segregated from a lease owned by Arch Mineral's subsidiary, Ark Land Co. The Union Pacific Corp. 's share is held in the name of Hanna Basin Coal Co. Finally, Stansbury Coal Co., ownership of which is shared with an Ideal Basic Industries, Inc., subsidiary, obtained a lease by assignment in 1975. The Union Pacific Corp. 's share in this joint venture is held in the name of Winton Coal co.

The Union Pacific Corp. has undertaken its lease development projects through complex ownership structures and participation in joint ventures. Ownership of the Union Pacific Corp.'s share is through subsidiaries, Winton, Hanna basin, and Bitter Creek, which are legal entities for leaseholding separate from the railroad unit. (They have no employees.) Moreover, these subsidiaries are not direct subsidiaries of the Union Pacific Corp., but are owned by Rocky Mountain Energy Co., a resource development subsidiary, which in turn is owned by the Union Pacific Corp.

Cement Manufacturers

Four companies primarily involved in the cement business currently own Federal coal leases. Ideal Basic Industries, Inc. , holds six of the nine leases controlled by these companies. Five of Ideal's leases are located in New Mexico; they were obtained by assignment from Consolidation Coal Co. in 1977. The sixth lease is owned by Stansbury Coal Co., a joint venture with the Union Pacific Corp. (see above). Ideal's 50-percent share in this venture is held in the name of a subsidiary, Ideal Coal Co. Texas Industries, Inc., obtained a New Mexico lease by assignment from an individual in *1976*. Monolith Portland Cement Co. has owned a Colorado lease since 1951, currently in its name and earlier through a now dissolved subsidiary, Monolith Portland Midwest Co, California Portland Cement Co, obtained a Utah lease by assignment from an independent coal company in 1962.

Steel Subsidiaries

Two steel companies which are subsidiaries of diversified corporations own leases. Since their leases were acquired when they were independent corporations, the lease histories of the holdings of the two companies, Lone Star Steel, owned by Northwest Industries since 1959, and CF&I Steel, owned by Crane Co. since 1969, are discussed under The Steel *Industry*. Lone Star currently owns seven Oklahoma leases and CF&I owns one Colorado lease.

Resource Development Companies

Two resource development companies, firms involved in the exploration and production of more than one energy resource where no single resource development program (such as coal, oil, or uranium) predominates, own leases.

In May 1977, Mountain States Resource Corp. obtained an 8,824-acre tract in Utah. It is the sixth largest lease ever issued by the Department of Interior. The lease stems from a prospecting permit issued to an individual in 1968 and assigned to Mountain States 1 year later. Mountain States, a small company founded in 1969, is involved in Western coal, oil and gas, and uranium development.

Energy Reserves Group, Inc., is the second independent resource development company in the survey. In 1979, it acquired four leases by assignment from Coal Search Corp. The leases were originally issued to individuals. Each lease was assigned to two other individuals before acquisition by Coal Search in 1976. Energy Reserves Group bought Coal Search Corp. in part to acquire the leases. The company mines coal and uranium.

Banks

Two banks now hold leases. Carbon Emery Bank obtained three Utah leases in 1969 when a debtor which had used the leases as collateral, defaulted on a loan. The Alaska State Bank has owned one of the four outstanding Alaskan leases since it was assigned to it from individuals in 1972.

The Remaining 1980 Lessees

Eight more companies, not previously discussed in this report, now own Federal coal leases. Eastern Associated Properties Corp., a subsidiary of Eastern Gas and Fuel Associates, shares ownership of a New Mexico lease with a subsidiary of Texas Eastern Transmission Co.[27] Mining Systems Corp., a subsidiary of the Washington based construction company, Standard Equipment, Inc., obtained an Oklahoma lease by assignment from an independent mining company in 1976. Leeco, Inc., a coal mining subsidiary of the diversified Kaneb Services, Inc., obtained a Kentucky lease de novo in 1975. Midcontinent Limestone Co., a limestone mining company, obtained three Colorado leases when it bought Coal Canyon, Inc., in 1972. Coal Canyon had acquired the leases as an independent company by assignment in the 1960's. Two companies primarily involved in producing materials for petroleum drilling, Geo Resources Exploration, Inc., and American Colloid Co., acquired single North Dakota leases de novo in *1964* and still own them. Equipment Rental Service of Salt Lake City, owned by the land agent Malcolm McKinnon, owns partial interest in three leases in Utah, two with Coastal States Energy Co. and one with Pacific Gas & Electric. (See Electric *Utilities* and *Oil and Natural Gas Pipeline Companies*, pp. 21-28 and 48-51 for lease histories.) Finally, Cooperative Security Corp., owned by the Church of the Latter Day Saints, obtained three Utah leases de novo in the early 1960's and retains ownership today.

Other Lessees 1950-75

The following table lists lessees falling into the *other* category in this survey which owned leases at one or more of the six analysis dates —1950, 1955, 1960, 1965, 1970, 1975—but which currently do not hold leases.

Lessee	*Dates*	Business activity *of controlling interest*
Northwest Improvement Co.	1950, 1955	Railroad
Sapinero Uranium Co.	1960, 1965	uranium
Mine Service Co.	1965	Resource accounting
S. E. Evans, Inc.	1965, 1970, 1975	Construction
Northern Wyoming Land Co.	1965	Ranching
Ruby Co.	1965	Diversified
Farmers Union Central Exchange	1970, 1975	Fuel procurement
Simplot Industries	1970, 1975	Diversified
Maneotis Sheep Co.,	1975	Ranching
Plateau Mining Co,	1975	Uranium

[27] See *Natural Gas Pipeline Companies*, p. 50, for lease history. Eastern Gas and Fuel Associates also owns a major share in two coal companies, Snowmass and Grand Mesa, which are developing mining plans for Colorado leases. Eastern Gas and Fuel is involved in maritime, coal, oil, and gas businesses.

APPENDIX
Methodology

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Methodology

This study of the ownership of existing Federal coal leases was conducted between November 1979 and October 1980. Most of the data collection and analysis was completed by May 1, 1980. A draft report was prepared in May 1980. Revisions and corrections were made between May and October in response to comments by reviewers and after the receipt of additional information gathered during telephone interviews and at OTA Task Force meetings on the development prospects of Federal coal leases in Santa Fe, N. Mex., Denver, Colo., and Cheyenne, Wyo.

Data Collection

The core of this project was the collection of the ownership histories of each of the 538 outstanding Federal coal leases in 13 States. This study analyzes the ownership histories of the currently valid coal leases contained on a master list developed by OTA from the Automated Coal Lease Data System maintained by the Department of Interior. A few leases subsequently have been issued which are not included in this study. Also, this study does not examine coal leases which have been relinquished and thus are no longer in existence. Every owner of record at any time in the history of each presently valid lease was identified.

The State Bureau of Land Management (BLM) offices are the primary repositories of lease ownership information. Summaries of ownership data appear in serial books maintained in BLM public records room. More complete information is contained in voluminous case files which house correspondence, memoranda, and legal papers pertaining to each lease.

In October and November 1979, three trial data collection trips were made: one to Denver and two to Salt Lake City. The purpose of these trips was to gain a familiarity with the public records, to identify and resolve potential data collection problems, to organize data worksheets, and to collect a portion of ownership information from the States with the largest number of outstanding leases. Proposed worksheets were reviewed and modified.

The actual lease histories for 523 of the 538 leases were obtained during a 5-week field trip from mid-November through late December 1979. Serial pages for each of the leases were examined. A serial page records the date of lease assignments. The research team discovered that when more than one owner has held title to a lease at different times (true for 78 percent of the leases) or when more than one acreage modification has taken place (true for about 30 percent of the leases), the accurate sequence of title transfers and acreage changes often could not be ascertained from the serial pages alone. Accurate information for these leases was obtained from a review of the case files themselves.

In addition to the case files and serial books, the research team examined the corporate qualifications statements for as many of the present and past lessees as the BLM maintains records. These statements are contained in files generally housed in the offices of the land law examiners at each State BLM office.

The field trip covered leases in the States of California, New Mexico, Oklahoma, Colorado, Utah, Wyoming, Montana, and North Dakota. Lease ownership data for 15 leases in other States were obtained by mail or phone interviews with BLM staff in Fairbanks and Anchorage, Alaska, Portland, Oreg., and Alexandria, Va.

Lease ownership information was recorded on worksheets, one for each lease.

Data Organization

In order to study the changes and trends in lease ownership, seven key dates were selected for intensive study: January 2 of the years 1950, 1955, 1960, 1965, 1970, 1975, and 1980. Using the worksheets as data sources, the leases existing at each of these key dates were listed in ledger books. The ownership of each lease at each of the key dates was recorded as was the acreage of the lease at that time.

Analysis of this information enabled the research team to determine the total number of leases in effect at each of the seven dates, the total acreage under lease, and a complete list of lessees. As mentioned above, the total does not include all outstanding leases at each key date; rather it includes only those leases which are in existence now. Other leases in effect at one or more of the analysis dates, but subsequently relinquished, were not included in this study.

Lessee Analysis

The largest part of the analytical work in the study consisted of placing each present and past lessee into a category defined by its principal business activity and organization at the time it held the lease. This task was complicated because many leases have changed hands a number of times over the past 30 years and because there have been many changes in organization and business activity among the lessees themselves. Each change was identified and dated, and information about now defunct lessees was unearthed.

Even without these changes, designations of the principal business activities for many companies are often difficult to make. Increasingly, lessees include diversified companies involved in several businesses with no clearly dominant activity. Also, divisions between some categories—such as coal or oil versus resource development-are somewhat arbitrary. Furthermore, recognizing the difference between a small coal or metals company which has not mined for several years because of soft markets and a landholding company which does not plan to mine is often a complicated task. To the extent possible, the percent of total sales contributed by different business activities was used as the determinant of principal lines of business for lessees examined in this survey. For private companies which do not publish financial reports or small companies with little or no current income, the research team attempted to assess their business capabilities or intentions from interviews and published materials of a nonfinancial nature.

The major source of information for this phase of the study included the corporate qualification statements at the BLM; company annual reports; standard industry reference texts such as Moody's *Public Utilities, Over the Counter,* and *Industrial Guides;* interviews with State government, BLM, and U.S. Geological Survey officials, land law examiners, and coal specialists; interviews with members of the coal mining industry; and newspapers and periodicals such as the *Wall Street Journal, Coal Age,* and *Coal Outlook.*

The corporate data collected in this section of the study enabled the categorization of 99 percent of all present and past coal lessees and their controlling interests.

Any business category whose members controlled 5 percent of the land under lease at any of the seven analysis dates (either through lease ownership by an independent corporation or through parent company ownership of a lease) was identified for separate further analysis. Any lessee not falling clearly into an identifiable business category, but which on its own controlled 5 percent of leased land at any analysis date, was also separated for individual attention. All other lessees were combined into the other category. The business activity categories and individual lessees meeting the above criteria are:

Utilities;
Energy companies;
Steel companies;
Peabody Holding Co.;
Independent coal company;
Minor oil and gas companies;
Unincorporated individuals;
Natural gas pipeline companies;
Nonresource-related diversified companies;
Kemmerer Coal Co.;
Metals and mining companies;
Landholding companies; and
Other.

The criteria for categorization are explained in the respective business activity subchapters.

Next, each coal lessee was categorized according to its business organization, as follows:

Unincorporated individuals;
Independent corporations;
Subsidiary corporations; and
Multicorporate entities.

Lessees falling into the subsidiary or multicorporate business organization were further divided into the following categories:

Subsidiary coal mining companies;
Subsidiary resource development companies;
Subsidiary landholding companies; and
Passive subsidiaries (i.e., no active employees).

Final Data Analysis

With the lease history and corporate information in hand, it was possible to analyze lease ownership patterns at each of the seven key analysis dates. Lists of companies or individuals in each of the business categories at each of the dates were made. The same process was performed for business organizations, The total number of leases and acreage falling into each category was then tabulated. From this information, it was possible to analyze quantitatively changes in lease ownership by business activity and organization in relative and absolute terms over time.

Returning again to the worksheets, it was then possible to investigate the acquisition routes for leases eventually obtained by each business category.

The histories of coal leases include all transfers of title and acreage modifications from the date of lease issuance for competitive leases or the date of issuance of prospecting permits from which preference-right leases were derived until approximately the end of 1979. Several leases have been assigned since the lease assignment histories were collected for this project. No lease assignments approved in 1980 were included in this report, However, changes in lessee ownership through mergers and acquisitions which have been widely publicized have been included as comprehensively as possible in the lessee analysis portion of the report.

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