

CHAPTER 3

FEDERAL COAL LEASES 1985: AN ANALYSIS OF CURRENT DEVELOPMENT STATUS, OWNERSHIP TRENDS, AND POTENTIAL SECTION 3 COMPLIANCE

For this report, OTA reviewed some 648 Federal coal leases including over 100 leases issued since 1976 and more than 30 leases that were relinquished, exchanged, or consolidated since 1981. A nonproducing coal lease will create a section 3 disqualification for the lessee if the lease has been held for 10 or more years, is not producing coal in commercial quantities, and is not covered by one or more of the limited exceptions to section 3. To determine the extent of the possible impacts of section 3, OTA reviewed the development and production status of all Federal coal leases. OTA also reviewed the lease ownership histories for the leases to determine when the section 3 10-year holding period would expire for the current lessees. Information on lease ownership is discussed later in this section. OTA projected the section 3 compliance status for Federal coal lessees using the lease ownership and development status information in the OTA data base and estimates of future coal demand in western coal production regions.

Development and Production Status of Federal Coal Leases

The development status of Federal coal leases reflects their current mine plan status.¹ Leases with an approved mine plan are leases within or associated with a mine plan approved by the Department of the Interior (DOI) and include leases within the active permit area and leases designated in the unpermitted life of mine area. Leases with a pending mine plan are those leases covered by mine plans under active permit review by the Office of Surface Mining (OSM). Undeveloped leases are all leases that do not have an approved or pending mine plan.

Table 10 summarizes the development status of the 648 Federal coal leases in OTA's data base. They include 616 leases in the seven Western States, of Colorado, Montana, New Mexico, North Dakota, Oklahoma, Utah, and Wyoming. OTA focused on the Federal leases in these western States with 95 percent of the leases and over 99 percent of the leased reserves. The 32 remaining leases are in the States of Alaska (2), Alabama (15), California (1), Kentucky (5), Oregon (3), Pennsylvania (2), Virginia (1), and Washington (2).

In 1985, 333 leases, over half of the western leases, with 13.1 billion tons of recoverable reserves, almost 65 percent of the reserves under lease, were covered by an approved or pending mine plan. Over 250 leases remain undeveloped, however, and 32 leases have been relinquished, exchanged or consolidated since 1981.

OTA found that of the 616 western leases, 299 leases or 48.5 percent of all the leases in the 7 western States were being actively mined or are associated with an permitted mine. About 60 percent of the reserves under lease are covered by an approved mine plan. This category includes active mines, temporarily inactive permitted mines, newly permitted mines now under construction, and some leases that are outside of the permit area, but are scheduled for mining

¹OTA's development status classifications are based on our earlier work in U.S. Congress, Office of Technology Assessment, *An Assessment of Development and Production Potential of Federal Coal Leases*, (Washington, DC: U.S. Government Printing Office, December 1981) OTA-M-150.

TABLE 10

DEVELOPMENT STATUS OF FEDERAL COAL LEASES
(ALL LEASES, ALL STATES IN OTA DATABASE)
AUGUST 1985

STATE	DEVELOPMENT STATUS	NO. LEASES	%	ACRES	%	RECOVERABLE RESERVES	%
Colorado	Approved	81	55.1%	88,155	52.6%	1,153	43.6%
	Pending	6	4.1%	20,891	12.5%	136	5.1%
	Undeveloped	54	36.7%	55,246	33.0%	1,295	48.9%
	Relinquished	6	4.1%	3,355	2.0%	62	2.4%
	Subtotal	147		167,647		2,646	100%
Montana	Approved	19	70.4%	35,548	79.6%	974	59.9%
	Pending	2	7.4%	1,198	2.7%	150	9.2%
	Undeveloped	6	22.2%	7,893	17.7%	503	30.9%
	Relinquished	0	0.0%	0	0.0%	0	0.0%
	Subtotal	27		44,639		1,627	100%
New Mexico	Approved	17	54.8%	33,275	72.6%	314	66.9%
	Pending	1	3.2%	2,044	4.5%	60	12.8%
	Undeveloped	12	38.7%	9,287	20.3%	75	15.9%
	Relinquished	1	3.2%	1,240	2.7%	21	4.5%
	Subtotal	31		45,846		470	100%
North Dakota	Approved	16	76.2%	15,198	79.2%	220	82.7%
	Pending	0	0.0%	0	0.0%	0	0.0%
	Undeveloped	4	19.0%	3,914	20.4%	46	17.2%
	Relinquished	1	4.8%	80	0.4%	0	0.0%
	Subtotal	21		19,192		266	100%
Utah	Approved	77	35.2%	95,548	30.1%	1,210	34.6%
	Pending	20	9.1%	23,885	7.5%	300	8.6%
	Undeveloped	108	49.3%	174,841	55.1%	1,645	47.1%
	Relinquished	14	6.4%	22,844	7.2%	341	9.8%
	Subtotal	219		317,118		3,496	100%
Wyoming	Approved	82	68.3%	166,884	64.2%	8,323	74.4%
	Pending	3	2.5%	3,580	1.4%	268	2.4%
	Undeveloped	26	21.7%	78,242	30.1%	2,387	21.3%
	Relinquished	9	7.5%	11,438	4.4%	216	1.9%
	Subtotal	120		260,144		11,194	100%
Oklahoma	Approved	6	11.8%	8,666	10.6%	6	2.9%
	Pending	3	5.9%	4,900	6.0%	15	7.4%
	Undeveloped	40	78.4%	66,851	82.0%	179	89.5%
	Relinquished	2	3.9%	1,120	1.4%	0	0.0%
	Subtotal	51		81,537		201	100%
Total West	Approved	298	48.4%	443,274	47.4%	12,200	61.3%
	Pending	35	5.7%	56,498	6.0%	928	4.7%
	Undeveloped	250	40.6%	396,274	42.3%	6,130	30.8%
	Relinquished	33	5.4%	40,077	4.3%	641	3.2%
	Subtotal	616		936,123		19,899	100%
Other States							
East	not determined	24		17,868		64	
Other West	not determined	8		9,173		39	
	Subtotal	32		27,041		103	
Total All Leases		648		963,164		20,003	

NOTE: All reserves in millions of tons.

SOURCE: Office of Technology Assessment

later. Table 11 summarizes the production status of existing Federal coal leases in western States.

A mine is "producing" if coal was mined in 1983, 1984 or 1985 and the mine has not been shut down. Table 11 shows the current production status of western leases and also the number of leases within and outside the mine permit mine areas.

The approved mine plan category includes leases generally considered as "producing", however, not all the 299 leases in this category have actually been mined. OTA found 226 leases in active mines, but actual production was reported on only 118 leases in 1984. There are a number of reasons why some "producing" leases may not have reported production in any given year. The sequence of mining operations in multi-lease tracts can mean that a Federal lease might be mined only every few years over the mine life or perhaps only once during the 40 years that a mine is in operation. Some leases in active mines may have already been depleted; eight leases were in this category in 1985. These leases aren't producing, because presumably there aren't any recoverable reserves left. The depleted leases can not be relinquished because reclamation is incomplete and, in some cases, the lessee may need to maintain control over the lands for reclamation or mine access.

OTA identified 39 leases in inactive permitted mines which were shut down because of poor markets, or accidents, or other reasons. The approved mine plan category includes 6 leases in permitted mines that have not begun producing to meet scheduled contract commitments and

Table 11

**PRODUCTION STATUS OF FEDERAL COAL LEASES
IN SEVEN WESTERN STATES**

Development Status	Production Status	<u>Total</u>		Reserves	<u>In Permit</u>		<u>Outside Permit</u>	
		No. Leases	Acres		No. Leases	Acres	No. Leases	Acres
Approved Permit	Producing	226	333,277	9,676	190	288,094	36	45,183
	Mined Out	8	12,908	12	8	12,908	0	0
	Inactive	39	50,644	515	34	42,745	5	7,899
	Contracts	6	14,679	1,226	6	14,679	0	0
	No Contracts	19	31,766	806	19	31,766	0	0
	Subtotal	298	443,274	12,236	257	390,192	41	53,082
Pending Permit	Contracts	4	6,944	7	5	4	0	0
	No Contracts	31	49,544	835	26	33,108	5	16,446
	Subtotal	35	56,498	928	30	40,052	5	16,446
Undeveloped	No Production	206	366,785	5,863				
	Past Prod.	44	29,489	267				
	Subtotal	250	396,274	6,130				
TOTAL		583	896,046	19,294				

All reserves in millions of tons.

NOTE: Totals exclude leases that have been relinquished and 32 leases outside of the seven Western States. Individual column entries may not add to totals because of independent rounding.

SOURCE: Office of Technology Assessment

another 19 leases in permitted mines that have no contracts. There are 41 leases outside the active permit areas which have been designated by the operator to be mined over the life of the mine.

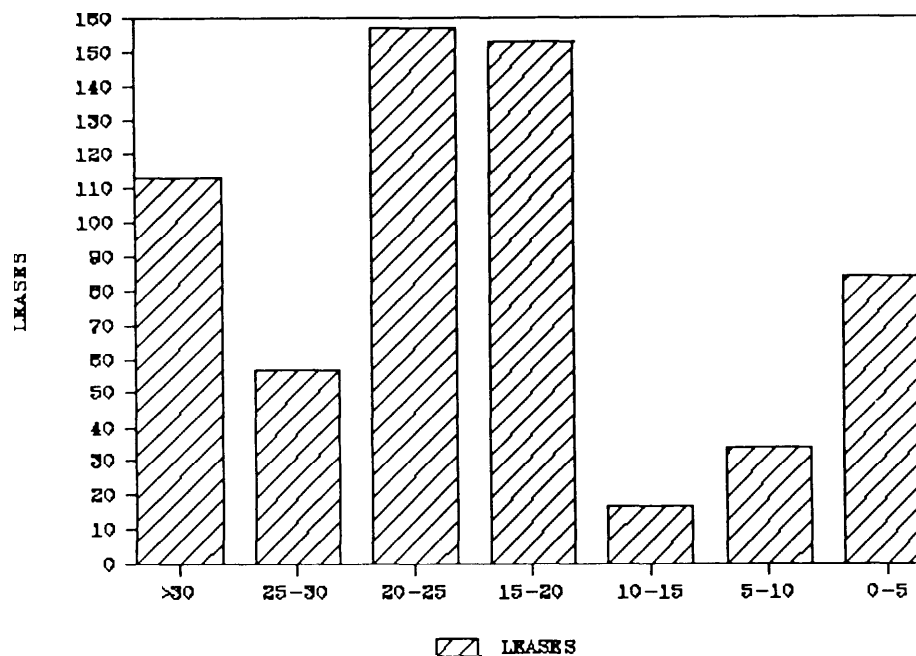
There were 35 leases with mine plans covering some 928 million tons of reserves under review in 1984-85. The pending mine plan category includes some leases that, because of poor market conditions, may not be mined in the near future even if the mine is permitted.

There are 250 leases still undeveloped. They contain about 6.1 billion tons of recoverable reserves or roughly 30 percent of all Federal leased reserves. They include some leases with inactive mine plans and others where some initial development work, such as environmental baseline studies, may have been completed or be ongoing. At least 44 undeveloped leases were mined in the past, but mining and reclamation activities have now been abandoned. The remaining 179 undeveloped leases appear to have had no production at all.

OTA found 33 leases that have been or are being relinquished. Many of these leases, particularly those with unfavorable short term development potential, are being turned back to avoid section 3 problems for the lessees or their parent companies and affiliates. Among companies that have indicated that they have or are planning to relinquish leases are: Gulf Oil Corp., Shell Oil, Atlantic Richfield Co., Montana Power Co., and Peabody Holding Co.

Figure 2.

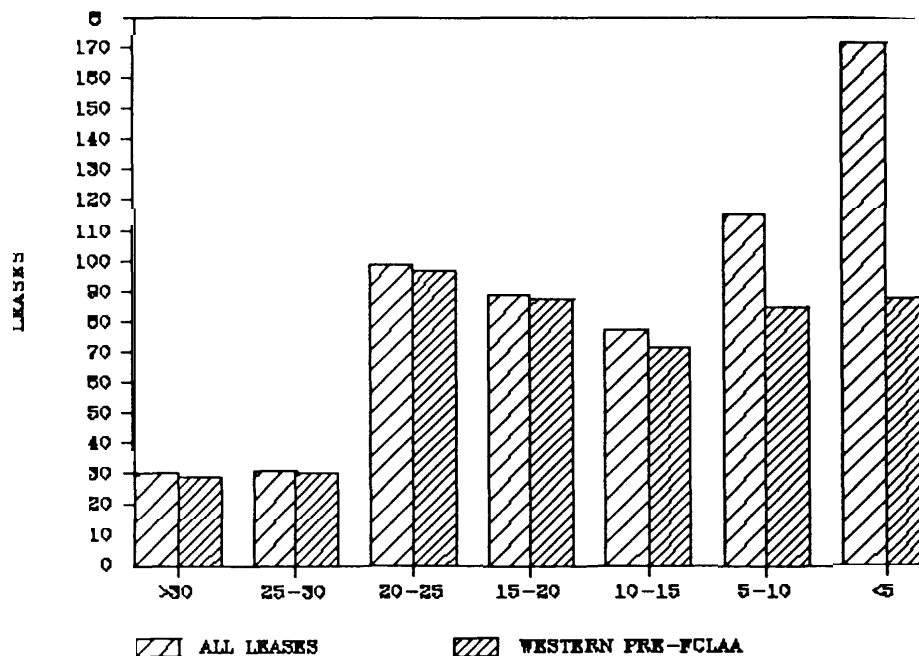
Age of Federal Coal Leases



Source: Office of Technology Assessment

Figure 3.

How Long Have Leases Been Held?



Source: Office of Technology Assessment

SECTION 3 COMPLIANCE STATUS OF FEDERAL COAL LEASES

As a precondition for a section 3 disqualification, a lessee or a related entity must have held the nonproducing lease for at least 10 years after August 4, 1976. Figure 2 shows the age of all existing leases. Fifty-three percent of existing leases are over 20 years old; 65 percent of pre-FCLAA leases are more than 20 years old. Figure 3 shows how long existing leases have been held by the current owners. (If a lease is held by more than one party, only the longest period of ownership was used.) About 39 percent of existing leases have been held for more than 20 years; almost half of the pre-FCLAA leases have been held for more than 20 years. Sixty-five percent of the pre-FCLAA leases have been held by their current owners for more than 15 years.

Section 3's primary impacts will be on the leases that were issued before enactment of FCLAA in 1976 (pre-FCLAA or "old" leases). OTA has generally excluded the new post-FCLAA leases from its section 3 analysis, but we did include new leases issued under pre-FCLAA terms and conditions as a result of lease exchanges. Table 12 shows the current development status of the 489 pre-FCLAA leases still in effect in the seven western States. Lessees have relinquished or exchanged 32 other pre-FCLAA leases since 1981. Slightly less than half of the western pre-FCLAA leases, 235 leases, have approved mine plans and 31 pre-FCLAA leases are in pending mine plans. There are 223 western pre-FCLAA leases with over 4.8 billion tons of coal reserves that are currently undeveloped.

Table 12
DEVELOPMENT STATUS OF PRE-FCLAA LEASES
IN 7 WESTERN STATES
AUGUST 1985

STATE	DEVELOPMENT STATUS	NO. LEASES	%	ACRES	%	RECOVERABLE RESERVES	%
Col orado	Approved	60	55.0%	72,934	60.2%	921	48.5%
	Pendi ng	3	2.8%	6,162	5.1%	12	0.6%
	Undevel oped	46	42.2%	41,973	34.7%	967	50.9%
	Subtotal	109	100%	121,069	100%	1,900	100%
Montana	Approved	11	61.1%	29,303	80.7%	805	62.9%
	Pendi ng	2	11.1%	1,198	3.3%	150	11.7%
	Undeveloped	5	27.8%	5,797	16.0%	325	25.4%
	Subtotal	18	100%	36,298	100%	1,280	100%
New Mexico	Approved	15	55.6%	28,491	71.8%	218	61.9%
	Pendi ng	1	3.7%	2,044	5.2%	60	17.0%
	Undevel oped	11	40.7%	9,127	23.0%	74	21.0%
	Subtotal	27	100%	39,662	100%	352	100%
North Dakota	Approved	11	73.3%	12,449	76.1%	187	80.3%
	Pendi ng	0	0.0%	0	0.0%	0	0.0%
	Undevel oped	4	26.7%	3,914	23.9%	46	19.7%
	Subtotal	15	100%	16,363	100%	233	100%
Utah	Approved	65	35.3%	78,916	32.7%	1,123	39.0%
	Pendi ng	19	10.3%	23,245	9.6%	300	10.4%
	Undevel oped	100	54.3%	139,213	57.7%	1,460	50.6%
	Subtotal	184	100%	241,374	100%	2,882	100%
Wyomi ng	Approved	68	73.7%	147,437	69.5%	7,334	78.3%
	Pendi ng	3	3.2%	3,580	1.8%	268	2.9%
	Undevel oped	22	23.7%	58,514	28.7%	1,768	18.9%
	Subtotal	93	100%	203,531	100%	9,371	100%
Okla homa	Approved	5	11.6%	8,526	11.7%	6	3.2%
	Pendi ng	3	7.0%	4,900	6.7%	15	8.0%
	Undevel oped	35	81.4%	59,596	81.6%	163	88.8%
	Subtotal	43	100%	73,022	100%	184	100%
All West	Approved	235	48.1%	372,056	50.9%	10,594	65.4%
	Pendi ng	31	6.3%	41,129	5.6%	804	5.0%
	Undevel oped	223	45.6%	318,134	43.5%	4,803	29.6%
	TOTAL	489	100%	731,319	100%	16,201	100%

NOTE: All reserves in millions of tons

SOURCE: Office of Technology Assessment

OTA's review of the development status of the 12 pre-FCLAA leases in other States was limited. We determined, however, that at least five of the leases are part of mines that were producing in 1984 and five more leases are undeveloped. At least three undeveloped leases have abandoned mine workings. The current development status of two leases was undetermined.

OTA estimated the section 3 production deadlines for all pre-FCLAA coal leases using information on coal lease assignments and corporate ownership. Table 13 shows these results. (Note: The effective date for section 3 disqualifications was extended to December 31, 1986, by the Continuing Appropriations Resolution for Fiscal Year 1986; Public Law, 99-190. This delay does not affect the results of OTA's analysis of section 3 compliance).

OTA found that 331 western pre-FCLAA leases, 67 percent of these leases, will have been held by the current lessee for 10 or more years on August 4, 1986 and thus must be producing in commercial quantities to enable the lessee and all related entities to acquire onshore mineral leases. over 70 percent of these 331 leases have been held for over 15 years. Because of assignments and other lease transfers, 158 leases will not be subject to potential section 3 disqualification until after August 4, 1986. OTA assumed that most lease assignments made as part of a corporate acquisition and merger would not restart the 10-year section 3 clock for purposes of this analysis.

TABLE 13
SECTION 3 DATES FOR PRE-FCLAA FEDERAL COAL LEASES
IN THE SEVEN WESTERN STATES

SECTION 3 DATE*	SECTION 3 COMPLIANCE	NO. OF LEASES	ACRES	RESERVES**
Aug. 4, 1986	In Compliance	134	228,477	7,491
	Uncertain	27	42,307	942
	Noncompliance	170	247,404	5,035
	Subtotal	331	518,188	13,468
Aug. 5, 1986 to Aug. 4, 1991	In Compliance	23	21,715	293
	Uncertain	10	18,457	344
	Noncompliance	39	57,904	536
	Subtotal	72	98,076	1,173
After Aug. 4, 1991	In Compliance	32	41,934	522
	Uncertain	19	34,390	355
	Noncompliance	35	38,731	683
	Subtotal	86	115,055	1,561
	TOTAL	489	731,319	16,201
	In Compliance	189	292,126	8,306
	Uncertain	56	95,154	1,641
	Noncompliance	244	344,039	6,254

NOTES :

* All reserves in millions of tons

* Section 3 date is earliest section 3 date for lease, if there is more than one lessee.

** Total recoverable reserves include pre-FCLAA reserves only; total reserves may include some associated reserves with later section 3 dates because reserves data were sometimes not available on a lease by lease basis.

SOURCE: Office of Technology Assessment

TABLE 14
SECTION 3 COMPLIANCE STATUS OF PRE-FCLAA LEASES
IN 7 WESTERN COAL STATES

STATE	COMPLIANCE	LEASES	%	ACRES	%	RESERVES	%
COLORADO	Li kel y	51	46.8%	53,082	43.8%	745	39.2%
	Uncertai n	11	10.1%	22,094	18.2%	150	7.9%
	Unl i kel y	47	43.1%	45,893	37.9%	1,005	52.9%
	Total	109	100%	121,069	100%	1,900	100%
MONTANA	Li kel y	11	61.1%	29,303	80.7%	805	62.9%
	Uncertai n		0.0%		0.0%		0.0%
	Unl i kel y	7	38.9%	6,995	19.3%	475	37.1%
	Total	18	100%	36,298	100%	1,280	100%
NEW MEXICO	Li kel y	11	40.7%	21,229	53.5%	222	63.1%
	Uncertai n		0.0%		0.0%		0.0%
	Unl i kel y	16	59.3%	18,433	46.5%	130	36.9%
	Total	27	100%	39,662	100%	352	100%
NORTH DAKOTA	Li kel y	7	46.7%	8,931	54.6%	127	54.2%
	Uncertai n	4	26.7%	3,518	21.5%	61	26.1%
	Unl i kel y	4	26.7%	3,914	23.9%	46	19.7%
	Total	15	100%	16,363	100%	233	100%
UTAH	Li kel y	49	26.6%	51,622	21.4%	864	30.0%
	Uncertai n	17	9.2%	29,865	12.4%	326	11.3%
	Unl i kel y	118	64.1%	159,887	66.2%	1,692	58.7%
	Total	184	100%	241,374	100%	2,882	100%
WYOMI NG	Li kel y	52	55.9%	114,533	56.3%	5,523	58.9%
	Uncertai n	14	15.1%	19,042	9.4%	1,046	11.2%
	Unl i kel y	27	29.0%	69,956	34.4%	2,802	29.9%
	Total	93	100%	203,531	100%	9,370	100%
OKLAHOMA	Li kel y	8	18.6%	13,426	18.4%	21	11.2%
	Uncertai n	10	23.3%	20,635	28.3%	59	32.1%
	Unl i kel y	25	58.1%	38,961	53.4%	104	56.7%
	Total	43	100%	73,022	100%	184	100%
TOTAL WEST	Li kel y	189	38.7%	292,126	39.9%	8,306	51.3%
	Uncertai n	56	11.5%	95,154	13.0%	1,641	10.1%
	Unl i kel y	244	49.9%	344,039	47.0%	6,254	38.6%
	Total	489	100%	731,319	100%	16,201	100%

All reserves in millions of tons

Note: Table excludes leases that have been relinquished, exchanged or consolidated, post-FCLAA leases, and leases outside of the 7 major western coal States.

SOURCE: Office of Technology Assessment

Using the information on lease development and production status and lease ownership histories, OTA projected the likely section 3 compliance status of the 489 western pre-FCLAA leases. The aggregate results of this analysis are shown in table 13. The results of this analysis by State are shown in table 14.

OTA estimates that 189 leases will comply with the section 3 production requirement. These leases contain over 8.3 billion tons of coal, slightly over half of the pre-FCLAA lease reserves. In making these estimates, OTA assumed that lessees with active mines with producing Federal leases would form LMUs if necessary to satisfy the section 3 "producing in commercial quantities" requirement for any nonproducing pre-FCLAA leases in their mines.

OTA found 56 leases with 1.6 billion tons of coal that are uncertain to comply with the section 3 producing in commercial quantities requirement. Leases were rated as "uncertain" if: 1) the mine was not producing at a rate of 1 percent of reserves annually; or 2) it has no reported coal contracts and the existing regional mine capacity is 100 to 150 percent of projected regional demand in the year the lessee's section 3 deadline occurs; or 3) the mine has not yet begun Federal coal production and the lessee must form an LMU with non-Federal coal. Many of the mines with uncertain status could comply with section 3 if an LMU were approved, but the terms of some non-Federal coal leases or the amount of reserves involved may make it undesirable to do so. OTA believes that most of the leases in the uncertain compliance category could eventually comply with section 3, however some lessees may be disqualified briefly and others may have to relinquish or sell some nonproducing reserves so that their actual production levels meet the 1 percent commercial quantities test.

TABLE 15
REASONS FOR PROJECTED SECTION 3 COMPLIANCE STATUS
FOR PRE-FCLAA LEASES IN 7 WESTERN STATES

STATUS	LEASES	%	ACRES	%	RESERVES	%
Likely to Comply	189	38.7%	292,126	39.9%	8,306	51.3%
Producing commercial quantities	169	34.6%	248,364	34.0%	6,686	41.3%
will produce commercial quantities	13	2.7%	30,994	4.2%	1,610	9.9%
Reserves "mined out"	7	1.4%	12,768	1.7%	10	0.1%
Uncertain to Comply	56	11.5%	95,154	13.0%	1,641	10.1%
Limited coal demand	35	7.2%	64,066	8.8%	978	6.0%
Non-Federal LMU approval required	21	4.3%	31,088	4.3%	663	4.1%
Unlikely to Comply	244	49.9%	344,039	47.0%	6,254	38.6%
Limited coal demand	178	36.4%	266,980	36.5%	4,085	25.2%
Suitable for onsite use only	13	2.7%	19,093	2.6%	1,264	7.8%
Unfavorable development potential	53	10.8%	57,966	7.9%	905	5.6%
TOTAL	489	100.0%	731,319	100.0%	16,201	100.0%

All reserves in millions of tons.

SOURCE: Office of Technology Assessment

OTA found 244 leases that are unlikely to satisfy the section 3 production requirement. Table 15 summarizes the reasons why OTA believes these leases will not be producing. Lack of markets was the major reason for nonproduction for 178 leases with over 4 billion tons of reserves. These leases generally have good quality minable reserves which are comparable in mining cost to reserves currently being mined, but under the current coal demand outlook, these reserves are unmarketable. Another 13 leases with over 1.2 billion tons of reserves are also currently unmarketable, but these reserves were found by OTA to be suitable only for onsite or near site use for power generation or synthetic fuels production. Unfavorable development potential, i.e. insufficient or poor quality reserves, bad mining conditions, access problems, and environmental conflicts, were the primary reasons why 53 leases with about 900 million tons of reserves would not be producing.

Under the most optimistic mine development schedule, a minimum of 18 months is needed to begin producing once a mine has been permitted. Given this minimum lead time, coal leases that have not yet been permitted or are not associated with a producing mine are unlikely to be producing in commercial quantities by August 4, 1986, the earliest section 3 "deadline" for Federal coal lessees. OTA estimates that 170 leases that have been held for 10 years are unlikely to be producing in commercial quantities by August 4, 1986; another 27 are uncertain to comply on that date. (See table 13). For leases with later section 3 production dates, we estimate that there are 91 leases that are unlikely to comply and 29 leases with uncertain compliance status. These lessees face a section 3 nonproduction penalty unless they sell or turn back any leases with compliance problems.

The section 3 production requirement applies only indirectly to the existing leases. Nothing happens to the noncomplying lease, it is not terminated or subject to economic penalties under existing law. Section 3 penalizes the lessee by disqualifying that person or corporation and all related business entities from acquiring any new Federal onshore mineral leases as long as the old lease is in noncompliance. OTA has determined that the 300 leases that are uncertain or unlikely to comply with section 3 are held by about 120 different lessees. The 120 lessees include leaseholders who hold only a percentage interest of a lease or who share an undivided interest in a lease. When the leaseholdings are attributed back to parent corporations and joint venture partners, about 87 distinct controlling entities are affected. These affected entities include 20 individuals or joint family holdings and 67 corporate and other business entities. These other business entities include partnerships, business trusts, a university, and a church. The ownership patterns of Federal coal leases and the impacts of section 3 on major leaseholders are discussed in the following section of this report.

Section 3 and Federal Coal Lease Ownership

Analysis of lease ownership information is essential to an understanding of the potential impacts of section 3 and proposed amendments to it. This section summarizes changes in lease ownership and coal production patterns on western public lands since the passage of FCLAA and discusses some of the complex ownership arrangements that could affect a company's susceptibility to section 3. The industry groups and companies most likely to face section 3 sanctions are identified.

BUSINESS STRUCTURE OF CURRENT LESSEES

Title to the 615 existing leases are held by some 220 different lessees. These included corporations, partnerships, individuals, trustees, trusts, joint ventures, and other business entities.² Because the section 3 noncompliance status of the title holder is attributed to related business entities, it is necessary to determine whether a lessee is owned by or under the control of another party.

OTA identified some 114 lessees that are actually subsidiaries of other companies. There are 51 lessees who hold leases in the name of the sole or parent corporation and 14 lessees that are joint ventures of two or more companies. (see table 16). One of the largest leaseholders, Peabody Coal Co., is a subsidiary of Peabody Holding Co. which is owned in turn by a consortium of five other companies.

Five coal lessees are actually trusts or trustees for individual beneficiaries. Under one unusual arrangement Bank of America holds four New Mexico leases as trustee for a trust established by the former lessees, two southwestern utilities. Shares in the trust are being sold to investors. Before establishing the trust, the beneficiary utilities subleased all the mine operating rights in exchange for an overriding royalty. The coal mined from leases is burned in a powerplant operated by one of the lessees. In another unusual ownership structure, an Oklahoma lessee is acting as the 'nominee' for two banks which may own the leases or are acting on behalf of others. Thirty-five individuals also own Federal coal leases. A list of current coal lessees and their parent companies can be found in Appendix D.

OVERVIEW OF FEDERAL COAL LEASE OWNERSHIP TRENDS 1975-85

Control of Federal coal leases has generally been transferred by one of two methods, assignments and corporate acquisitions. Between August 1976 and the beginning of 1985 about half of all pre-FCLAA leases were either assigned or transferred through a corporate acquisition, or both. Figure 4 shows how current lessees initially acquired their leases.

An assignment is the transfer of the legal title to a Federal coal lease from one party to another. Assignments also include any transfer of a shared partial interest in the lease and lease segregation, the subdivision and transfer of a portion of the leased acreage through creation of a separate new lease. OTA excluded all assignments to a party that is controlled by or affiliated with the assignor from its analysis for section 3 purposes. Lease assignments among unaffiliated entities have occurred at least 177 times between the passage of FCLAA and March 1985 involving some 147 leases. At least 79 such ownership transactions have been completed. As of the beginning of 1985, assignment applications involving several dozen additional leases were pending before the Bureau of Land Management (BLM).

Control of Federal coal leases can also change with the transfer of ownership of the lessee company to another company, even though the legal title to the lease remains unchanged. Since passage of FCLAA, 17 corporate acquisitions affecting the ownership of leaseholding companies have been completed. These acquisitions involve approximately 154 leases and are shown in table 17.

² See U. S. Congress, Office of Technology Assessment technical memorandum, Patterns and Trends in Federal Coal Lease Ownership 1950-80, (Washington, DC: U.S. Government Printing Office, March 1981) OTA-TM-M-7, at 6-8 for a more exhaustive discussion of various types of business organizations that hold leases.

Table 16

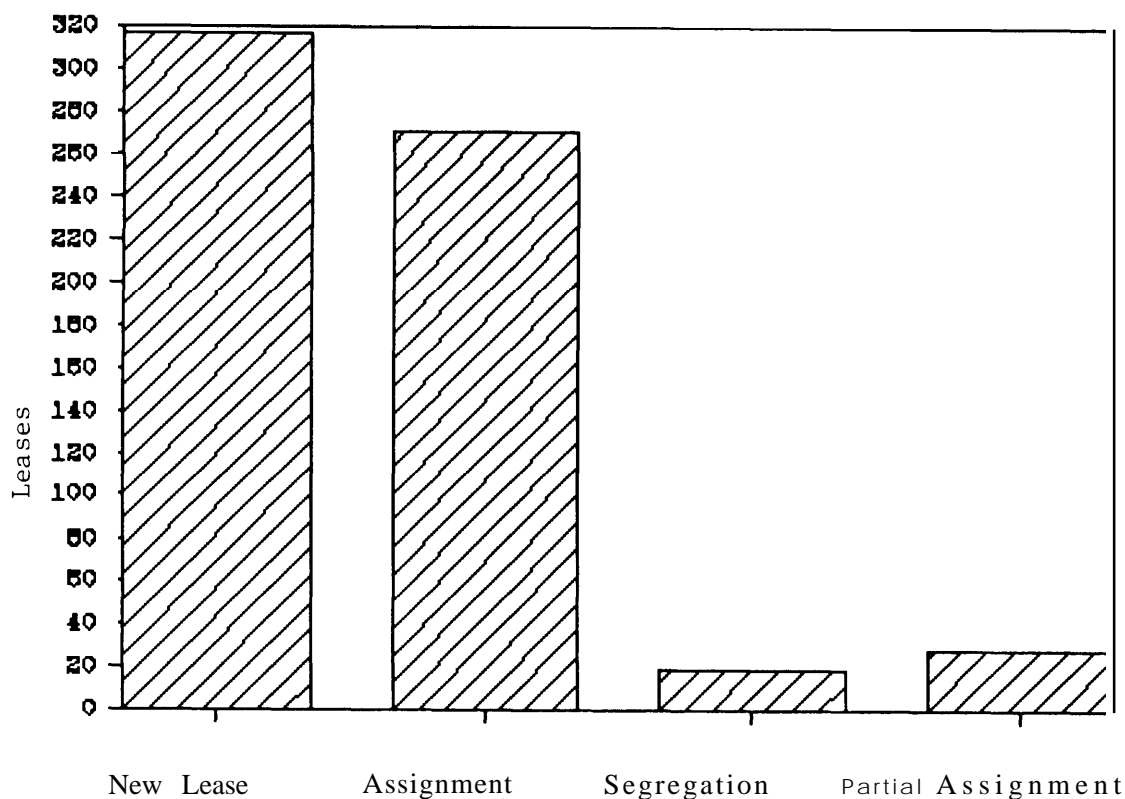
JOINT VENTURES OWNING FEDERAL COAL LEASES

<u>Joint Venture (Subsidiary)</u>	<u>Part i c i pants</u>
Arch Minerals (Ark Land)	Ashland Oil (50%) Hunt Enterprises(25%) Hunt Petroleun Corp.(25%)
Black Butte Coal Co.	Peter Kiewit Sons, Inc. Union Pacific Corp. (Rocky Mountain Energy Co.)
Bridger Coal Co.	Pacific Power & Light Co. Idaho Power Co.
Colowyo Coal Co.	W. R. Grace & Co. Hanna Mining Corp.
Cumberland Coal Co.	Peter Kiewit Sons, Inc. Union pacific Corp. (Rocky Mountain Energy Co.)
Fort Union Mine Partnership	Frontier Coal Co. (90%) (American subsidiary of Total Petroleun, a French Company) Transit Coal Co. (10%) (Subsidiary of Frontier Coal Co.)
Grand Mesa Properties, Inc.	Eastern Gas & Fuel Associates NICOR, Inc.
Carbon Coal	Hamilton Bros Joint Venture (80%) Hamilton Bros Oil Co. Hamilton Bros Exploration Co. Hamilton Bros Corp.
Hayden Gulf West Coal Co.	W.R. Grace & Co. Hanna Mining
Medicine Bow Coal Co.	Arch Minerals: Ashland Oil (50%) Hunt Enterprises (25%) Hunt Petroleum Corp. (25%) Union Pacific Corp. (Rocky Mountain Energy Co.)
P. I. I. West Ltd.	Petroleun International, Inc. Westhoff Brothers Inc.
Powderhorn Properties	Eastern Gas & Fuels Associates NICOR, Inc.
Salt Creek Mining Co.	Occidental Petroleum Corp. Colorado-Ute Electric Association
Snowmass Coal Co.	Eastern Gas & Fuels Associates NICOR, Inc.

SOURCE: Office of Technology Assessment

Figure 4.

How Federal Coal Leases Were Acquired



Source: Office of Technology Assessment

As with assignments, several corporate transactions affecting Federal leases are pending completion or have been completed after the preparation of the OTA database used in this study. These include: the purchase of Kaiser Steel Co.'s western coal operations by a subsidiary of Perma Resources Corp.; the sale of some of Texaco's coal operations acquired in its purchase of Getty Oil Co. to Cypress Mining, an independent company recently created by a spinoff from AMOCO; and the purchase of Soldier Creek Coal Co. by SUNEDCO, a subsidiary of The Sun Co.³ Control of some leases has been affected by both assignments and acquisitions. In addition to assignments and acquisitions, there are other types of ownership changes involving Federal leases, such as changes in joint venture partners. These transactions, although important for the purposes of interpreting section 3 impacts, affect a small number of leases.

³Coal Week, July 1, 1985.

Table 17

CORPORATE ACQUISITIONS AFFECTING LESSEES SINCE PASSAGE OF FCLAA

<u>Company:</u>	<u>Acquired BY:</u>
Sunland Mining	Pyro Energy Co.
Energy Fuels Co.	Getty Oil Corp.
Getty Oil Corp.	Texaco, Inc.
Kemmerer Coal Co.	Gulf Oil Corp.
Gulf Oil Corp.	Chevron Corp.
Empire Energy Co.	Standard Oil of Indiana Co. (AMOCO)
Peabody Coal Co.	Peabody Holding Co.
Cambridge Mining Co.	General Exploration Co.
Anchor Coal Co.	Fluor Corp.
Consolidation Coal Co. (CONOCO)	E. I. du Pont de Nemours & Co.
Swisher Coal Co.	Atlantic Richfield Co.
U. S. Fuel Co.	Sharon Steel Corp.
Utah International, Inc.	Broken Hill Proprietary, Ltd.
Belco Petroleum Corp.	Internorth Corp.
Midcontinent Limestone	Pitkin Iron Corp.
Western Slope Carbon Co.	The Williams Companies
Energy Reserves Group, Inc.	Broken Hill Proprietary, Ltd.

SOURCE: Office of Technology Assessment

OWNERSHIP AND PRODUCTION BY INDUSTRY CATEGORY 1975-85

OTA has previously summarized the changes in lease ownership patterns for 13 different industry categories from over 30 years. That information is updated here for the 11 categories still active in Federal leasing. The industry categories were selected in 1979 based on historical patterns existing then; each separate group or company controlled at least 5 percent of acreage under lease at one or more of the 5-year intervals used in the analysis. This information is useful in defining the types of companies that are active in the Federal coal leasing program and in assessing potential impacts of policy changes on them. The 11 industry categories and the companies in each are listed in the appendix.

Table 18 shows the total Federal lease acreage held by each industry category in 1975, 1980 and late 1985. (Individual leases vary in size from 40 acres to over 10,000 acres, so that acreage provides an alternative indication of the relative size and importance of leaseholdings.) The electric utility industry has been and continues to be the largest industry group holding leases. Utilities have increased their share of Federal lease acreage over the past five years. The major oil companies category is the third largest group of leaseholders, and if the holdings of the DuPont subsidiary Conoco are added, the major oil companies actually control over 190,000 leased acres, making them the second largest group. The holdings of independent coal companies and individuals (many of whom were lease brokers or speculators) have dropped precipitously over the past decade. Nonresource-related diversified companies significantly increased their leaseholdings during the same period. This group includes large chemical companies, such as DuPont. Another growing category are companies in the "other" category,

TABLE 18
OWNERSHIP OF FEDERAL COAL LEASES
BY INDUSTRY CATEGORY - 1975, 1980, AND 1984

BUSINESS CATEGORY	OWNERSHIP		OWNERSHIP		OWNERSHIP	
	Acres	%	Acres	%	Acres	%
Utilities	142,077	19%	163,259	21%	204,567	22%
Other Co's.	70,124	9%	84,367	10%	189,159	20%
Oil majors	138,409	18%	155,024	20%	141,157	15%
Nonres. Divers. Co's.	12,580	2%	35,675	5%	85,211	9%
Oil & Gas Co's.	42,193	5%	45,926	6%	70,365	8%
Steel Co's.	49,448	6%	60,015	8%	61,986	7%
Coal Co's.	92,825	12%	87,601	11%	55,247	6%
Metals & Mining Co's.	49,377	6%	17,620	2%	40,229	4%
Natural Gas Co's.	32,522	4%	36,317	5%	36,231	4%
Peabody Holding Co.	68,923	9%	62,009	8%	20,382	2%
Individuals	66,515	8%	43,215	4%	18,553	2%
TOTAL	764,993	100%	791,028	100%	923,087	100%

NOTE: Acreage includes all existing Federal coal leases, but excludes relinquishments.

SOURCE: Office of Technology Assessment

which embraces such diverse businesses as railroads, banks, cement producers, and construction companies. (Although section 2(c) of the MLA prohibits the land grant railroads from owning Federal coal leases except for their own use, they nevertheless hold interests in Federal coal leases. Several leases are held by joint ventures between the railroad's mining subsidiaries and other firms and thus avoided the 2(c) ban. According to lease records, the assignment of two small New Mexico leases to the mining affiliate of the Santa Fe Railroad was approved by the Department after 1981, despite the statutory prohibition).

The aggregate data in table 18 are the result of a large number of transactions involving lease and lessee ownership. The aggregate totals for the business categories are in some cases unaffected by transactions between companies in the same group, such as Chevron's acquisition of Gulf Oil Corp. Also, transfers of leases between companies in different industry categories were often partly or completely offset by other transactions. Gulf Oil Corp.'s purchase of Kemmerer Coal Co., for example, greatly increased the holdings of the oil majors, but DuPont's purchase of Conoco, Inc. resulted in the removal of a large number of leases from that group.

Tables 19, 20 and 21 shows how lease ownership by industry category and the amount of Federal coal produced from those leases changed over the past decade. In the mid-1970s, electric utilities were by far the largest producers of Federal coal, independent coal companies and metals and mining companies also produced a disproportionately large amount of coal compared to the number of acres they held under lease. In contrast the share of total Federal coal production of many lessees involved in oil and gas operations, including major oil firms, natural gas pipeline companies, and smaller oil and gas companies, was substantially less than their proportionate share of Federal lease acreage.

Production patterns on Federal lease tracts have changed dramatically since the mid-1970s. Major oil companies, which produced only minimal quantities of Federal coal in the mid-1970s and which were accused by some of deliberately holding coal land out of production

in order to raise the price of oil, have emerged as perhaps the dominant coal producers in the West. Small oil and gas companies and metals and mining companies now produce a higher percentage of coal than predicted by the size of their holdings, while the remaining industry categories underproduce relative to the size of their holdings.

The ownership and production patterns of Federal coal leases have also changed since FCLAA was passed. One of the concerns of Congress was to limit two practices which held potential for speculative gain from Federal reserves: (1) holding reserves with no intent of production for later resale at a profit to others; and (2) deferring production from Federal reserves with the expectation of mining the coal when the price of coal rises or mining costs decline generating greater profits in the future than could be gained by mining now. The potential for speculation by individuals and small companies without the technical or financial capability of mining coal has declined markedly as many of their leases have been transferred to companies in other business categories. However, many large companies continue to hold sizable undeveloped lease tracts that are not in production, suggesting that the potential for reaping greater future profits through the strategic holding of nonproducing reserves by firms capable of mining coal still exists. Coal production has grown substantially in a decade, yet about 40 percent of the existing leases are still undeveloped.

Appendix A contains a brief discussion of the current leaseholdings of major industry categories and the significant changes since 1975.

Table 19

**OWNERSHIP AND PRODUCTION OF FEDERAL COAL LEASES
BY INDUSTRY CATEGORY - MID 1970'S**

BUSINESS CATEGORY	OWNERSHIP	1975	PRODUCTION	1972
	Acres	%	Million Tons	%
Utilities	142,077	20%	4.8	47%
Oil majors	138,409	19%	0.5	5%
Other Company	63,276	9%	0.5	4%
Nonresource related				
Diversified Companies	12,580	2%	0	0%
Steel Companies	49,448	7%	0.8	7%
Peabody Holding Co.	68,923	10%	0	0%
Oil & Gas Co's.	42,193	6%	0.2	2%
Metals & Mining Co's.	49,377	7%	1.2	12%
Natural Gas Co's.	32,522	4%	0	0%
Coal Co's.	58,837	8%	2.0	20%
Individuals	66,515	9%	0.3	3%
TOTAL	724,157	100%	10.3	100%

SOURCE : Office of Technology Assessment

TABLE 20

OWNERSHIP AND PRODUCTION OF FEDERAL COAL LEASES
BY INDUSTRY CATEGORY - ABOUT 1980

BUSINESS CATEGORY	OWNERSHIP Acres	1980 %	PRODUCTION Million Tons	1979 %
Utilities	163,259	21%	17.8	30%
Oil majors	155,024	20%	9.9	16%
Coal Co's.	87,601	11%	4.4	7%
Other Co's.	84,367	10%	5.2	9%
Peabody Holding Co.	62,009	8%	2.2	4%
Steel Co's.	60,015	8%	1.3	2%
Oil & Gas Co's.	45,926	6%	5.3	9%
Individuals	43,215	5%	0.7	1%
Natural Gas Co's.	36,317	5%	2.4	4%
Nonres. Divers. Co's.	35,675	4%	1.0	2%
Metals & Mining Co's.	17,620	2%	9.3	16%
TOTAL	791,028	100%	59.5	100%

NOTES:

1. Reported Federal production is for closest available year.
2. Acreages have been adjusted to reflect lessee's proportionate share of joint holdings.

SOURCE: Office of Technology Assessment

TABLE 21

OWNERSHIP AND PRODUCTION OF FEDERAL COAL LEASES
BY INDUSTRY CATEGORY - ABOUT 1984

BUSINESS CATEGORY	OWNERSHIP Acres	1984 %	PRODUCTION Million Tons	1983 %
Utilities	204,567	22%	22.5	20%
Other Co's.	189,159	20%	11.7	10%
Oil majors	141,157	15%	45.1	40%
Nonres. Divers. Co's.	85,211	9%	1.6	2%
Oil & Gas Co's.	70,365	8%	12.2	11%
Steel Co's.	61,986	7%	1.1	1%
Coal Co's.	55,247	5%	3.6	3%
Metals & Mining Co's.	40,229	4%	13.2	11%
Natural Gas Co's.	36,231	4%	2.1	2%
Peabody Holding Co.	20,382	2%	0.9	1%
Individuals	18,553	2%	neg	0%
TOTAL	923,087	100%	114.0	100%

NOTES:

1. Reported Federal production is for closest available year.
2. Acreages have been adjusted to reflect lessee's proportionate share of joint holdings.

SOURCE: Office of Technology Assessment

SECTION 3 COMPLIANCE STATUS OF INDUSTRY GROUPS

Table 22 shows the section 3 compliance status for the 11 different industry groups for the 489 pre-FCLAA leases in the seven major western coal producing States. It indicates the number of leases and leased acreage in each category that are likely to comply with section 3 production requirements and those with potential section 3 compliance problems, i.e. leases that are uncertain or unlikely to comply. (Note that table 22 reflects the total number of leases held by companies in each category. The total of the leases in each category exceeds the total of pre-FCLAA leases because some jointly held leases are owned by companies in different industry groups, so that one lease may appear in two categories. The total acreage figures have been prorated to reflect the percentage ownership for jointly held leases).

The business categories with the most leases at risk of noncompliance are the "other" companies, major oil companies, utilities, and the nonresource-related diversified companies. There are at least 50,000 acres of leaseholdings in each of these categories that are potentially noncomplying. Together these four industry groups hold 69 percent of the leased acreage unlikely to be producing in commercial quantities by the applicable section 3 deadlines.

TABLE 22
SECTION 3 COMPLIANCE STATUS
OF WESTERN PRE-FCLAA FEDERAL COAL LEASES
BY INDUSTRY CATEGORY

BUSINESS CATEGORY	ALL LEASES Acres	LIKELY TO COMPLY			POTENTIALLY NONCOMPLYING		
		Leases	Acres	% Acres	Leases	Acres	% Acres
Other Co's.	148,336	32	56,730	38%	64	91,606	62%
Utilities	151,552	50	76,924	51%	48	74,628	49%
Nonres. Divers. Co's.	78,552	5	6,603	8%	41	71,919	92%
Oil majors	130,774	39	66,836	51%	51	63,938	49%
Steel Co's.	55,014	9	14,568	26%	31	40,446	74%
Metals & Mining Co's.	37,821	7	9,542	25%	28	28,279	75%
Coal Co's.	37,677	18	15,584	41%	23	22,093	59%
Oil & Gas Co's.	35 # 904	16	18,636	52%	13	17,268	48%
Peabody Holding Co.	20,257	6	7,907	39%	4	12,350	61%
Natural Gas Co's.	28,949	17	18,596	64%	7	10,353	36%
Individuals	6,513	3	200	3%	17	6,313	97%
TOTAL	731,319	189	292,126	40%	300	439,193	60%

NOTES:

1. "% Acres" means the percent of total acreage held by an industry in each category.
2. Total acreage does not include post-FCLAA leases or leases located outside the seven major western States, or relinquished leases.
3. The number of leases includes all leases for which one or more of the lessees' parent companies fall into the designated industry category. The number of leases in each category reflects the total of all leases held by lessees in each category and exceed the total of pre-FCLAA leases because jointly held leases owned by companies in different categories appear in each category. The total number of leases has been adjusted to avoid double counting of these 40 leases. Acreages have been prorated to reflect the ownership percentages of joint lessees.
4. All ownership data is current as of Sept. 1, 1985.

SOURCE: Office of Technology Assessment

Table 22 shows the percentage of leased acreage held by each industry group that is unlikely to comply with section 3. On a total acreage basis, the industries that are apparently least impacted by section 3 noncompliance are natural gas companies, oil and gas companies, utilities, and the oil majors; at least half of their acreage holdings are likely to be in compliance. Nearly all of the leased acreage held by unincorporated individuals, some 96 percent of their holdings, are unlikely to be in production. Other industry groups with a large percentage of total lease acreage at risk of noncompliance with section 3 are nonresource-related diversified companies and steel companies.

THE 20 LARGEST FEDERAL COAL RESERVES HOLDERS

OTA ranked the 20 major Federal coal lessees by their Federal reserves holdings. The results are shown in table 23. Together these lessees control approximately 65 percent of all Federal coal reserves under lease, or about 12.6 billion tons of coal. In table 23 the full recoverable reserves in which a lessee has an interest are attributed to the lessee's parent corporation. (Note: A lessee may own 100 percent or less of the lease or participate in a joint venture which owns a lease). Prorating of the holdings of individual lessees tends to obscure the extent of "control" or involvement of companies in the leasing program and diminishes their apparent stake in any changes to the laws regarding coal leasing. The total holdings of the top 20 companies or lessee groups were adjusted to eliminate any double counting of leases or reserves.

The susceptibility of these 20 lessees and their individual parent companies to section 3 sanctions from nonproducing leases under their control is shown in table 23.⁴ The table shows the number of leases and the amount and percent of the lessees total reserves that are at risk of noncompliance with section 3, i.e. leases that were rated as uncertain or unlikely to comply with section 3. Approximately 47 percent of the reserves of pre-FCLAA leases held by the top 20 leaseholders are not likely to be in production by the section 3 deadlines applicable to them, but these represent 75 percent of all potentially noncomplying reserves. About 52 percent of the reserves held by the top 20 leaseholders are in lease tracts likely to meet section 3 production deadlines.

Fifteen of the top 20 reserves holders face potential compliance problems. Four lessees (Exxon Corp. Mobil Oil Corp., Amax, Inc., and Idaho Power Co.) will comply with section 3 for all their leases. One lessee group (Kaneb Services, Inc. and Northwest Life Insurance Co.) has only nonproducing post-FCLAA reserves that will be forfeited if not producing after 10 years. Two of the top 20 reserves holders, Swanton Corp. and the 3 southwestern utilities, are not likely to comply with section 3 for any of their leases. Montana Power Co. has one potentially noncomplying lease with negligible reserves for which a relinquishment has been filed.

⁴Note: For the purpose of this analysis OTA has assumed that "control" exists when a company is owned in whole, or in part, by another and the lessee company is considered as a subsidiary or joint venture of the parent company. OTA has not attributed a controlling interest through investments in stock of publicly traded companies or in holding companies. We note that for some purposes, ownership of 10 percent of a corporation's stock is sufficient to be considered a "controlling" interest. There is some participation in the corporate affairs of some coal lessees through stock ownership by other coal lessees. For example, Chevron, which now owns Gulf, holds over 20 percent of the stock in Amax, another major Federal coal producer. Peabody Coal Co. is owned by the Peabody Holding Co., which is in turn owned by 5 companies, including The Williams Companies which also owns Western Slope Carbon, a Federal coal lessee. OTA has not in this report attributed section 3 compliance status to the stockholding companies in these cases. However, the Department of the Interior might elect to do so in enforcing section 3. OTA's definition and conclusions may not coincide with the Department's eventual position on this matter.

Table 23

THE TOP 20 FEDERAL RESERVE HOLDERS
SECTION 3 Compliance STATUS

PARENT COMPANY OF LESSEES	TOTAL NUMBER OF LEASES	RECOVERABLE RESERVES UNDER LEASE (m.t.)	POTENT I ALLY NONCOMPLYING LEASES	RESERVES*	
1. Exxon Corp.	5	1,490	0	0	0%
2. Pacific Power & Light Co. ^{a 3}	1	1,453	10	427	27%
3. Amax, Inc.	6	1,261	0	0	0%
4. Atlantic Richfield Co.	13	1,242	3	51	4%
5. DuPont ^b	35	1,135	31	1,049	93%
6. Peabody Holding Co. ^c	11	1,019	4	800	79%
7. Broken Hill Prop. Ltd. ^d	30	930	25	624	67%
8. Texaco, Inc. ^e	17	927	5	800	86%
9. Chevron Corp. ^f	38	803	24	725	90%
10. Kerr-McGee Corp. ^g	5	736	3	398	54%
11. The Sun Co.	8	643	6	97	15%
12. Shell Oil Corp.	4	641	2	240	37%
13. Peter Kiewit Sons, Inc. ^h	13	582	3	70	12%
14. Kaneb Services, Inc. & Northwest Life Insurance	2	445	0	0	0%
15. United States Steel Corp.	19	438	12	339	83%
16. Mobil Corp. ^j	1	424	0	0	0%
17. Swanton Corp.	16	361	16	361	100%
18. Arizona Public Service San Diego Gas & Electric Southern Ca. Edison	21	345	21	345	100%
19. Idaho Power Co.	3	329	0	0	0%
20. Montana Power Co.	9	287	1	0	0%
TOTAL**	264	12,593	150	5,976	47%

NOTES

All reserves in millions of tons.

• Totals have been adjusted to avoid double counting of jointly held reserves.

- a. Includes joint ventures.
- b. Includes 14 leases in which CONOCO, subsidiary Consolidation Coal Co., and Chevron's Gulf Oil subsidiary each own 50%. The leases total 23,890 acres with 241 million tons of reserves.
- c. Totals exclude leases and reserves on which relinquishments and assignments have been approved or are currently pending.
- d. Includes subsidiaries Utah International, Inc. and Energy Reserves Group, Inc.
- e. Includes Texaco's Lake DeSmet holdings and leases held by Getty Minerals, but does not reflect recently announced sale of Getty's coal operations to Cyprus Mining or sale of Getty's 50% share of the Skyline Mine in Utah to Coastal States Energy Co.
- f. Includes 14 leases in which Chevron's Gulf Oil subsidiary and Dupont's Consolidation Coal Company subsidiary each own 50%. The leases total 23,890 acres with 241 million tons of reserves.
- g. Does not include adjustments for pending 1-90 lease exchange of part of the East Gillette tract in Wyoming.
- h. Does not include Sun's recently announced purchase of Soldier Canyon mine in Utah from California Portland Cement.
- i. Includes joint ventures.
- j. Total leases reflect two Mobil leases in the Rojo Caballo Mine now reconsolidated into a single lease.
- k. Includes joint venture Bridger Coal Co. with Pacific Power & Light Co.

SOURCE: Office of Technology Assessment

DuPont, the fourth largest lease holder has the largest number of leases and the most reserves at risk of noncompliance: 31 leases with over 1 billion tons of reserves. Peabody Holding Co., Texaco, Inc., Chevron Corp., and Broken Hill Proprietary, Ltd. all have at least 500 million tons of potentially noncomplying reserves. Most of Peabody's at risk reserves are in the uncertain compliance category because of insufficient production or difficulties in LMU formation. Appendix B contains a brief summary of the holdings of each of the top 20 lessees and their section 3 status.

Potential Effects of Section 3

Enforcement of section 3 will have a disparate effect on coal lessees. The provision would penalize equally a lessee that has made aggressive efforts to develop and operate a mine on its single lease but has fallen short of the needed production level at the time when section 3 is enforced, and a lessee that has held many leases for almost 20 years and has made only minimal effort and investments toward developing those leases. Section 3 will strike most heavily on major oil companies and other lessees that are actively involved in the Federal onshore oil and gas leasing program. (Offshore oil and gas leases are not affected by section 3.) Direct acquisition of oil and gas leases by competitive bidding, the simultaneous leasing or "lottery" system, and noncompetitive "over the counter" leasing would be cut off by section 3 for noncomplying firms. These companies would have to rely on the assignment market and operating agreements to acquire new Federal onshore oil and gas development rights. Many of the same companies would be relatively unaffected by section 3 enforcement if it were limited to coal, because of the large amount of undeveloped coal reserves they already hold under lease.

Section 3 enforcement will probably do little to force the sale or relinquishment of the 17 noncomplying leases held by individuals. Application of diligent production requirements or higher lease payments are more likely to affect these leases.

Section 3 enforcement is also likely to affect the operations of the Federal oil and gas leasing program to a greater extent than the coal program primarily because of the vastly greater number of annual transactions in oil and gas leases. According to the annual publication, *Public Land Statistics*, there were nearly 130,000 oil and gas leases in effect in 1982 (most recent data available). Each year the Department handles about 45,000 assignments and transfers of interests in oil and gas leases. Each new lease will require a determination that the applicant or bidder and all related entities does not own or control any noncomplying Federal coal leases. (See table 24.) In contrast, there are only 615 Federal coal leases and about 130 pending coal preference right lease applications. On the average less than 20 coal lease transfers have been handled in any year over the past decade.

The Department finalized guidelines to assist it in determining whether a coal lessee is in compliance with section 3. However, it has not even proposed guidelines or regulations to assure that section 3 determinations will be made for oil and gas and other mineral lease transactions or that the Department will have the information it needs in a readily accessible form so that the other leasing programs will not be adversely affected. OTA believes that the Department could complete the necessary administrative steps to have an adequate enforcement process for section 3 in place before August 4, 1986 if it so chooses, but it has yet to make such a commitment.

Many of the major Federal coal lessees with potential section 3 disqualifications are also involved in other mineral activities. For example, 15 of the top 20 reserve holders face disqualification under section 3, if their pre-FCLAA leases are not brought into production. (See table 23.) Many of these reserve holders are also involved to some extent in oil and gas

TABLE 24

FEDERAL ONSHORE MINERAL LEASES

Mineral	Public Domain		Acquired & Military Lands		Total	
	Number of	Total	Number of	Total	Number of	Total
Oil & Gas	115,389	146,501,775	14,492	11,312,708	129,881	157,814,483
Coal	607	910,076	11	8,363	618	918,439
Tar Sand	12	21,270			12	21,270
Gilsonite	12	3,210			12	3,210
Phosphate	135	98,161	4	1,148	139	99,309
Potash	170	221,787			170	221,787
Sodium	124	179,870			124	179,870
Potassium	1	1,948			1	1,948
TOTAL	116,450	147,938,097	14,507	11,322,219	130,957	159,260,316

Source: United States Department of the Interior, Public Land Statistics 1983.

development, although not all of them currently hold Federal oil and gas leases. If Peabody's noncompliance status is attributed to its major owners, the Williams Companies might be foreclosed from Federal oil and gas leasing. The impact on noncomplying major oil and gas companies of section 3 disqualification could be significant. It is likely that most of them would divest themselves of their coal leases or coal operating divisions rather than forego the opportunity of oil and gas leasing on Federal land. The overall impact on the nation's oil and gas industry of section 3 would likely be slight given the competitive nature of the industry, the large number of companies with no involvement in Federal coal leasing, and the current oil glut. Moreover, at least two major oil company lessees, Exxon Corp. and Mobil Oil Corp., have no section 3 compliance problems and others are likely to resolve their compliance difficulties and avoid disqualification.

It is likely that the immediate impacts on other leasable energy minerals, oil shale, tar sands or gilsonite, would also be slight. No new oil shale leases could be issued to section 3 leaseholders, the near term impact of this restriction is probably nil since the oil shale leasing program is dormant for lack of interest. There are only four Federal oil shale leases outstanding. Leasing of tar sands or gilsonite deposits could also be affected. OTA has not determined how many applicants for these leases also hold Federal coal leases.

The section 3 disqualification would also apply to leases of phosphate, potash, sulfur, and sodium on Federal lands. Many of the nation's major fertilizer mineral producers are also Federal coal lessees. OTA has not analyzed the potential impacts on the issuance of fertilizer leases of section 3 disqualification. We note, however, that there is currently significant idle capacity in the domestic fertilizer industry according to the U.S. Bureau of Mines. A *primary* means for acquiring these leases is through prospecting permit preference right leasing systems which are similar to the system for coal leases that was repealed by FCLAA. Section 3, if it is interpreted to bar issuance of proven preference right leases, could restrict issuance of such fertilizer leases to section 3 leaseholders. Overall impacts on the fertilizer mineral industry of such a restriction would likely be minuscule. Coal lessees with interests in phosphate production include: Amax, Chevron, Mobil, W.R. Grace, Kerr-McGee, Monsanto, Occidental

and CFI Industries. Potash producers include Kerr-McGee, Amax, IBI, Inc., and Gulf Resources & Chemicals. Kerr-McGee is a major sodium producer and Occidental Chemical is Frasch sulfur producer. States which may have Federally-owned fertilizer mineral deposits include Florida, Louisiana, Arkansas, North Carolina, Idaho, Wyoming, New Mexico, California, and Utah.

As noted above, the Department has not yet indicated how it will enforce section 3 for these other minerals. Only the regulations pertaining to coal leases now contain a provision forbidding issuance of new leases (and assignments) to section 3 leaseholders. Enforcement of section 3 is not, however, contingent on DOI's action to promulgate regulations or instructions for these minerals. In the oil and gas area, if the Department does not act, it can be expected that the Department's failure to demonstrate compliance with section 3 of FCLAA in issuing new oil and gas leases will be come an additional grounds for challenging lease awards, even if there is no apparent connection between the successful bidder or applicant and a noncomplying coal lessee.

SPECULATION IN FEDERAL COAL RESOURCES

OTA's 1981 report has often been cited by some as indicating that section 3 is no longer needed as a deterrent to speculation in Federal coal reserves because "speculators" have largely disappeared from the scene by the late 1970s. OTA disagrees with this interpretation because it defines the problem of speculation too narrowly and ignores a major concern of Congress in enacting section 3. It is true that one class of "speculators", the individuals, land agents and leasebrokers that were so active in the 50s and 60s in acquiring and then reselling Federal coal leases, have now largely disposed of their holdings. But, the Congressional and public concern over speculation in Federal reserves that prompted passage of FCLAA provisions was not limited to the actions of these individuals. OTA finds that the discussion of the issue in the 1974 report of the Ford Foundation Energy Policy Project succinctly summarizes what was perceived as the problem of speculation when FCLAA was passed. These observations are probably still representative of today's concerns, given recent changes in the Federal coal management program.

Once the resource development rights are sold, the public, as consumer, has an interest in the development of those resources for its use at an early date and at a fair price. Assuming that energy prices are on the rise, if the lessee is allowed to sit on his lease without developing it, it will be costly to the public in two ways. The lessee will have "purchased" the development rights (if, in fact, he paid anything) with a lower payment to the treasury than at future prices; and by not producing his lease until some future time, he can sell the resource back to the public at a higher price than if he develops it immediately. The legal system is designed to encourage early production of the leased resources and thus discourage such private speculations. But Interior Department policies are having the opposite effect, contrary to the intent of the laws.

By not requiring the lessee to either develop his lease or surrender it, the lessee, not the government is allowed to speculate with the public's resources. The nature of this speculation is quite simple. The resources are often leased at no cost or low cost relative to their actual present value. The initial lease terms are quite long and extensions are liberally granted. Holding costs in the form of rentals and minimum royalties are extremely low. Requirements for speed and diligence in developing the leased tracts are either lacking or not enforced. And leases can be transferred freely from owner to owner with a

higher royalty to them than they pay the government. The existence of such overriding royalties is in itself a good indication that leases have generally been sold at less than their market value...

This type of private holding without development is possible because coal leases are issued in perpetuity, although the terms and conditions are to be reviewed every 20 years. The law States that "leases shall be for indeterminate periods upon conditions of diligent development and continued operation of the mine." This provision can be abrogated only by a finding that it is in the public interest to do so. Contrary to the clear legal intent, the Department has allowed lessees to pay an advance annual "royalty" and has never enforced diligence requirements. The "royalty" is really simply an annual rental which for most leases is one dollar per acre...

The problem, then, is quite sweeping: extensive leasing, combined with insufficient competition, little or no understanding of the value of the resources being leased, and no assurance of development. The public treasury does not receive a fair return for its resources nor does the public receive the energy from the resources under lease. The lease holders can sit on, or trade, their inexpensively acquired leases, waiting for higher energy prices before producing the resources.⁵

There are numerous references in the legislative history of FCLAA to concern over the entry of large energy conglomerates, big oil, and coal companies into the big coal leasing and the fear that they would sit on their Federal reserves waiting for the price to go up instead of mining them to meet domestic energy needs. Since 1976, the holdings of coal leases by oil majors and other large firms have increased. Concerns over the concentration of holdings by these companies and their effect on competition in the coal industry are not now as great as they were in 1974-78. Since 1976 the amount of Federal coal production by these lessees has also grown significantly providing evidence that many of this group are actively mining and selling coal and not sitting on large amounts of reserves awaiting future price increases. The coal mining subsidiaries of major oil companies are now among the largest coal producers in the West. Market expectations have also changed and coal demand has grown more slowly than projected in some high range forecasts. However even in 1985, billions of tons of leased Federal coal remain undeveloped. Oil majors and other energy conglomerates control a significant share of these nonproducing coal leases and for the next 10 years, section 3 is effectively the only production requirement imposed on these leases.

Whether the holding of nonproducing Federal coal leases is undesirable speculation from a policy standpoint is not a matter on which there is universal agreement. There are those who believe strongly as a matter of policy that Federal resources should be held only for production. There are also those who do not view speculation as an unwelcome aspect of Federal mineral policy. For example, the Fair Market Value Commission Report quoted the opinion of one of its witnesses on the issue:

Speculators, far from being a personification of evil, in fact serve important social functions in that their actions indirectly provide useful information in the market, and smooth the transactions among inconstant fluctuations of supply and demand. Speculation which is in essence the

⁵ See Energy Policy Project of the Ford Foundation, A Time to Choose: America's Energy Future, (Cambridge, Mass.: Balinger Press, 1974) at 289-291.

conservation of resources until their value in production is maximized, is actually legitimate economic behavior that serves the interests of society as well as the resource owner.⁶

The quote above demonstrates that when people talk about speculation and speculators, they often do not share the same definitions of such behavior. The first part of the quote above more accurately describes the activities of lease brokers, who played a historic role in coal leasing and now have largely disappeared. In the second part of the quote, the term resource owner most likely refers to the coal developer lessee and not the Federal Government.

The experience of the "energy shortage" and OPEC threats of the mid- 1970s, have given away to the current situation of coal gluts and oil gluts. The coal markets have reverted from the perceived seller's market of the mid- 1970s, which saw abrupt price increases and a scramble for long term contracts, to its historical buyer's market condition of substantial overcapacity where consumers are now seeking to avoid long term contract commitments. Most forecasts call for only modest increases in coal demand for two next decades. Few coal industry analysts are predicting any real price increase in coal due to mining out of available low cost reserves until the late- 1990s, if then.

There is more coal under lease than can be sold or burned within the market areas served by Federal coal within the next two decades and beyond barring major realignment in power generation requiring massive investment in powerplant and synfuels plant construction. For various policy and other reasons, largely the desire to promote competition among potential suppliers and the necessary, but at times unbridled, optimism of coal companies in their reserves acquisition phase, it is likely that the amount of Federal coal under lease will exceed by a significant margin, the amount of coal expected to be needed by consumers. Many lessees will be unable to comply with lease development and production requirements despite even their most diligent efforts at securing purchasers for their coal. Allowing lessees to retain coal leases indefinitely without development in the same manner that companies might, for example, hold the coal reserves that they own outright, would be equivalent for policy purposes to transferring ownership of the reserves to private parties and runs contrary to the longstanding Federal policy against disposal of public coal resources. For this reason, the Federal leasing program will need some mechanism to determine which leases can continue to be held, and for how long, and which must be returned to the government for possible resale to others. Whether this mechanism will be section 3, the current diligence system, or some other provision is a matter for congressional consideration.

WHAT IS THE REVENUE GAIN OR LOSS TO THE FEDERAL GOVERNMENT FROM ENFORCEMENT OR REPEAL OF SECTION 3 WITHOUT PAYMENT REQUIREMENTS?

In the request letter to OTA, Congressman Weaver inquired whether the revenue impacts on the Federal Government from enforcement or repeal of section 3 could be estimated. Following a review of likely impacts, and discussions with Committee staff and others, OTA has concluded that it is neither useful nor practicable to calculate the value of such gain or loss because of the countervailing effects of the impacts of section 3 and the extensive assumptions of fact that would have to be made.

However, we can discuss the issue in a more general manner. If section 3 is enforced, leases will be relinquished, the government will lose annual rental payments, and possibly

⁶ See Statement of Daniel E. Klein, Commission on Fair Market Value Policy for Federal Coal Leasing: Report of the Commission, February 1984, at 296.

royalties from leases that might have been mined. If the relinquished lease were resold later and brought into production, there might be an intervening revenue loss. On the other hand, any loss of revenues from relinquishments is offset by the revenues that might be gained from bonuses on resale of these leases and higher post-FCLAA royalties on production. (Bonus revenues, even if only at the current regulatory minimum bid level of \$100 per acre would be significantly higher than the \$1 to \$3 per acre annual rental now paid on nonproducing leases). In addition to the financial benefits of enforcement, there are some general public policy benefits to be gained in limiting the potential for nonproductive, speculative holding of Federal resources and encouraging Federal lessees to develop their leases to increase competition in the coal markets.

OTA does not believe that all of the leases that might eventually be relinquished would be reoffered in the next 10 to 15 years, particularly those outside of currently producing coal fields and those with poor quality reserves. It is unlikely that there would be enough interest in them if payment of fair market value were required. We also doubt that all of the noncomplying section 3 leases will be relinquished. We believe it is highly likely that lessees will find buyers for the better quality tracts and in some cases with little delay in the tract's overall development schedule. In this respect we agree with the conclusions of the Report of the Commission on Fair Market Value Policy for Federal Coal Leases that one of the main impacts of section 3 *could* be the creation of a new class of leaseholders. However, OTA believes that it is more likely that leases will be purchased by firms that are already active in western coal mining that either have no other Federal leases or are in compliance with section 3 and thus unaffected by the Department's ban on assignments to noncomplying lessees. (The Commission also noted that this impact might be beneficial to consumers because the new lessees might have lower barriers to entry because of lower prices paid for leases that had to be sold to avoid a section 3 penalty.⁷ We are not certain that the impact of section 3 is necessarily lower prices for the Federal leases that are transferred privately, than leases sold by the government by competitive bid.)

If the section 3 noncompliance leases with favorable development potential are in fact transferred rather than relinquished, there might be little direct loss to the Federal Government because rentals would continue and royalties would be paid on production. It can be argued that if the lease were assigned rather than relinquished, that the coal might be mined at the lower pre-FCLAA royalty rates. OTA believes that given the three to seven years needed to bring an unpermitted lease into production, that it is likely that any period during which lower royalties would be paid would be short because at least 435 of the 535 pre-FCLAA leases are scheduled for readjustment by 1991. OTA notes that there is one major exception to this assumption. Between 1976 and present, there were an undetermined number of pre-FCLAA leases that the Department failed to readjust on time, or that had readjustments overturned on appeal and were not further contested by the Department. These unadjusted leases will carry the pre-FCLAA royalty rates and no regulatory diligent production requirements for 10 to 20 more years. This loss however is not due to section 3.

The repeal or modification of section 3 without requiring a significant payment obligation on nonproducing leases as the price of relief would represent a lost opportunity for generating additional revenues to the Government from pre-FCLAA leases. Does repeal create a windfall for the lessee? To find such a windfall, since there is no direct financial transfer to the lessee, requires that one assume that repeal makes the leases more valuable, but this would be hard to measure. One might assume that the effect of repeal would be to confer a gain on the lessee of the amount that the value of the lease might have been discounted to reflect the

⁷Report of the Commission on Fair Market Value Policy for Federal Coal Leases, at 303-304.

risk that it would be lost for nondevelopment after 10 years. Such a theory, if valid in practice, would be more directly applicable to the Department's 1982 relaxation of diligence regulations for pre-FCLAA leases that previously faced possible cancellation in 1986 for nonproduction. Indeed the Commission on Fair Market Policy for Federal Coal Leases found such a windfall situation:

The Commission also found that the 1982 extension of diligent development requirements for pre-1976 leases conferred a windfall gain on these lease holders that was unnecessarily generous. The Interior Department decided to allow pre-1976 lease holders to retain their leases in order to maintain an ample supply of Federal coal reserves under lease. This approach was neither equitable to the Government nor economically efficient.

An alternative strategy would have been to attempt to cancel undeveloped pre-1976 leases (at their next adjustment date) and replace them with newly issued Federal leases. This approach might have generated substantial new revenues to the Government, instead of a large windfall gain for existing lessees. Assuming reasonable tract selection efforts, it might also have placed new, higher quality Federal tracts under lease, replacing tracts leased 20 or more years ago in a haphazard way. Such a strategy might have achieved environmental as well as economic benefits in the selection of tracts under lease.⁸

The Commission (two commissioners voting, three abstaining) recommended adoption of a system of gradually escalating advance royalties to be imposed on pre-FCLAA leases beginning at the next readjustment and on post-FCLAA leases as a means of extending leases beyond the 10-year statutory diligent development deadline. The Commission also was concerned that allowing such extensions for new leases issued between 1976 and any Congressional enactment of such an advance royalty scheme might also confer a windfall gain on those lessees who might have discounted their winning bids because of the inflexible 10-year diligence period.⁹

Section 3 does not deprive a lessee of the lease as a penalty, so any discount for the risk of nondevelopment for section 3 purposes is likely to be small. Moreover, the lessee can be purged of the section 3 disqualification by selling the lease, perhaps even at a profit. The lessee may relinquish the lease only as a last resort.

We think that it is unlikely that lessees in fact have discounted the value of their leases for the potential impacts of either section 3 or section 7 (or the 1976 diligence regulations). For lessees facing a section 3 disqualification in 1986, the largest group of noncomplying lessees, such discounting is particularly unlikely since they would have to foresee events occurring after they acquired the leases in order to reduce the amount they paid for them originally. It is also improbable that these lessees would also have foreseen the full extent of applicability of section 3. For leases sold or transferred after passage of FCLAA, there does not appear to be any discernible pattern of discounting for future nonproduction penalties in reported private lease sales. The reasons for this may be:

1. That the lessees fully expected to be able to mine or resell the reserves within the time allotted,
2. The reserves were already undervalued when they bought them, and/or

⁸*Id.*, at 301.

⁹*Id.* at 198.

3. That the lessees did not expect that either Congress or the Department would actually enforce section 3 or any diligence provisions applicable to the leases.

Although the loss may be impracticable to measure and may not be reflected in any discounting of the amounts paid for Federal coal leases, it is clear that the easing of development requirements confers something of value on the lessee. The lessee is permitted to keep a coal lease that he might otherwise have lost through revocation, relinquishment, or divestiture. A private lessor might seek some additional payment or other undertaking from the lessee as the price of extending or altering their lease arrangement. The most comparable private transaction would be delay rentals or other payments for the privilege of extending a lease without production.

The Market Outlook for Federal Coal

To support proposed changes in the current production requirements for Federal coal leases, it has been suggested that the market outlook for Federal coal has changed significantly since passage of FCLAA in 1976. Because actual demand has not grown as rapidly as projected in the mid- 1970s, according to this argument, the impacts of enforcement of production requirements may be more punitive than anticipated by Congress in 1976 and some legislative or administrative relief is warranted. Recent years have seen a scaling back of coal demand projections for the next decade. Are estimates of probable future coal demand now substantially lower than forecast when FCLAA was under consideration, thus undercutting some of the concerns that lead to the adoption of FCLAA's stringent production requirements? To determine what the market outlook for Federal coal was in 1976, OTA reviewed legislative history materials and other published sources for information on expected demand for coal from Federal leases. We also looked at several later coal demand and production projections for the Federal coal leasing program and compared them with actual production for 1980 and 1984, and estimated 1985 production. The results of this exercise were inconclusive. Total U.S. and western Federal coal production have not in fact grown as dramatically as predicted in some mid- 1970s high range forecasts. However, actual coal production does match reasonably well with some of the mid-range coal demand forecasts available to Congress in 1974-1976 and there, nevertheless, has been a substantial increase in western Federal coal production over the past decade.

Table 25 summarizes some of the major forecasts for total U.S. coal production published in 1974 to 1976. Forecasts cited in House and Senate reports on FCLAA are marked with an asterisk. All projections show anticipated increases from the 1974 actual production of 602 million tons. The 1980 mid-range projection ranged from 665 to 950 million tons. Actual 1980 coal output was 824 million tons, slightly above the midpoint in the forecast ranges. The 1985 forecasts show a much larger spread in the mid-range forecasts: from 820 million to 1,500 million tons. The projections include both supply forecasts (what could be produced if there was sufficient demand) and consumption forecasts (what actual coal use or demand was likely to be) under different assumptions about the rate of demand growth and the energy supply mix. For example, the Federal Energy Administration (FEA) developed both supply and demand forecasts for the Project Independence Blueprint Report, (P.I.B.), but did not fully integrate the two forecasts. The P.I.B. forecasts assumed that nuclear power would supply a far greater portion of electricity demand than proved to be the case. When only the 1985 demand based projections are considered, the mid-level range is narrower (820 million to 980 million tons).

Table 25
SELECTED FORECASTS FOR TOTAL U.S. COAL IN 1980 AND 1985

	1980	1985	1980	1985
			in	in
			10 ⁶ tons	10 ⁶ tons
FEA P.I.B. Supply (1974)	895*	950	1,376	1,100
FEA P.I.B. Consumption (1974)	695		839	635
Draft Coal Leasing EIS (1974)		665*		
Final Coal Leasing EIS (1975)				
USDI projections		740		
USDI adjusted FEA projection				980
National Coal Association (1974)			1,100	1,500
Ford Energy Policy Project (1974)			640	1,500*
				880**
Actual Production	824			888***

* Estimate cited in FCLAA legislative history.

** Mid range calculated arithmetically.

*** Estimated.

Sources:

U.S. Federal Energy Administration, Interagency Task Force on Coal, Project Independence Blueprint, Final Task Force Report, 1974, Coal, Supply forecasts p. 129. (House Report 94-681 on the Federal Coal Leasing Amendments Act of 1975, at page 9, cites the 1980 low and high values.)

U.S. Federal Energy Administration, Project Independence Report, 1974. Consumption forecasts, pp. 34-48 of Appendix. 1985 mid-range calculated arithmetically.

U.S. Department of the Interior, Draft Environmental Impact Statement, Proposed Federal Coal Leasing Program, 1974, page 1-32. (House Report 94-681, at page 9, cites the EIS's projected coal demand in terms of trillion Btu rather than tonnage.)

U.S. Department of the Interior, Final Environmental Impact Statement, Proposed Federal Coal Leasing Program, 1975. The first set of figures are from Table 1-4, page 1-25. The second set of figures represent USDI interpretation of the Project Independence supply forecast in the text on page 1-28.

National Coal Association projection from testimony by Car Bagge in Hearings on the Federal Coal Leasing Program, before the House Committee on Interior and Insular Affairs, 93rd Cong., 2nd Sess., 1974, at 241

Energy Policy Project of 1974, the Ford Foundation, A Time to Choose: America's Energy Future, page 296. Mid-range calculated arithmetically.

Total 1985 production is now projected by the Energy Information Administration (EIA) to be about 894 million tons, and is also at about the mid-point of the projected range.¹⁰

Table 26 summarizes forecasts for western and western Federal coal production published in 1974-1976. Table 26 shows projected production by State from the same projections and also includes for comparison several more recent projections used in setting regional leasing targets for the Federal coal management program. Actual 1980 production in the western coal States (Northern Great Plains and Rocky Mountain Coal Regions) of 196.4 million tons exceeded the level forecasted in the final Federal Coal Leasing Program EIS by 66.4 million tons. DOI forecasts of 1980 Federal coal production ranged from 43.0 to 125.7 million tons. Actual 1980 western Federal coal production of 68.8 million tons was in the lower end of this range.

The P.I.B. 1985 supply forecasts for western (Northern Great Plains and Rocky Mountain) coal regions ranged from 194.6 million tons under a business as usual scenario to 380.4 million tons with accelerated development. A 1976 FEA update for congressional testimony estimated 345 million tons for the same region in 1985. Actual 1984 production of 228.8 million tons was 34.6 million tons above the business as usual forecast but well below the high or accelerated development forecast. The EIA now projects that total 1985 production in the region will be about 260 millions tons.

Actual Federal production for FY 1984 of 103 million tons was at about the midpoint between the 1975 FEIS estimates, and quite close to the projections of 114.2 million tons in DOI's 1976 testimony. The State forecasts shown in table 26 are very close to actual 1984 State Federal coal production. The DOI's 1975 projections also match 1984 actual production closely, except for Colorado and Utah where production is much lower than forecast in 1975.

In summary, actual U. S., western and Federal production in 1980 and 1985 are reasonably close to the mid-level forecasts available to Congress when FCLAA was under consideration. After 1976, the forecast levels of western and Federal coal production were higher reflecting the anticipated impacts of higher world oil prices and Federal energy policy initiatives promoting expanded use of coal over other fossil energy sources. The Federal coal management program EIS published in 1979 and later DOE projections shown in table 27 reflect these expectations. The 1979 EIS projected 1985 U.S. production of over 1,116 million tons, higher than the 1974 P.I.B. high consumption forecast for the same year (See table 25). Mid-level western demand was projected at 400 million tons in 1985, 20 million tons higher than the 1976 P.I.B. accelerated development scenario and more than twice the P.I.B. business as usual forecast.

Since 1980, however, most energy demand forecasts have been scaled back. There have been dramatic adjustments downward of the DOE projections used to establish coal production goals for deciding how much coal should be offered for lease in Federal coal regions. Table 28 shows the changes in projected total U.S. and western demand for 1990 between the 1979 EIS and the 1985 Draft Supplemental EIS for the coal management program. The most recent 1990 mid-level forecast is 30 percent lower than the 1979 forecast. For 1990, the FEIS projected national production ranging from 1.1 billion to 1.85 billion tons and western production ranging from 382 million to 937 million tons. The 1985 draft environmental statement for the Federal coal management program, in contrast, projects national production in 1990 ranging from 1.03 billion to 1.1 billion tons and western production at 300 to 340 million tons under both its

¹⁰ U.S. Department of Energy, Energy Information Administration, Quarterly Coal Report, April-June 1985, (Washington, DC: U.S. Government Printing Office, October 1985), table 1.

TABLE 26
Forecasts for Western and Federal Coal Demand Circa 1976
1980 (million tons)

Total Production	1975	1976	1977	1978	1979	1980
1975 Coal Leasing EIS Actual Production	19.5	36.1	6.5	17.2	13.1	94.0
Federal Production						
USDI, 1974 Hearing*	11.4	24.6	---	6.3	20.1	29.2
USDI, May 1975 Hearing*	24.3	15.5	3.0	1.7	16.1	65.2
1975 Coal Leasing EIS						
USDI, 1976 Hearings*	7.2	10.3	1.8	---	7.6	49.6
Actual Production	9.4	10.4	6.3	0.6	8.7	33.4
						68.8
1985 (million tons)						
Total Production						
FEA Energy Outlook (1974): Business as Usual						194.2*
Accelerated Development						380.4*
FEA (1976)						345.0*
Actual 1984 Production	17.8	32.9	25.9	20.2	0	228.8
Federal Production						
USDI, 1974 Hearing*	22.0	47.2	---	27.4	27.2	175.2
USDI, May 1975 Hearing*	35.9	15.7	4.0	1.7	19.2	145.5
1975 Leasing EIS (Low)						50.0
1975 Leasing EIS (High)						150.0
USDI, 1976 Hearings*	9.4	17.8	1.8	---	2.2	114.2
Actual 1984 Production	9.9	14.5	3.0	1.3	6.1	103.4

Sources:

U.S. Department of the Interior, Final Environmental Impact Statement, Proposed Federal Coal Leasing Program, 1975. The first set of figures are from Table 4, page I-25. The second set of figures represent USDI interpretation of the Project Independence supply forecast in the next text on page I-28.

USDI projections from Hearings on the Federal Coal Leasing Program before the House Committee on Interior and Insular Affairs, 93rd Cong., 2nd Sess., Part 1, at p.155.

USD projections at pages 35-36, Federal Coal Leasing Amendments Act of 1975 Senate Hearings on S. 391, May 7 and 8, 1975.

USDI data from Oversight Hearings on Federal Coal Leasing. Before the Subcommittee on Mines and Mining of the House Committee on Interior and Insular Affairs, 94th Cong., 2nd Sess., 1976, at p. 26-27. Data based on production schedules in mine plan proposals on file in Geological Survey; Production from Indian coal has been subtracted out.

U.S. Federal Energy Administration, Interagency Task Force on Coal. Project Independence Blueprint, Final Task Force Report, Coal, 1974. Figures are for the Northern Great Plains and Rocky Mountain regions, cited at page 28, *supra*.

U.S. Federal Energy Administration, National Energy Outlook, 1976. Cited at page 28, *supra*.

Table 27
Comparison of 1979 and 1985 Coal Leasing EIS Coal Production Forecasts
(Proposed Alternative, in millions of tons)

	979 E S						1985 D= S					
	1985			1990			1985			1990		
	<u>Low</u>	<u>Mid</u>	<u>High</u>	<u>Low</u>	<u>Mid</u>	<u>High</u>	<u>Low</u>	<u>Mid</u>	<u>High</u>	<u>Low</u>	<u>Mid</u>	<u>High</u>
Total U.S.	990	1116	1188	1114	1521	1857	n/a	n/a	n/a	1076	1100	
Far West*	308	400	447	308	400	447	n/a	n/a	n/a	278	316	

* For 1979 EIS calculated from Table 2-17, page 2-30 by adding Northern Great Plains, Rocky Mountains and Southwest. For 1985 Draft EIS, calculated from Table 3-7, pages 98-100 by adding totals for each region.

SOURCE: Office of Technology Assessment

TABLE 28
SELECTED FORECASTS FOR WESTERN COAL PRODUCTION 1980-95

FORECAST	TOTAL WESTERN PRODUCTION * (Millions of Tons)			
	1980	1985	1990	1995
DOE Coal Production Goals (1981)				
Low	--	363	421	550
Medium	--	382	565	909
High	--	435	727	1274
DOI Coal Leasing FEIS (1979)				
Low	--	295	361	--
Medium	--	386	653	--
High	--	433	916	--
DOI Coal Leasing FEIS Supp.(1985)				
Proposed Action				
Low	--	--	287	334
Medium	--	--	305	355
High	--	--	316	399
No New Federal Leasing				
Low	--	--	288	335
Medium	--	--	304	355
High	--	--	316	398
EIA 1985 Annual Outlook	--	258	317	384
DRI Coal Review (Sumner 85)	--	253	320	378
Actual Production	219	258(est.)		

NOTES:

Western Production generally includes the Northern Great Plains, Rocky Mountain, and Southwest Coal Production Regions and is roughly equivalent to the Federal Coal Production Regions for Colorado, Montana, New Mexico, North Dakota, Utah and Wyoming.

SOURCES: U.S. Department of Energy, The 1980 Biennial Update of National and Regional Coal Production Goals for 1985, 1990 and 1995, March 1981.

U.S. Department of the Interior, Bureau of Land Management, Final Environmental Impact Statement Supplement for the Federal Coal Management Program, October 1985.

proposed action and "no new leasing" scenarios. For the year 2000, its projections range from 1.35 to 1.8 billion tons nationally and 385 million to 615 million for western States.¹¹

Thus, the projections about future coal demand that were available to the Congress and others in 1974-76 displayed a wide range of estimates. Some of these projections appear to have significantly underestimated western coal production in 1985, while overestimating national coal production. Other high-range forecasts, as one might expect, substantially overstated actual growth in coal demand. Whatever the differences in outlook, it was clear in 1976 that coal production would have to expand to meet even modestly increased national energy needs and that production from the currently idle Federal coal reserves could aid this growth.

¹¹United States Department of the Interior, Draft Environmental Statement for the Federal Coal Management Program, (Washington, DC: U.S. Government Printing Office, October 1985) at 90.

OTA has previously written and testified concerning the demand for coal and the production potential of western Federal coal leases. The extent of market demand, not the availability of minable leased reserves will continue to determine how much coal is produced from Federal coal leases. In the next 10 years, as in the past, the potential production capacity of Federal coal leases greatly exceeds anticipated annual demand for coal in western Federal coal regions. The potential for increased coal production from Federal coal lease is substantial. In our 1981 report OTA found that mines with Federal coal could produce between 410 million to 550 million ton of coal per year in 1991 if there were sufficient market demand. Uncertainties in coal demand, rail construction, and synfuels development accounted for the 90 million range in potential 1991 production capacity. In 1981 there was over 100 million tons of unused production capacity in existing mines on Federal leases. Over 75 million tons of this overcapacity was in the Powder River basin alone. With the issuance of new competitive leases and preference right lease applications (with reserves of between 5 and 7 billion tons), the total annual production capacity of Federal coal leases in the 1990s could increase by 75 to 115 million tons in the 1990s.

In 1985 the market outlook for western coal is not nearly as optimistic as projected in the late 1970s. Figure 5 compares two DOE 1990 mid-level demand forecasts for the Fort Union coal region (North Dakota and eastern Montana), the Powder River basin (southeastern Montana and northeastern Wyoming), southern Wyoming, Colorado, Utah, and New Mexico. The first was made in 1980 in preparation for the 1981 Green River-Ham's Fork Federal coal lease sale and the second was made in 1985 for DOI's draft supplemental EIS on the Federal Coal Management Program. Total forecasted demand was halved from 543 to 278 million tons in 1990. All regions and States, except the Fort Union region showed a substantial drop in expected demand.

What happened? Various factors have contributed to the declines shown in the figures.

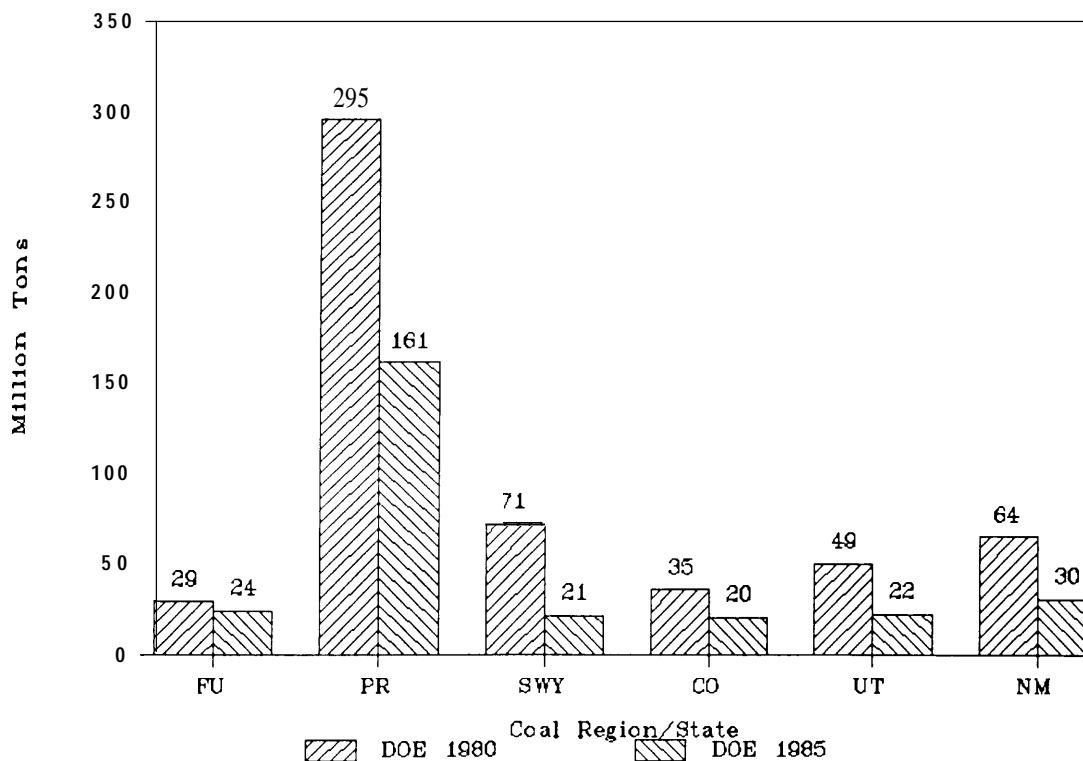
There has been a steady downward trend in forecasted electrical growth rates during the past ten years. In 1974 the utility industry expected annual growth rates of 7.4 percent. By 1984 annual growth in electricity demand had dropped to 2.5 percent. The demand for western coal is highly dependent on the electrical growth rate because about 90 percent of western production coal is used by electric utilities. Most of the decline in figure 5 is a result of this factor.

The low sulfur content of western coal is no longer a major factor promoting an increase in the West's share of total coal demand. There are various reasons for this. Scrubber and sulfur removal technologies are sufficiently advanced that utilities are no longer as reluctant to use them with local high sulfur coals. Boilers designed for mid-western and eastern coal must be derated or experience deterioration of heat rate when coal with lower heat content, such as that from the Powder River basin is burned,

Transportation costs from western coal regions to Midwestern and southwestern consumers remain high. Higher transportation costs resulting from rail deregulation have hurt western coal more than eastern and Midwestern coal because transportation costs are a high percentage of delivered cost of western coal.

Moderately stable oil and gas prices have reduced the rate of industrial boiler conversions and eliminated any significant coal demand for synthetic fuels production in the near future. Also, demand for western coal for export to Pacific Rim countries has not been as significant as expected in the early 1980s.

Figure 5.
Forecasted 1990 Demand



REGIONAL AND STATE PRODUCTION, CAPACITY AND DEMAND

Figures 6 through 11 show actual production in 1980 to 1984, permitted mine capacity, and projected production from 1985 to 2000 for the major western coal regions and States. The production capacity includes Federal and non-Federal mines with approved OSM permits and takes into account reserve depletion of Federal mines. The projected demand uses the DOE mid-level forecast (proposed action) for the years 1990, 1995, and 2000 in the draft supplemental EIS for the Federal coal management program. Actual demand for the period may well be lower, but is unlikely to be higher than shown.

Coal production has grown steadily in the Fort Union region (figure 6) with 99 percent of this coal from North Dakota mines. Projected demand exceeds capacity in 1995, but State enforcement of prevention of significant deterioration air quality standards may limit actual production to approved capacity or lower.

Coal production in the Powder River region has also grown steadily and is expected to continue at about the same rate to the year 2000 (figure 7). Approved capacity currently far exceeds demand for this period, but gradually declines to an 18 percent surplus in the year 2000.

Southern Wyoming has experienced a substantial drop in coal production in the last four years (figure 8). At forecasted levels, demand will exceed approved capacity in 1997.

Coal production in Colorado shows a modest decline in recent years (figure 9) and is expected to grow modestly during the next fifteen years. Approved capacities are well above forecasted demand until the late 1990s.

The level of coal production in Utah has varied in recent years and demand is expected to grow at rates similar to the 1980 to 1981 period (figure 10). Approved capacity is well above forecasted demand through the early 1990s and has a surplus of 12 percent in the year 2000.

New Mexico has experienced the greatest growth in coal production of the western coal States (figure 11). Demand is expected to grow at a similar rate and exceeds approved capacity in 1997.

Figure 6.

Fort Union Region: Capacity and Production 1980-2000

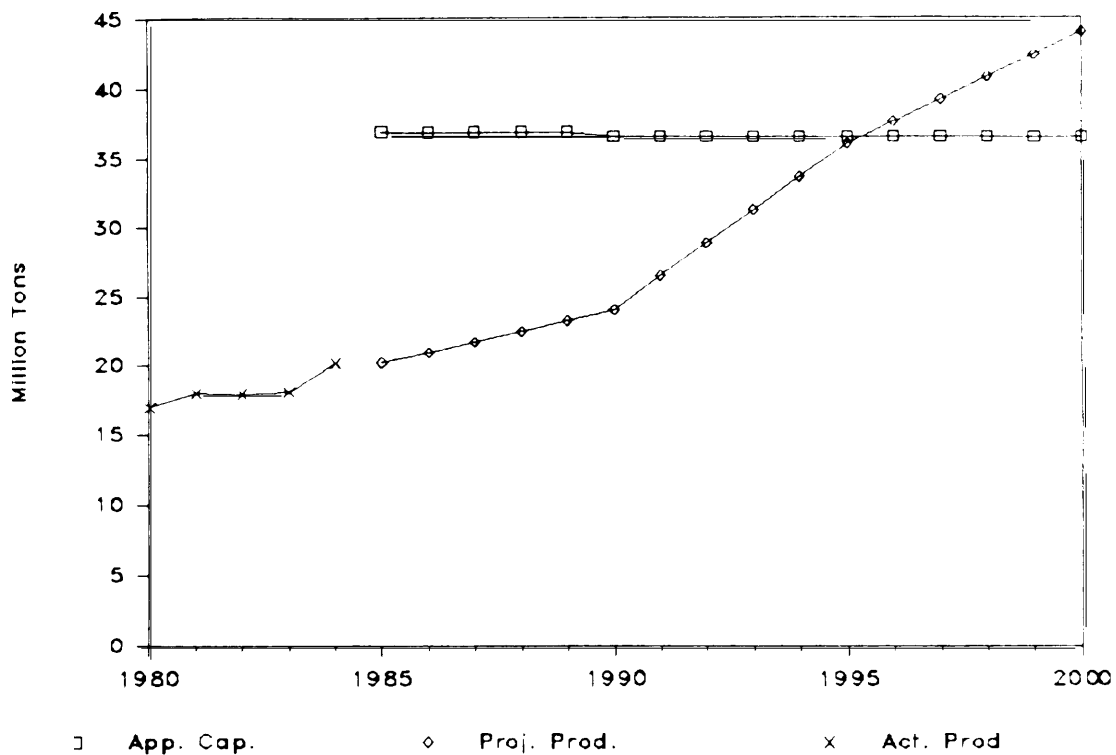


Figure 7.

Powder River Basin: Capacity and Production 1980-2000

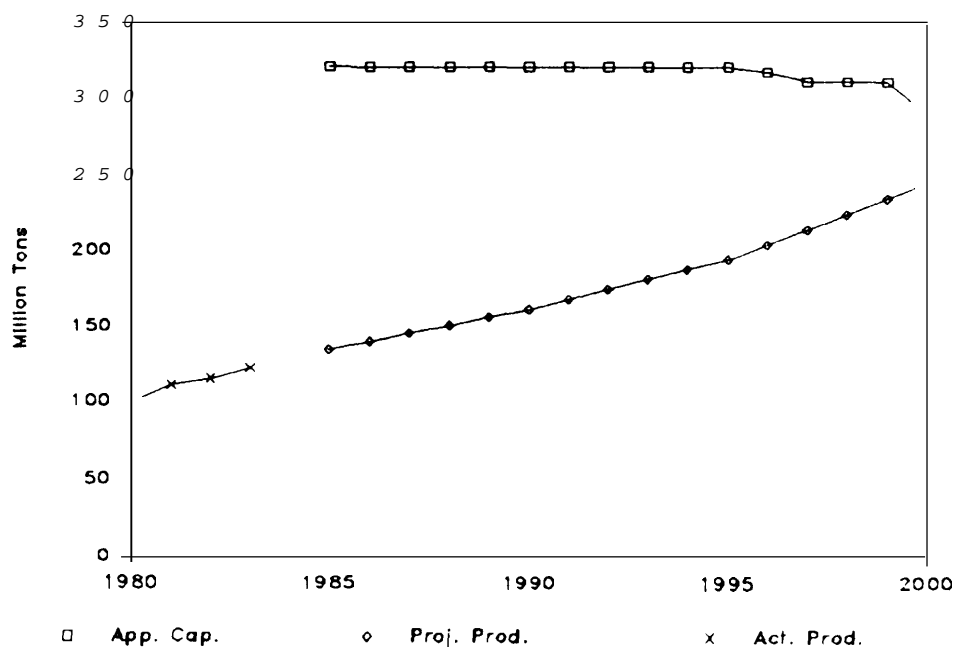


Figure 8.

Southern Wyoming: Capacity and Production 1980-2000

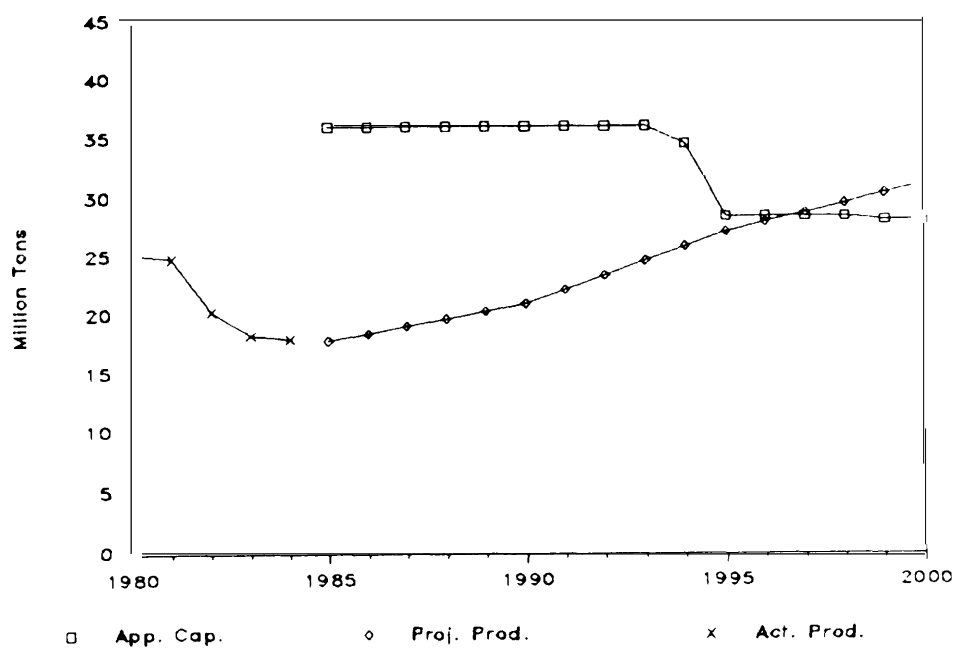


Figure 9.

Colorado: Capacity and Production 1980-2000

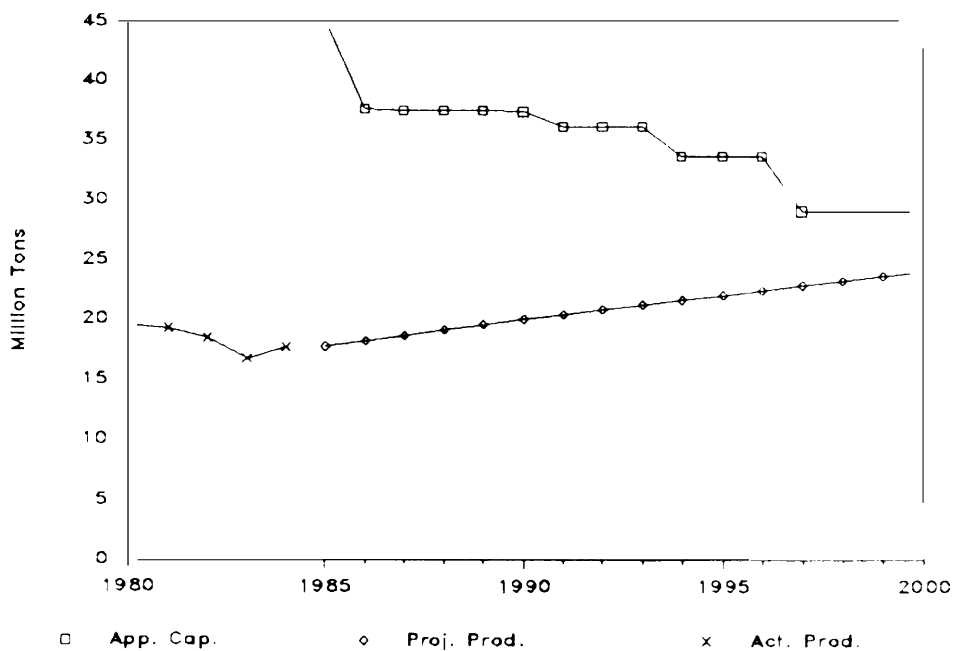


Figure 10

Utah: Capacity and Production 1980-2000

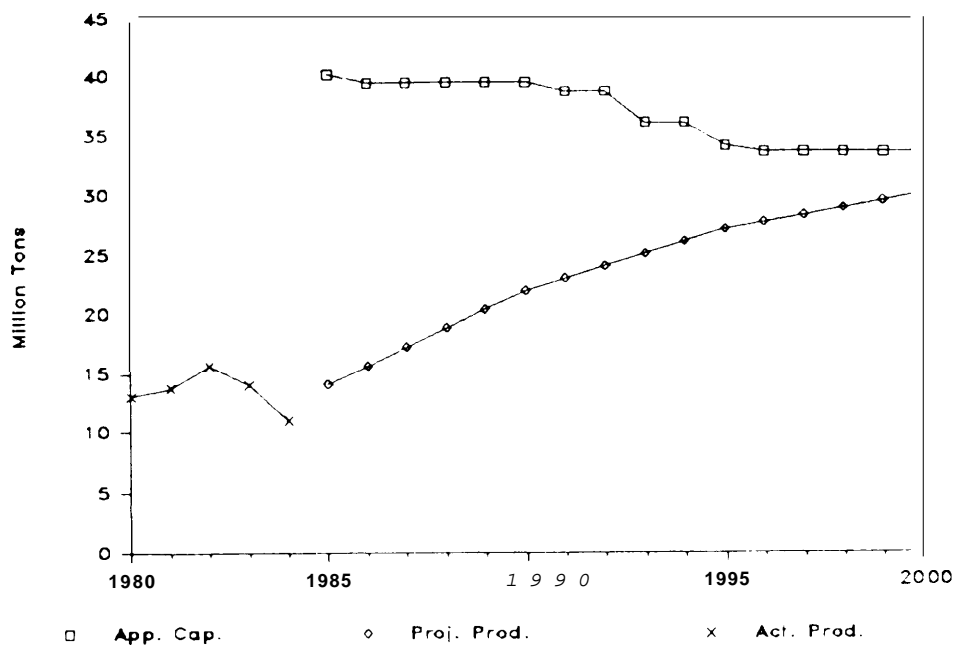


Figure 11.

New Mexico: Capacity and Production 1980-2000

