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**Evaluation of the Analysis Supporting President Ford's Veto of H.R. 25, the Surface Mining Control and Reclamation Act of 1975. EMD-77-37; B-178205. April 15, 1977. 25 pp.**

**Report to the Congress; by Elmer B. Staats, Comptroller General.**

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The rationale and methodology used by the Department of the Interior and the Federal Energy Administration to estimate the impact of the proposed Surface Mining Control and Reclamation Act of 1975 were evaluated. The analysis served as the basis for President Ford's veto of H.R. 25 on May 20, 1975. The reasons given for the veto were that: coal production would be unnecessarily reduced by 40 to 162 million tons; up to 36,000 people would lose their jobs; the Nation would be more dependent on foreign oil; and consumers would pay higher electric bills. Findings/Conclusions: The estimates of reduced coal production were speculative. Much of the production analysis was not supported by documentation, so the calculations could not be independently assessed or verified. Several methodological flaws existed. Employment gains which would result from the legislation were not considered when estimating unemployment. Agency documents inconsistently estimated the increased oil imports necessary to offset reduced coal production. An inaccurate British thermal unit conversion factor was used in calculating the replacement of coal with oil. The increased cost of electricity to consumers was also estimated using the incorrect conversion factor. Many of the problems identified resulted from insufficient information on coal productivity; this information should be available in the future following implementation of recent Federal legislation and GAO recommendations. (SC)

# *REPORT TO THE CONGRESS*



*BY THE COMPTROLLER GENERAL  
OF THE UNITED STATES*

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## **Evaluation Of The Analysis Supporting President Ford's Veto Of H.R. 25, The Surface Mining Control And Reclamation Act Of 1975**

Department of the Interior  
Federal Energy Administration

On May 20, 1975, President Ford vetoed the proposed Surface Mining Control and Reclamation Act of that year. At the request of Senators Henry M. Jackson and Lee Metcalf, GAO evaluated the Ford administration's assessment of the bill. The report concludes that lack of data hindered the analysis of the issue.



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WASHINGTON, D.C. 20548

B-178205

To the President of the Senate and the  
Speaker of the House of Representatives

This report is an evaluation of the rationale and methodology used by the Department of the Interior and the Federal Energy Administration to estimate the impact of H.R. 25, the proposed Surface Mining Control and Reclamation Act of 1975. The analysis served as the basis for President Ford's veto of H.R. 25 on May 20, 1975.

Our work was done at the request of Senators Jackson and Metcalf, as Chairmen, respectively, of the Senate Committee on Energy and Natural Resources, and its Subcommittee on Public Lands and Resources. We made our review pursuant to the Budget and Accounting Act of 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

Copies of this report are being sent to the Secretary of the Interior and the Administrator, Federal Energy Administration.

*James A. Stacks*

Comptroller General  
of the United States

D I G E S T

On May 20, 1975, President Ford vetoed the proposed Surface Mining Control and Reclamation Act of 1975. Much of the controversy surrounding the bill concerned the environmental standards relating to strip mining. President Ford cited four reasons for his veto:

- Coal production would be unnecessarily reduced by 40 to 162 million tons.
- Up to 36,000 people would lose their jobs.
- The Nation would be more dependent on foreign oil.
- Consumers would pay higher electric bills. (See p. 1.)

The legislation, which formed the basis for the President's veto, was assessed by the Bureau of Mines and the Federal Energy Administration, with assistance from the Department of Commerce.

GAO provided copies of the report to responsible agency officials and discussed the issues raised in this report with them. GAO did not obtain formal written comments due to the short time frame available for developing the report.

QUESTIONABLE ANALYSIS

The estimates of reduced coal production (the key variable on which others were based) were speculative, as evidenced by

- the subjective manner in which most production estimates were developed and
- the absence of cost data with which to analyze the effect of H.R. 25 on various types of coal mines and, therefore, the inability to determine which mines would actually close down and which mines could make necessary cost adjustments and continue production. (See pp. 5 to 6.)

Much of the production analysis was not supported by documentation, and, as a result, the calculations could not be independently assessed or verified. (See p. 6.)

Several methodological flaws existed:

--Unemployment was possibly overstated. (See p. 14.)

--No documentation showed that existing State reclamation laws and their effect on reducing the impact of H.R. 25 were considered. (See p. 18.)

--Oil import figures were overstated. (See p. 16.)

### COAL PRODUCTION LOSSES

The administration estimated that production would be reduced from 40 to 162 million tons in 1977. (See p. 4.)

The production loss served as the basis for computing employment loss figures, increased oil imports, and increased electric utility bills. Any questions about production loss figures will affect the other factors. (See p. 6.)

The administration's assessment did not consider that, as an alternative to closing down, mines affected by H.R. 25 could pass their increased costs on to consumers in the form of higher prices.

Some mines could continue to operate despite additional financial burdens caused by the bill and thus retain all or most of their previous employees. (See p. 5.)

Some production loss figures were based on a hurriedly conducted and undocumented telephone survey. Others were based largely on subjective engineering estimates with little or no supporting documentation. (See pp. 6 to 12.)

### EMPLOYMENT

The Department of Commerce estimated that 9,000 to 36,000 jobs would be lost in 1977 if coal production were reduced by 40 to 162 million tons. (See p. 13.)

Unemployment may have been overstated because employment gains from increased underground coal production and from reclamation jobs were not considered. (See pp. 13 to 15.)

#### INCREASED OIL IMPORTS

Agency documents inconsistently estimated the increased oil imports necessary to offset reduced coal production. Estimates ranged between 80 to 100 percent, with the remainder, if any, being made up by increased underground production. (See p. 15.)

In calculating the replacement of coal with oil, the administration used an inaccurate British thermal unit conversion factor--one for crude oil. A factor for residual fuel oil would have been more appropriate since residual oil would be used as a substitute for coal. Using the residual oil factor would have reduced the estimate of increased oil imports. (See p. 16.)

#### INCREASED ELECTRICITY COSTS

The Federal Energy Administration estimated that the cost of electricity to consumers could rise 3.4 to 8.0 percent as a result of H.R. 25. This estimate was based on the inaccurate Btu conversion factor. Any reductions in the estimate of increased oil imports would reduce the potential increase in consumer electric bills. (See p. 16.)

#### STRICTNESS OF STATE LAWS

GAO was unable to identify, from the supporting documentation, how various State laws that already had reclamation or environmental restrictions similar to H.R. 25 would have affected estimates of reduced production. According to agency officials, engineering estimates considered reclamation costs already required by the various States. (See p. 18.)

#### OUTLOOK

Many of the problems GAO identified resulted from insufficient information on coal productivity. However, if the Secretary of the Interior effectively puts into

practice a provision in the Federal Coal Leasing Amendments Act of 1975 more information should be available in the future. (See p. 21.)

In addition, in a March 17, 1977, report to the Congress dealing with the Government's data on domestic energy resources and reserves, GAO recommended to the Administrator, Federal Energy Administration, that more information be gathered on coal reserves. Such information should help create a comprehensive coal data base with which to better evaluate future courses of action. (See p. 21.)

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**ABBREVIATIONS**

**BOM**      **Bureau of Mines**  
**FEA**      **Federal Energy Administration**  
**GAO**      **General Accounting Office**

CHAPTER 1  
INTRODUCTION

On May 20, 1975, President Ford vetoed H.R. 25, the proposed Surface Mining Control and Reclamation Act of 1975, citing as reasons:

- Coal production would be unnecessarily reduced by 40 to 162 million tons.
- As many as 36,000 people would lose their jobs.
- The Nation would be more dependent on foreign oil.
- Consumers would pay higher electric bills.

H.R. 25, as submitted to the President for signature, contained a number of provisions relative to surface mining. A partial listing of the purposes, as set forth in section 102 were

- to protect society and the environment from the adverse effects of surface mining;
- to assure that surface mining is not conducted in areas where required reclamation is not feasible;
- to strike a balance between environmental protection, agricultural productivity, and the Nation's need for coal; and
- to promote the reclamation of previously unreclaimed areas.

Much of the controversy surrounding this bill centered around the impact of the environmental standards set forth in the bill.

The Ford administration contended that the bill would result in an improper balance between energy and economic goals and important environmental objectives. In addition, the administration believed that provisions for obtaining required mining permit applications would add costs that many small mining operations simply could not afford to pay.

The assessment of the legislation, which formed the basis for the President's veto, consisted of (1) an analysis

of the impact of the bill's various provisions on coal production and (2) the resulting impacts on employment, oil imports, and electric utility costs. The assessment was performed by the following Federal departments and agencies.

--The Bureau of Mines (BOM), Department of the Interior, which calculated the loss in coal production for all areas except small mines.

--The Federal Energy Administration (FEA), which computed the coal production loss for small mines, assessed the economics of increased oil imports, and assessed the increase in utility costs.

The Department of Commerce assisted in estimating the employment impact. No official interagency task force was established, although the Department of the Interior acted as the focal point for the assessment. Following the President's veto message, the administration prepared an assessment document for subsequent hearings.

We examined three other studies of surface mining legislation conducted within the last 3 years. All of the studies were done by private firms, with two of them being privately financed and the other funded by the Federal Government. These studies were not completely comparable because they were made of different bills at different points in time, and because they contained a wide range of opinion as to possible impacts. The studies were in general agreement, however, in pointing out the (1) subjectivity required in making assessment impacts, and (2) significant effect that legal interpretations could have on the impact. The range of possible lost coal production estimated by these studies went from a low of 22 million tons to a high of 292 million tons.

#### SCOPE

We contacted personnel at FEA, Interior, and Commerce and reviewed the studies performed by others. In addition, we have reviewed the June 3, 1975, hearings of the Subcommittees on Energy and the Environment, and Mines and Mining of the House Committee on Interior and Insular Affairs concerning President Ford's veto of H.R. 25. We examined the rationale and methodology used by the Ford administration to compute the production and economic impacts and, where feasible, attempted to verify the data against other sources. Given the time allowed for this analysis, we were not expected to perform an independent assessment of the impacts of H.R. 25.

The administration's analysis, and therefore our evaluation, concentrated on assessing the bill's impact during the first year of full implementation--calendar year 1977.

We provided copies of our draft report to responsible agency officials and discussed the issues raised in this report with them. We have not obtained formal written comments due to the short time frame we had to develop the report.

## CHAPTER 2

### PRODUCTION LOSS ESTIMATES

In his May 20, 1975, veto message, President Ford stated that, if H.R. 25 were enacted into law, a loss in production of 40 to 162 million tons of coal would result in calendar year 1977, the bill's first year of full implementation. Losses were defined as amounts by which production would fall short of 1977 production--685 million tons--projected by BOM. Thus, according to the veto message, H.R. 25 could have reduced estimated 1977 production from 6 to 24 percent. According to the supporting analyses, five areas, which are shown below, would be severely affected if H.R. 25 had been signed into law. The minimum and maximum estimated coal production loss was computed by FEA and BOM.

#### Estimated Coal Production Loss Calendar Year 1977

<u>Area</u> (note a)	<u>Tons</u>	
	<u>Minimum</u>	<u>Maximum</u>
	(millions)	
Small mines	22	52
Steep slopes	7	25
Siltation	0	10
Aquifers	0	9
Alluvial valley floors	<u>11</u>	<u>66</u>
	<u>40</u>	<u>162</u>

a/Each of these areas is defined and discussed in detail on the following pages.

The above figures represent a range of coal production losses from 40 to 162 million tons. In comparison, the administration estimated its own proposed strip-mining bill--S. 652--would result in a coal production loss of 33 to 80 million tons. Thus, the focus of the debate over H.R. 25, instead of being on its total estimated impact, should have also included the additional or incremental impact caused by H.R. 25 over and above the impact expected from S. 652. The incremental production loss impact between S. 652 and H.R. 25 is shown below.

Coal Production Losses (1977)

<u>Area</u>	<u>Tons</u>		
	<u>S. 652</u>	<u>H.R. 25</u>	<u>Difference</u>
	------(millions)-----		
Small mines	15-30	22-52	7-22
Steep slopes, siltation, and aquifers	7-38	7-44	0-6
Alluvial valley floors	<u>11-12</u>	<u>11-66</u>	<u>0-54</u>
Total	<u>33-80</u>	<u>40-162</u>	<u>7-82</u>

The incremental production loss figures could have also been used to estimate the incremental impacts on employment, oil imports, and consumer electric bills.

In the administration's analysis of estimated production losses, the low estimate reflected the liberal interpretation of the bill and the high estimate reflected the restrictive interpretation of the bill. They did not allow for any possible pass-through of increased costs by mines affected by the new law, which would then continue to produce at the higher cost level and retain all, or most, of their previous employment levels.

To us, continued production could have been a reasonable reaction to this type of cost increase in many cases. Such an analytical approach might have tended to reduce considerably the maximum production and employment losses projected by the administration. It seems reasonable to assume that during the 2-year interim period provided by the bill that some mines would make adjustments to the new law, rather than shutdown and lose their capital investment in existing mines. Coal is considerably cheaper than imported oil on a Btu basis, and could experience some cost increase and still be competitive. For example, using a price of \$11.60 per barrel for residual fuel oil and \$20 for a ton of coal (see p. 16), and considering the fact that one ton of coal has the same Btu content as 3.55 barrels of residual oil (see p. 16), the price of coal could increase considerably from \$20 per ton and still be cheaper than residual oil on a Btu basis.

Interior officials told us that only large mining operations with sufficient capital would be able to pass-through costs and continue to operate. They argued that many small mines would not be able to adjust during the 2-year interim period to avoid shutting down, since most of the

capital required for continued operation would be front-end costs and could be difficult for the small operator to raise. The purpose of our raising this issue, however, is not to speculate on how many mines would have been able to continue operating, but to (1) show the importance of considering cost factors in analyzing the bill's impact and (2) point out that we could find no documentation to indicate that such factors were considered by the administration in its analysis.

Much of the assessment of production losses relied on the expertise and judgment of BOM and other involved personnel. There was little accompanying documentation and thus the assessment was not readily conducive to our evaluation.

Much of the documentation we examined was unsigned, undated, and had no accompanying transmittal memorandums. Because of this and because a number of persons who were involved with the analysis has either transferred to other agencies or left the Government, we could not always determine when the data was developed, or by whom. Also, some data was developed by telephone with no records kept of the telephone calls. In many cases, the persons we interviewed could not remember the individual they contacted or the persons who called them. Consequently, we were often not able to fully identify and evaluate the steps that were taken to develop the information.

Although we could not conclusively determine when all the data was developed, agency officials stated that data in support of the administration's position was developed before the date of the veto but that information summarizing and clarifying the basis for the veto was prepared after the veto. We found no evidence to indicate the contrary.

The estimate of the potential production loss is critical to the entire analysis. These losses serve as the basis for the loss in employment, increased oil imports, and increased electric utility costs. If the production loss figures are questionable, so are the estimates for the other factors. Our analysis of the production loss estimates is discussed in detail below.

### SMALL MINES

The administration estimated expected losses from small mines to be from 22 to 52 million tons. H.R. 25 contained a number of provisions with which all surface mines would have to comply in order to continue mining. The provisions would affect small mines the most because of their limited financial and technical resources.

Small mines were defined as those producing less than 50,000 tons of coal a year. FEA had responsibility for assessing the impact that H.R. 25 would have on small mines. According to information submitted by the administration during the June 3, 1975, hearings on President Ford's veto of H.R. 25, FEA conducted an examination of a "large cross section" of surface coal mines in the East. They determined that the ability of the small mines to comply with the provisions of H.R. 25 relating to bonding and permit applications was inherently limited. This was due to lack of money and technical expertise. FEA concluded that many small mines were not able to collect extensive baseline hydrologic data, prepare detailed underground maps, test bore and analyze strata characteristics, prepare detailed mining and reclamation plans, and assess the mining impact upon the hydrology of the area. In addition, the minimum bonding requirement in H.R. 25 was higher than in most Appalachian States where most small mine operators are located, thus creating an additional expense for most small mines.

In arriving at potential losses for small mines, FEA made a telephone survey of State regulatory authorities, State reclamation associations, and mining companies in seven Appalachian States. These sources, according to material submitted during the hearings, estimated coal production losses from small mines would be 52 million tons. The minimum loss figure for small mines was based on the undocumented engineering judgment of BOM and FEA officials, i.e., it was their best guess. They estimated that about 40 percent of the 52 million tons--22 million tons 1/--could not be mined and would be lost.

FEA's telephone survey was hurriedly conducted in December 1974. FEA could not identify the names of persons contacted, or the coal production loss estimated by each person surveyed. We did, however, receive a breakdown of estimated losses by each of the seven States surveyed. Because of the absence of supporting documentation, we could not independently determine the representativeness of FEA's sample of mines contacted and the validity of the estimates provided or the projection of the sample to the nationwide small mine population.

### STEEP SLOPES

Section 515(d) of H.R. 25 restricted mining in areas where the terrain is at a 20 degree or greater slope, in

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1/This calculation actually results in 20.8 million tons of coal.

order to minimize environmental damage in these areas. Projected coal production losses from the bill's steep slope provision were estimated by BOM at 7 to 25 million tons. To avoid double counting of small mine production in both the small mine and steep slope categories, BOM deleted production from small mines on steep slopes from its estimated steep slope production figure. 1/

BOM used an indepth study prepared by the Council on Environmental Quality to calculate the impact of the steep slope mining provisions. This study, published in 1973, was based on 1971 coal mining data. The study indicated that, in 1971, 80 million tons of coal (51 percent of surface production in Appalachia) were mined in Appalachia from steep slopes. Based on these figures and BOM historical Appalachian production growth figures, BOM estimated 1977 steep slope production of 110 million tons.

Using engineering judgments, the BOM field staff estimated that 70 percent of 1974 small mine production (50 million tons) came from steep slopes. Applying this estimate to its estimated 1977 small mine production of 60 million tons, the BOM concluded that there were 42 million tons of small mine production on steep slopes. The total steep slope coal production estimate of 110 million tons minus the 42 tons of estimated small mine coal production on steep slopes resulted in an estimated 68 million tons of coal production in 1977 from steep slopes from mines producing more than 50,000 tons per year.

In the judgment of BOM officials, H.R. 25 could reduce steep slope production from 10 to 35 percent--7 to 25 million tons. BOM could provide us little documentation on its analysis. BOM's data was obtained by telephone from BOM regional offices with no records kept of the conversations. Also, responsible personnel could not recall, in most cases, when such conversations were held, or with whom.

We noted another way the assessment could have been done which would have resulted in a 1977 steep slope mining estimate in Appalachia of 89 million tons instead of BOM's estimate of 110 million tons. Our assessment used the 1971 Council on Environmental Quality percentage figure of Appalachian surface production attributed to steep slopes

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1/There was concern expressed during the June 1975 hearings as to the possible double counting of small mines' production on steep slopes. We found, however, no duplication under the procedure BOM followed.

(51 percent) and applied it to the 1974 Project Independence Report figure of 175 million tons, which represented the projected 1977 Appalachian surface coal production. This resulted in a 1977 steep slope mining estimate in Appalachia of 89 million tons. By using a smaller figure as our base for all steep slope mining production and applying the same methodology as BOM would result in a smaller minimum and maximum production loss range. In our view, it would be just as reasonable to calculate the production loss using the lesser total steep slope production in Appalachia for 1977.

### SILTATION

Siltation refers to the washing downstream of material from the mining area. Section 515(b)(10)(B) and 516(b)(9)(B) of H.R. 25 were intended to minimize siltation and avoid channel deepening or enlargement. BOM estimated this restriction could reduce 1977 coal production by zero to 10 million tons and assumed the provision would mainly impact Appalachia.

Since its assessment was based on subjective engineering estimates, which were not documented, BOM could not provide support for the estimated production losses from siltation.

### AQUIFERS

Western coal beds often act as aquifers, or prevent ground water from draining to lower levels. Section 515(b)(10)(D) of H.R. 25 sought to minimize ground water disturbances by requiring that the hydrology of the mined area be restored to its approximate premining condition. BOM estimated that this provision could reduce coal production in 1977 from zero to 9 million tons.

It was the judgment of BOM officials that this provision would have little if any impact in the East and that any impact in the West would generally be identified with alluvial valley floor impacts. Thus, the impact of the provision would fall primarily on "Midwest" coal production. Lacking Midwest production data, the basic methodology BOM followed was to subtract East and West expected production from nationwide strip mining estimates for 1977 in order to derive the expected loss figure.

BOM projected 1977 nationwide surface mining production to be 350 million tons. Relying on 1974 Project Independence forecasts and/or its own estimates, BOM projected 1977 estimated Appalachian surface production of 169 million tons and Western surface production of 95 million tons.

Estimated nationwide surface production of 350 million tons less the estimated Eastern and Western production of 264 million tons resulted in 86 million tons of projected 1977 Midwest coal production. 1/

It was the judgment of BOM officials that the aquifer provision could reduce coal production from zero to 10 percent, or zero to 9 million tons. There was no documentation to support the zero to 10 percent calculation.

We noted that the 350 million ton nationwide surface mining production estimate for 1977 BOM used did not agree with the November 1974 Project Independence Blueprint forecast of 394 million tons for the same period. BOM told us that it did not agree with the 4 to 5 percent per year productivity growth rate on which the Project Independence Blueprint figure was based and that BOM lowered its projection accordingly. BOM was not able to provide documentation supporting development of the 350 million ton figure. The use of the lower estimate by BOM resulted in a lower estimate of impacts than would have been the case using the higher Project Independence estimates. To that extent, the argument supporting the President's veto of H.R. 25 was more conservative than if BOM had chosen to use the higher figure.

#### ALLUVIAL VALLEY FLOORS

An alluvial valley floor 2/ is essentially a valley with sufficient soil and water to support agriculture.

The restrictions on alluvial valley floor mining were estimated by BOM to have the largest potential impact on surface mining. BOM estimated that 11 to 66 million tons of coal production could be lost in the first year of implementation of H.R. 25 due to the alluvial valley floor provisions.

Section 510(b)(5) of H.R. 25 provides that no mining application shall be approved unless it is affirmatively demonstrated that

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1/BOM rounded this to 90 million tons.

2/As stated in H.R. 25, Sec. 701, "alluvial valley floors" means the unconsolidated stream laid deposits holding streams where water availability is sufficient for subirrigation or flood irrigation agricultural activities.

"the proposed surface coal mining operation, if located west of the one hundredth meridian west longitude, would not have a substantial adverse effect on alluvial valley floors underlain by unconsolidated stream laid deposits where farming can be practiced in the form of irrigated, flood irrigated, or naturally subirrigated hay meadows or other croplands (excluding undeveloped rangelands), where such valley floors are significant to the practice of farming or ranching operations if such operations are significant and economically feasible."

In addition, Section 515(b)(10)(F) requires "preserving throughout the mining and reclamation process the essential hydrologic functions of alluvial valley floors in the arid and semiarid areas of the country."

#### BOM assessment

BOM claimed that the provisions on alluvial valley floors would impact those mines lying on an alluvial valley floor as well as those mines near enough to have an adverse effect on the floor itself. Using its familiarity with specific mining operations in the West, BOM determined which mines, in their opinion, located on both private and Federal leases, would be impacted by the alluvial valley floor provision. The production from these mines represented 68 percent of total Western production in 1974. BOM then estimated 1977 Western coal production to be 95 million tons and applied the 68 percent to the 95 million tons to obtain the maximum impact of 66 million tons. <sup>1/</sup> This figure is based on a total shutdown of those mines determined by BOM to be operating on or near alluvial valley floors in 1974. BOM assumed, in making its projection, that the alluvial valley impact on production would be the same--68 percent--in 1977 as in 1974.

The low range of the production loss estimate--11 million tons--is the estimated production that would be lost under what BOM considered to be the narrowest interpretation of H.R. 25. It represents the total forecast production of three mines. BOM officials felt these mines would impact on alluvial valley floors regardless of how narrow the alluvial valley floor provision of H.R. 25 was interpreted.

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<sup>1/</sup>This actually computes to 65 million tons.

BOM's determination of which mines would be impacted by an alluvial valley floor was based on the expert judgment of BOM personnel. Maps prepared by U.S. Geological Survey, Department of the Interior, were used by BOM to confirm its earlier judgment. These maps, which were also provided to us, showed the location of alluvial valley floors and the proximity of existing mining operations to them.

### Other assessment

In addition to BOM, the U.S. Geological Survey, in response to a congressional request, estimated the impacts of the alluvial valley floor provisions. Geological Survey's estimate was the subject of some controversy during the June 1975 hearings, since it differed from BOM's estimate. Geological Survey's assessment, however, addressed coal reserve losses rather than coal production losses, and thus, was not comparable to BOM's production loss figures previously cited.

BOM also estimated the impacts on coal reserve losses and concluded that losses could range from 17 to 66 billion tons. Geological Survey estimated that coal reserve losses could range from 1.7 to 23 billion tons. Listed below are major reasons for the differences in the reserve estimate loss figures.

- Geological Survey's assessment was based on selected Federal leases in the eastern and western Powder River Basin that were overlain by alluvial valley floors. BOM's estimates were based on a study of mines on Federal and private coal leases in seven western States, of which 2 States were in the Powder River Basin.
- Geological Survey's estimates were then projected to all private and Federal coal leases in the Powder River Basin, a 12 county area in Wyoming and Montana. BOM's estimates represented all Federal and private coal leases west of the 100th meridian.
- Geological Survey interpreted the alluvial valley floor provisions as impacting only areas overlain by an alluvial valley floor. BOM interpreted the alluvial valley floor provisions as impacting mines on an alluvial valley floor as well as those mines near enough to have an adverse effect on the floor itself.

The apparent difference of opinion between Geological Survey and BOM over the alluvial valley floor provision demonstrates the necessity for as much precision as possible in the wording of the bill, and shows how important interpretation can be in assessing its impact.

## CHAPTER 3

### OTHER FACTORS

Other factors, in addition to coal production losses, were cited by President Ford as reasons for his veto of H.R. 25. These factors include employment losses of up to 36,000 jobs, increased oil imports, and higher consumer electric utility bills.

### EMPLOYMENT

The Department of Commerce, relying on production loss estimates and productivity data provided by BOM, was responsible for calculating 1977 employment losses of 9,000 to 36,000 resulting from implementation of H.R. 25. The range of job losses was contingent on BOM's and FEA's estimated production loss of 40 to 162 million tons in 1977 and national average surface mining production of 36 tons per man per day.

BOM 1972 coal statistics, which were considered by BOM to be the most representative, showed national average surface mining production of 36 tons per man per day, with each man working an average of 225 days per year. This indicates average annual production of about 8,100 tons per miner. The Department of Commerce applied the 1972 productivity factor to the estimated 1977 coal production losses of 40 to 162 million tons, resulting in direct employment losses ranging from 4,938 miners (40 million tons divided by 8,100 tons per miner) to 20,000 miners (162 million tons divided by 8,100 tons per miner). Indirect employment losses were also calculated by Commerce based on the research of Dr. William H. Miernyk from the University of West Virginia. Dr. Miernyk, considered by the Department of Commerce to be a noted authority on input-output analysis, claimed that for every one direct job lost in the surface mining sector, an additional 0.8 jobs in other sectors of the economy would also be lost. Using this factor, Commerce concluded that a 40 to 162 million ton production loss could impact an additional 3,950 to 16,000 jobs indirectly, resulting in total direct and indirect employment losses of 8,888 to 36,000.

We noted that the Department of Commerce did not compute employment gains from shifts to underground mining and from reclamation jobs because it was the administration's position that such gains would not occur during the first year of implementation of H.R. 25 and should, therefore, not be included in the employment analysis. Also Commerce was not provided regional productivity figures for use in determining employment impact. As discussed below, considerations of

shifts to underground mining and reclamation jobs might have reduced the estimated job losses.

### Shift to underground mining

BOM, in clarifying President Ford's veto message, stated that 90 percent of the coal production loss would be replaced by foreign oil. Although the administration did not indicate where the remaining 10 percent would come from, we found from a review of supporting documents, that the remaining 10 percent might have come from additional production from underground mines. However, the administration did not consider, in its employment loss calculations, any offsetting increase in employment resulting from this increased underground production. Applying the administration's methodology for employment loss impact--that production equals jobs--and using the BOM nationwide underground mining productivity statistics, we estimated that an additional 7,000 jobs would be directly created and that about 5,600 jobs would be indirectly created from increased underground production, thereby reducing the maximum employment impact (direct and indirect) from 36,000 cited by the administration, to about 23,400.

However, earlier BOM estimates developed before the veto stated that as much as 20 percent of the coal production loss might be regained by underground mining. The use of this factor would have further reduced the total employment impact by about 12,600 from 23,400 to 10,800. During the subsequent veto hearing, however, FEA indicated that the coal production loss would be made up 100 percent by oil and that there would be no shift to underground mining.

Thus, there appeared to be some confusion within the administration as to whether increased underground mining could offset any decreased surface production.

### Reclamation and other additional employment not included

The administration contended that there would be no jobs created under the reclamation provision of H.R. 25, since the reclamation activities would be financed by a tax on coal production. The result would be that any reclamation jobs created would be at the expense of jobs in other sectors of the economy. While this may be correct in certain theoretical instances, it is possible, depending upon such economic factors as the level of national unemployment and the extent in which increases in coal prices are passed through to the public, that an increase in employment could result due to reclamation activities, which could offset the loss of employment in the coal industry. Also, the addition of reclamation jobs in

those specific areas being reclaimed could help offset any local employment losses due to reduced coal production.

One study we examined estimated a net employment loss in Appalachia of 1,400 persons initially, but also pointed out that additional employment could be created in the first year of full implementation in both government and industry to implement the legislation and conduct the studies required for permit applications.

### Geographic factors not considered

The productivity of surface mining varies considerably throughout the country. Using 1974 BOM productivity figures for the Western States (about 83 tons per man per day), those for Appalachia (25 tons per man per day), and those for the rest of the Nation (31 tons per man per day), we recalculated the employment figures taking into account the level of productivity that exists where the production losses were expected to occur. Our calculation showed maximum direct employment losses of about 22,000 as opposed to 20,000 calculated by the Department of Commerce. While the use of available regional figures would have yielded a more precise and confident estimate, the use of national, rather than regional, productivity factors in this instance resulted in a lower estimate of the impact of coal production losses on employment.

### INCREASED OIL IMPORTS

#### Replacing lost coal production

As discussed on page 14, we noted some differing opinions concerning what percentage of the estimated 1977 production loss of from 40 to 162 million tons would be replaced, and with what.

In an attachment to a memorandum dated May 23, 1975--3 days after President Ford's veto of H.R. 25--BOM estimated that 90 percent of the loss would be replaced by foreign oil (154 to 627 million barrels a year) with the remainder being offset by increases in coal production from underground mines. However, during the June 1975 hearings, FEA indicated that the coal production loss would be made up 100 percent by oil and that oil imports could increase by 164 to 657 million barrels a year. In addition, earlier BOM estimates developed before the hearings speculated that 80 percent of the lost surface coal production would be replaced by imported oil with the remaining 20 percent made up through underground mining increases.

In addition, we saw no documentation to indicate whether the administration considered the possibility for increased production from surface mines not adversely affected by H.R. 25. BOM officials informed us that there was some potential for such increased production.

### Btu equivalency

The figures presented by FEA during the veto hearings, in calculating the replacing of coal with oil, used a Btu conversion factor of 4.14, i.e., 1 ton of coal will generate as much heat as 4.14 barrels of oil. However, when President Ford vetoed the bill, a 4.3 conversion factor was used. BOM also used the 4.3 factor in a memorandum dated 3 days after President Ford's veto. The 1976 Keystone Coal Industry Manual cites 4.17 as the factor for comparing coal and crude oil.

However, since lost coal production would most likely be replaced by residual fuel oil and not crude oil, we believe a more appropriate factor to use would be that for residual fuel oil. According to Keystone, on a Btu equivalency basis 1 ton of electric generation coal equals 3.55 barrels of residual fuel oil. This lower figure is the result of the higher Btu content of residual fuel oil as compared to most other petroleum products. Applying this conversion factor to the estimated maximum coal production loss would reduce maximum oil imports to 518 million barrels of oil (assuming 90 percent of lost production is replaced by oil), or 575 million barrels of oil (assuming 100 percent of lost production is replaced by oil), versus 627 million barrels as cited in the BOM memorandum, and the 657 million barrels as cited in the June 1975 hearings.

### INCREASED CONSUMER ELECTRIC BILLS

According to FEA, the cost of electricity could rise 3.4 to 8.0 percent as a result of H.R. 25. This is based on the higher costs of imported oil used to replace the lost coal and the higher market costs of the remaining coal (the spot market price for coal would increase sharply and immediately).

The administration's figures were based on the following assumptions:

--Residual fuel oil price is \$11.60 per barrel.

--Average price of coal (spot and long term contract) is \$20 per ton.

- 1975 anticipated demand for coal is 663 million tons.
- 20 percent of coal demand is purchased in the spot market.
- Oil imports would range from .45 to 1.84 million barrels per day.
- Conversion factor of 4.14 for oil to coal.
- 1975 anticipated electricity demand is 1963 billion kilowatt hours.
- Average cost per kilowatt hour is 25 mils.
- 70 percent of the increased cost of coal would be borne by electric utilities.

Application of these assumptions results in the following figures.

	<u>Estimates per year</u>	
	<u>Low</u>	<u>High</u>
Increased annual cost due to oil use	\$ .79 billion	\$3.24 billion
Increased annual cost due to coal price increases	\$1.59 billion	\$2.39 billion
Average increased cost per kilowatt hour	.85 mils	2.01 mils
Percent increase in electricity price	3.4%	8.04%

With respect to the administration's assumptions, we have already noted that the use of a conversion factor of 3.55 would have been more accurate than 4.14. Another point to recognize is that the administration calculations deal with the year 1975, whereas the rest of the administration's analysis dealt with 1977.

As we have already indicated in our previous discussion of the administration's analysis of increased oil imports, the estimated oil import figures may have been overstated. Any reduction in the estimate would also serve to reduce the potential increase in consumer electric bills.

## STRICTNESS OF STATE LAWS

A topic of debate during the June 1975 hearings was whether Pennsylvania and other States had reclamation or environmental restrictions approaching those of H.R. 25. We found no evidence that the administration considered any production costs or losses that had already occurred or would occur because of State laws. The elimination of those States already complying with provisions similar to those of H.R. 25 could significantly reduce the adverse impact of H.R. 25. The effect of H.R. 25 would be its incremental impact on surface mining.

Information developed by the administration in preparation for the June 1975 hearings found that Montana had a surface mining law that approached H.R. 25 both environmentally and administratively. West Virginia, Pennsylvania, Ohio, Indiana, and Wyoming were mentioned as having laws that approach H.R. 25 environmentally. These six States represent 48 percent of the Nation's surface mining. BOM officials stated that there were major differences existing between the laws in these States and H.R. 25. However, any similarities existing between the State laws and H.R. 25 would still tend to minimize to some extent the impact of H.R. 25.

For example, the administration's starting point for its steep slope assessment was 1971 Appalachian production projected into 1977. Unless the engineering estimate (for which no documentation was available) included an estimate for this, it would seem the administration's estimate would not have taken into account any surface legislation enacted in those States since 1971. Three Appalachian States have enacted surface mining legislation since 1971.

As another example, we examined a study which calculated the incremental impact of the legislation on producers, while the administration's assessment apparently considered total impact. Any of the expenses and requirements which the producer may have been incurring because of the existing State surface mining laws which equaled or exceeded H.R. 25 requirements should have been deducted to arrive at the bill's incremental impact.

BOM officials told us that their engineering estimates did include consideration of reclamation costs already required by the various States. They also stated that permit application costs in States in 1975 were negligible in comparison to those of H.R. 25, and thus incremental considerations were not significant. While these considerations may

have been included in BOM's subjective engineering estimates, we were not able to identify, from the supporting documentation we examined, how the various State laws would have affected the production loss estimates.

Recent studies by the Department of the Interior have shown existing reclamation laws in Wyoming and Montana to be equal to or more stringent than Federal standards. On May 17, 1976, the Department of the Interior adopted regulations authorizing it to enter into cooperative agreements with States to allow State enforcement and administration of surface coal mining reclamation standards on Federal coal leases so long as the same degree of environmental protection as would occur under Federal law is insured. In March 1977 Interior had finalized and implemented one agreement and was expected to complete agreements with North Dakota, Utah, and New Mexico in the near future. The regulations could affect the impact of proposed Federal surface mining legislation and thus deserve recognition in future impact studies.

## CHAPTER 4

### CONCLUSIONS

Although we did not always find sufficient documentation to either verify or evaluate every calculation the administration made, it is our opinion that most of the data was developed prior to the veto.

As to the accuracy and validity of the assessment itself, we did find weaknesses and inaccuracies in the study. This is to be expected when much of the assessment relied on the expert estimates and assumptions of BOM and other involved personnel. Such "guesstimating" is often used in decision-making but it is not conducive to outside evaluation or audit.

There seems to be a consensus, in looking at the other studies made of proposed surface mining legislation, that the bill would be subject to legal interpretation which could affect the actual impact on production significantly.

It is important to emphasize that any adjustments made to the production impact estimate would require corresponding recalculation of the impacts on employment, oil imports, and consumer electric bills, since the production impact estimate was the key figure on which the other impacts were based. Thus, any inaccuracies or methodological flaws we have identified pertaining to production impacts would also affect the unemployment, oil imports, and consumer electric bill estimates.

Our major conclusions on the administration's assessment are:

--The estimates of production impacts were quite speculative, as evidenced by

- (1) the subjective manner in which most of the production estimates were developed and
- (2) the absence of cost data with which to analyze the impact of H.R. 25 on various types of coal mines and, therefore, the inability to make assessments on which mines would actually close down, and which mines could make necessary cost adjustments and continue to produce.

--Much of the production impact analysis was lacking in documentary support and, as a result, the calculations could not be independently assessed or verified.

--Several methodological flaws, as listed below, existed in the administration's analysis.

- (1) Unemployment was possibly overstated because the potential for increased employment in underground mines and reclamation jobs was not included in the 1977 estimates.
- (2) There was no documentation showing that existing State reclamation laws and their impact on reducing incremental production losses from H.R. 25 were considered.
- (3) Oil import figures were overstated because an improper factor was used to convert coal Btu's to residual oil Btu's.

Many of the problems we have identified in the administration's analysis of the effects of H.R. 25 resulted from a lack of sufficient information on coal productivity, particularly with regard to the effects of cost-price relationships on coal recoverability.

We believe our report provides an excellent case example of how the lack of data has hindered the analysis of an important national issue. Federal legislation was enacted last year, however, that should help improve the situation.

The Federal Coal Leasing Amendments Act of 1975 (Public Law 94-377) directed the Secretary of the Interior to conduct a comprehensive exploratory program, including stratigraphic drilling, to evaluate the extent, location, and potential for developing coal resources on Federal lands. This legislation, if effectively implemented, should provide the data necessary to help schedule the locations of future Federal coal lease sales in such a way as to be most compatible with the reclamation requirements of applicable Federal or State laws in existence at the time. It will not, however, help with coal on private lands, which represents 94.7 percent of total 1974 U.S. coal production.

Our recent report to the Congress <sup>1/</sup> examined the Government's data on domestic resources and reserves of crude oil, natural gas, uranium, and coal, and concluded that estimates of resources and reserves of these fuels could be greatly improved.

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1/Domestic Energy Resource and Reserve Estimates--Uses, Limitations, and Needed Data, EMD-77-6, March 17, 1977.

**We recommended that the Administrator, FEA,**

- monitor the Department of the Interior's implementation of the comprehensive exploratory program authorized under the Federal Coal Leasing Amendments Act of 1975 and**
- obtain from coal producers, as part of FEA's new energy data requirements contained in the Energy Conservation and Production Act (Public Law 94-385), estimates of recoverable domestic coal reserves by using appropriate verification techniques and develop plans to update the results of this effort on a regular and recurring basis, including the effect of cost-price relationships on recoverability.**

**Implementing these recommendations, coupled with the requirements of the Federal Coal Leasing Amendments Act of 1975, should go a long way toward creating a more comprehensive coal data base with which to better evaluate the impacts of future alternative courses of action.**

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WILLIAM J. VAN NESS, CHIEF COUNSEL

## United States Senate

COMMITTEE ON  
INTERIOR AND INSULAR AFFAIRS  
WASHINGTON, D.C. 20510

11 November 1976

Mr. Elmer B. Staats  
Comptroller General of the United States  
General Accounting Office  
441 G Street  
Washington, D. C. 20548

Dear Mr. Staats:

On 20 May 1975, President Ford defended his veto of H.R. 25, the Surface Mining Control and Reclamation Act, by claiming that if the bill were enacted, 36,000 Americans would lose their jobs, utility bills would be increased, the Nation would become more dependent on foreign oil and coal production would be reduced at a time when we needed increased production. The House Interior Committee held a hearing on 3 June 1975, to review the veto message. The Bureau of Mines and Federal Energy Administration explanation of the rationale for the President's conclusion was considered totally inadequate by most participants.

Subsequently, reporters for the Baltimore Sun and the Louisville Courier-Journal investigated the process by which FEA and the Bureau had developed their data regarding the supposed impacts of H.R. 25. Their articles raised serious questions about the methods used -- so much so that we were impelled to write President Ford asking for clarification.

We have not had a direct response to our letter. However, FEA Administrator Frank Zarb recently sent Senator Floyd Haskell a reply which is basically a recapitulation of explanations already supplied to Congresswoman Patsy Mink by the Bureau.

Since Congress will assuredly undertake reconsideration of H.R. 25 in the new session, the question of the Ford veto rationale is bound to re-emerge, along with continuing doubts about the methods used to arrive at the conclusion about the impact of the bill on coal production and the economy.

Mr. Elmer B. Staats  
11 November 1976  
Page Two

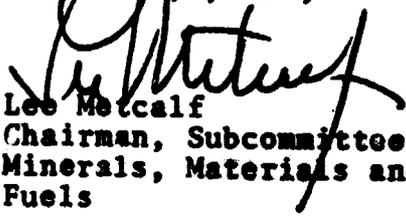
In order to lay these matters to rest once and for all, we request that the General Accounting Office conduct an investigation into the manner in which the Bureau of Mines and FEA conducted their study of the energy and economic impacts of H.R. 25 and its predecessor bill, H.R. 11500. We would appreciate a final report no later than 15 February 1977.

Mike Harvey, Deputy Chief Counsel of Interior Committee, has already discussed our request with Monte Canfield of your staff. If your staff has any questions, they may call him at 224 - 1076.



Henry M. Jackson  
Chairman, Committee on  
Interior and Insular  
Affairs

Very truly yours,



Lee Metcalf  
Chairman, Subcommittee on  
Minerals, Materials and  
Fuels

**PRINCIPAL OFFICIALS**  
**RESPONSIBLE FOR ADMINISTERING ACTIVITIES**  
**DISCUSSED IN THIS REPORT**

**Tenure of Office**  
**From**                      **To**

**DEPARTMENT OF THE INTERIOR**

**SECRETARY:**

Cecil D. Andrus	Jan. 1977	Present
Thomas S. Kleppe	Oct. 1975	Jan. 1977
Kent Frizzell (acting)	July 1975	Oct. 1975
Stanley K. Hathaway	June 1975	July 1975
Kent Frizzell (acting)	May 1975	June 1975
Rogers C. B. Morton	Jan. 1971	May 1975

**FEDERAL ENERGY ADMINISTRATION**

**ADMINISTRATOR:**

John P. O'Leary	Feb. 1977	Present
Gorman C. Smith (acting)	Jan. 1977	Feb. 1977
Frank G. Zarb	Dec. 1974	Jan. 1977