



# Lawrence Berkeley Laboratory

UNIVERSITY OF CALIFORNIA

## ENERGY & ENVIRONMENT DIVISION

MONTHLY FUEL CONSUMPTION REPORT-MANUFACTURING PLANTS

Steven Alter, Carl Blumstein, Eric Mohr,  
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December 1978

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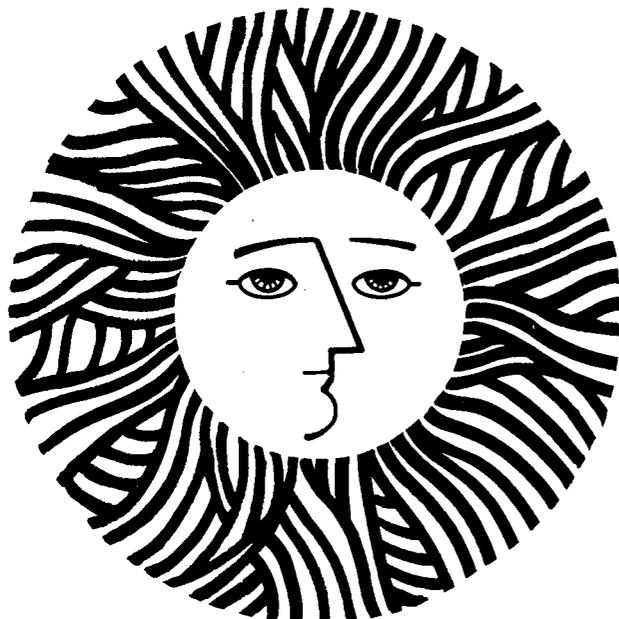
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LBL-8435  
Interim Report

MONTHLY FUEL CONSUMPTION REPORT  
MANUFACTURING PLANTS

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December 1978

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## PREFACE

The Energy Information Administration maintains a group of coal information systems which provide information on production, consumption, and stocks of coal. One of these systems is the Monthly Fuel Consumption Report: Manufacturing Plants (MFCR), which gathers information on coal consumption and stocks of both general industrial users, accounting for about 9% of total coal usage, and steel and rolling mills, accounting for less than 1%.

The purpose of this interim validation report is to describe progress to date in assessing the accuracy and usefulness of the information that is collected and distributed by the MFCR system. Work to date has focused only on the general industrial coal consumers. Due to changes in the MFCR system in late 1977, 1976 is the most recent year for which complete information is available. Much of the data analysis to date uses 1976 information. On-going work will extend this analysis to include the years 1973-1975. Work to date has not attempted to evaluate the potential impact of planned changes in the MFCR system.

Supported by the Office of Energy Information Validation of the Energy Information Administration of the U.S. Department of Energy under contract number W-7405-ENG-48.

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Interim Report

ES-1

MONTHLY FUEL CONSUMPTION REPORT

MANUFACTURING PLANTS

EXECUTIVE SUMMARY

## EXECUTIVE SUMMARY

## I. SYSTEM IDENTIFICATION

## A. CURRENT IDENTIFICATION INFORMATION

- Name of system being validated: Monthly Fuel Consumption Report: Manufacturing Plants
- EIA standard series number: EIA-3
- Form clearance information: Submitted to the Office of Management and Budget (under the agency number FEA-C332-M-0) for clearance on September 23, 1977. The requested expiration date was January 1, 1980. The OMB clearance number was 038-R0193.
- Statutory authority under which reporting requirements were established:
  - Federal Energy Administration Act of 1974 (Pub. L. No. 93-275, 88 Stat. 96 (May 7, 1974), codified as amended at 15 U.S.C.A. § 761, et. seq. (1978)).
  - Department of Energy Organization Act (Pub. L. No. 95-91, 91 Stat. 565 (August 4, 1977), codified as amended at 42 U.S.C.A. § 7101, et. seq. (1978)).

## B. HISTORICAL IDENTIFICATION INFORMATION

- Antecedent to the present system: BOM Form 6-1400-M-1
- Planned successors to the system: None currently known to LBL. A planned revision and improvement of the system is in process.

## C. IDENTIFICATION OF PURPOSE

- Purpose of the system: As stated on form EIA-3, the form "is designed to provide the sales and volume data of manufacturing consumers necessary for fully informed monitoring and guidance by the U.S. Department of Energy's Energy Information Administration (EIA) in accordance with Section 13 of the Federal Energy Administration Act of 1974 (PUB. L. No. 93-275).... The data collected will be used in the compilation of public statistical reports with primary efforts providing for continual monitoring of coal production, consumption, and distribution for coal-related analysis, including energy/environmental studies, energy policy and implementation of mandated coal programs."

## D. IDENTIFICATION OF INFORMATION COLLECTED

- Reporting requirements: As of December 1977, respondents are required to complete all parts of form EIA-3.
- Numerical information requested (on a monthly basis):
  - (1) Quantity of fuel consumed in the following fuel categories: bituminous coal, sub-bituminous coal, lignite, anthracite, oil, gas, furnace coke, foundry coke, and other.
  - (2) Quantity received during the month and average price per unit in each of the fuel categories.
  - (3) Beginning and ending stocks in each of the fuel categories except gas.
  - (4) Average Btu content per ton in each of the fuel categories except oil and gas.
  - (5) Average sulfur content in each of the fuel categories except gas.
  - (6) Estimated shipment time and distance for each major coal source.
  - (7) Quantity of waste ash removed after consuming coal.
- Level of resolution: Monthly consumption, receipts, and beginning and ending stocks at individual manufacturing plants or other commercial establishments.
- Descriptive information requested:
  - (1) Plant location.
  - (2) Plant standard industrial classification
  - (3) Bureau of Mines district of coal origin.
  - (4) Justification of any claim that the information on the form is confidential and will cause substantial competitive injury if released.

## E. IDENTIFICATION OF COLLECTION AND COLLATION PROCESS

1. Universe Identification and Sample Design

- Universe: The universe is not clearly defined. Various aspects of system documentation imply each of four definitions that can be referred to as the "form title" definition, "form instructions" definition, "published" definition, and "in-house" definition.

The title of the reporting form is "Monthly Fuel Consumption Report: Manufacturing Plants." The instructions for form EIA-3 imply that the universe is "all firms and establishments that consume bituminous coal and lignite," and state that establishments such as airline terminals and administrative offices should be included. Footnotes published between 1958 and 1977 refer to a baseline estimate based on consumption and stocks of users directly involved in manufacturing or mining. The in-house definition of the universe appears to be all establishments other than electric power utilities and coking plants that buy coal directly from retailers.

- Frame: The frame primarily consists of a list of establishments that voluntarily submitted the BOM 6-1400-M-1 before reporting became mandatory in December 1977 (retroactive to January 1977). The 1976 data base contained responses from 747 firms, 106 of which did not burn coal. Additional establishments added during 1977 and 1978 have increased the size of the frame to over 1,000.
- Census of frame elements: Although no census of the elements of the frame has been attempted in conjunction with the MFCR system itself, the Census of Manufactures reports information that is directly related to the MFCR frame.
- Sampling: The MFCR system collects responses from the entire frame.
- Means of information collection: Form EIA-3 is completed on a monthly basis and sent to the Coal Statistics Branch of the Division of Coal and Electric Power Statistics in the Office of Energy Data and Interpretation in EIA. Response was voluntary before December 1977, when it became mandatory retroactive to January 1977.
- Length of reporting period: One month
- Frequency of data collection: Monthly

## 2. System Implementation

- Agency collecting the information:

Coal Statistics Branch  
Division of Coal and Electric Power Statistics  
Office of Energy Data and Interpretation  
Energy Information Administration

- Processing the information: The completed forms are manually edited by the Coal Statistics Branch and then sent to Optimum Systems Incorporated (OSI) for keypunching. Several iterations of manual and computerized checks are performed by Computer Sciences Corporation (CSC) in the process of updating the system's master file, which is stored on tape.
- Information volume: During 1976 (the most recent year for which complete information was available), a total of 722 respondents reported. The average monthly response rate was 86%. The frame has been increased to over 1,000 during 1977-1978.
- Processing time: Forms are due fifteen days after the close of the reporting period. The editing process requires approximately six weeks. Preliminary estimates of national consumption and stocks by fuel category are published ten weeks after the end of the reporting period. These preliminary estimates are revised one month later. A final estimate for the reporting month is published one year later, i.e., approximately fifteen months after the reporting period.
- Custodians of computer files: Optimum Systems Incorporated (OSI).

## F. USES OF OUTPUT

### 1. Direct Uses of the Information

- Regulatory uses: No regulatory uses of the information collected by form EIA-3 have been found.
- Use in specific analyses and models: Further research is required in order to identify specific analyses and models that use information collected by form EIA-3.

### 2. Publication of Information

- Agency that publishes the information: EIA
- Reports published:
  - (1) EIA Energy Data Reports, Weekly Coal Report  
(previously called Bureau of Mines Mineral Industry Surveys, Weekly Coal Report)

ES-7

- (2) EIA Monthly Energy Review
  - (3) DOE Annual Report to Congress
  - (4) Minerals Yearbook
  - (5) Mineral Facts and Problems
- Primary Format of Reports: Tables
  - Recipients of reports: Examination not yet complete. The Energy Data Reports, Weekly Coal Report is sent to anyone who requests it. Presently, about 2,000 individuals or organizations receive the report. These include government agencies, investment firms, libraries, research groups, and firms associated with the coal industry.

#### G. RELATED SYSTEMS

Examination of the relationship between form EIA-3 and related information systems is in progress. The related systems can be classified as follows:

- (1) EIA coal information systems - EIA forms 1 through 7, 20, and 210.
- (2) Other coal information systems - the Annual Survey of Manufactures and Census of Manufactures of the Bureau of Census.
- (3) Other fuel information systems - the Major Fuel Burning Installations Survey (FEA-C-602-S-0), the National Emissions Data System of the Environmental Protection Agency, and the Annual Survey of Manufactures and Census of Manufactures of the Bureau of Census.

## II. CONCLUSIONS AND RECOMMENDATIONS

### A. CONCLUSIONS

#### 1. Usefulness

- Preliminary user interviews indicate that the published outputs of the MFCR system are not generally considered useful by individuals concerned with monitoring or

analyzing long-term trends in coal demand and availability. Many users and potential users of coal information state that the MFCR outputs are not timely, are too highly aggregated and are perceived to be inaccurate. (Additional work will be done to confirm initial findings.)

- If the MFCR system were accurate, it might provide potentially useful information that would, however, constitute only part of the information required for monitoring or analyzing long-term trends in coal demand and availability.

## 2. Accuracy

- The accuracy of time series produced to date by the MFCR system is highly suspect for the following reasons:
  - (1) Ill-defined universe: The universe is not clearly defined. The definition of the universe implied by the instructions for the EIA-3 conforms neither to the baseline cited in published statistical estimates nor to the "in-house" definition used in collecting the information.
  - (2) Inappropriate and outdated baseline: The baseline cited in published statistical estimates from 1958 through 1977 does not correspond precisely to the quantity apparently being estimated. During these years, the Weekly Coal Report references a 1954 baseline including only manufacturing and mining firms. However, the information gathered by the EIA-3 is currently used to estimate coal consumption of a group of users including establishments that are not manufacturers. Although several adjustments to the baseline have apparently been made, at least one (for inclusion of institutional users of fuel) has not been documented. A new baseline is now being developed by the Bureau of Census to improve the accuracy of future estimates.
  - (3) Technical bias: The linked relative procedure used to estimate national consumption and stocks is most appropriate when the population of respondents does not change. Although estimates based on this procedure would reflect changes in coal consumption within an established population of respondents, these estimates would not reflect the impact of entry to and exit from the respondent population. Consequently, significant trends first away from coal use (in the 1960s and early 1970s) and later toward coal use (in the mid and late 1970s) should be underrepresented in estimates generated by the MFCR system.

- (4) Disagreement with Bureau of Census estimates: The statistical estimates generated by the MFCR system in the years 1974, 1975, and 1976 are 24%, 37%, and 31% higher than comparable estimates published in the Annual Survey of Manufactures (1974, 1975, 1976).
- (5) Disagreement between the data base and the information published: Monthly percentage changes in consumption for 1976 were computed by applying the linked relative procedure to the 1976 information in the data base. These percentage changes differed from percentage changes published in the Weekly Coal Report. The cumulative effect of these differences was quite significant. The ratio of December 1976 consumption to January 1976 consumption in the published report is 1.237; the comparable ratio computed from the data base is 0.998. Thus, the published December 1976 consumption is 24% higher than the 1976 information in the data base would suggest. (A similar analysis for previous years is in process.)
- (6) Possible non-coverage bias: The following combination of LBL findings and past DOE estimates raises suspicions about, but does not conclusively prove the existence of, possible non-coverage bias, related to the effects of seasonality. The information in the data base for 1976 covers approximately one half of total estimated bituminous coal consumption in 1976 (26 million of a total 55 million tons). Histograms of 1976 information indicate that consumption is highly skewed. Approximately 25% of the coal users who responded consumed 75% of the total amount consumed. April 1978, DOE estimates of the size of the 1978 MFCR universe (3700 to 4000) indicate that the 1976 data base (containing 616 coal users among 722 respondents) may have missed on the order of 80% of coal users. Assuming that these users used the 29 million tons not accounted for in the data base, it is likely that the majority of these users are small. Since preliminary comparisons of seasonal consumption patterns suggest that coal usage by small users has stronger seasonality than that of large users, it is possible that the published information systematically underrepresents the seasonality of coal usage.
- (7) Possible selection bias: Until December 1977, reporting was voluntary. It is not known whether this affected the estimates that were generated by the system.

- (8) High variance of the estimate: A mathematical formula has been derived for a lower bound on the variance of an estimate generated using the link relative method for M periods. Substitution of 1976 population statistics into this formula indicates that the application of the link relative method for twenty years would result in monthly estimates for the last year whose standard deviation is at least 32% of the estimated value.

## B. RECOMMENDATIONS

### 1. Caveats

- The information generated by the MFCR system is highly suspect for reasons cited above. Whenever possible, annual consumption information generated by the Bureau of Census should be used in its stead.

### 2. System Design

- The purpose of the MFCR system is to provide information rather than to support a specific regulatory process. Consequently, recommendations concerning system design cannot be made until a thorough study of the need for coal information has been performed.

### 3. Continuing Research

- Completion of data quality investigations
- Design and execution of a study of needs for coal information. Such a study is required in order to make recommendations about the redesign of the MFCR system.

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Interim Report

INTERIM VALIDATION REPORT

MONTHLY FUEL CONSUMPTION REPORT

## I. SYSTEM IDENTIFICATION

### A. CURRENT IDENTIFICATION INFORMATION

The "Monthly Fuel Consumption Report: Manufacturing Plants" (MFCR) uses form EIA-3 (reproduced in Appendix A) to collect information on monthly consumption, receipts, and beginning and ending stocks of major fuels from establishments accounting for about 10% of total coal consumption in 1977. The primary purpose of the MFCR system is to collect information about the use of coal. Although information about the use of oil, gas, and coke is also collected, only the coal information is published.

Form EIA-3 is used to gather information from two of five groups of coal consumers whose consumption is reported in the Energy Data Reports, Weekly Coal Report. These groups of coal consumers and the pertinent EIA form for gathering monthly information are as follows:

<u>Coal Consumer</u>	<u>EIA form</u>	Percent <sup>1</sup> of total coal consumption in first half of 1977
Electric power utilities	EIA-210	75.9 %
Beehive and oven coke plants	EIA-5	13.0 %
Steel and rolling mills	EIA-3	0.6 %
Other manufacturing and mining industries including cement	EIA-3	9.3 %
Retail deliveries	EIA-2	1.2 %

Research to date on the MFCR system has focused primarily on the information gathered in the category "other manufacturing and mining industries including cement."

Form EIA-3 (temporarily called form FEA-C-332-M-0) was submitted to the Office of Management and Budget (OMB) for clearance on September 23, 1977, with a requested expiration date of January 1, 1980. See Appendix B for the full text of the clearance request. The EIA's authority to collect and publish the data on form EIA-3 is derived from the Federal Energy Administration Act of 1974, Pub. L. No. 93-275, 88 Stat. 96 (May 7, 1974), codified, as amended, at 15 U.S.C.A. Section 761, et seq. (1978) and the Department of Energy Organization Act, Pub. L. No. 95-91, 91 Stat. 565 (August 4, 1977), codified, as amended, at 42 U.S.C.A. Section 7101, et seq. (1978). See Appendix C for relevant excerpts from these acts.

B. HISTORICAL IDENTIFICATION INFORMATION

The EIA-3 supersedes the Bureau of Mines form 6-1400-1. See Appendix D for a copy of the form BOM-6-1400-M-1 and its clearance request. As outlined in Figure 1, the previous history of the MFCR system goes back to 1917. See Appendix E for some of the earliest historical documents related to what is now the MFCR system.

July 21, 1917	United States Geological Survey publishes first issue of the <u>Weekly Coal Report</u> "to serve both the Government and the trade with an authoritative index of industrial conditions." <sup>2</sup> <u>Weekly Coal Report</u> data is collected for the committee on coal production of the Council on National Defense. <sup>3</sup> The wartime United States Fuel Administration also uses these statistics. <sup>4</sup>
Spring, 1925 (?)	Monthly Fuel Consumption Report is initiated. Its output is published monthly as a part of the <u>Weekly Coal Report</u> .
July 1, 1925	Division of Mineral Resources, which apparently published the <u>Weekly Coal Report</u> , is transferred from the Survey to the Bureau of Mines (BOM). <sup>5</sup> BOM is transferred from Department of Interior to Department of Commerce. <sup>6</sup>
July 3, 1925	BOM begins publishing <u>Weekly Coal Report</u> . <sup>7</sup> Organic Act of May 16, 1910, <sup>8</sup> establishing BOM, provides BOM with sufficient authority to collect and publish MFCR data and <u>Weekly Coal Report</u> . <sup>9</sup>
1934	BOM is transferred from Department of Commerce to Department of Interior. <sup>10</sup>
1935-1947	<u>Weekly Coal Report</u> is published by various agencies, ending with Bureau of Mines.
1954	Bureau of Census (BOC) conducts a baseline survey for BOM to establish a reference point for total coal stocks and consumption by industrial users other than utilities and coking operations. <sup>11</sup>
1958	BOM revises its own estimated figures on the consumption of bituminous coal and lignite to bring them "into closer conformity" with figures from Census of Manufactures and Census of Mineral Industries. <sup>12</sup>
1971	BOM converts processing of input data from manual to computerized system. <sup>13</sup>
1976	BOM expands input form to include data on price, sulfur content, and Btu content. <sup>14</sup>
October 1977	Energy Information Administration (EIA) of Department of Energy (DOE) assumes the function of collecting and publishing MFCR data. <sup>15</sup> EIA publishes data as part of its <u>Energy Data Reports</u> .
December 1977	EIA issues a notice providing for the mandatory reporting of MFCR information previously submitted on a voluntary basis, retroactive to January 1977. <sup>16</sup> This information to be reported on form EIA-3 (formerly BOM-6-1400-M-1). <sup>17</sup> EIA's authority to require the submission of EIA-3 is derived from the Federal Energy Administration Act of 1974 <sup>18</sup> and the Department of Energy Organization Act. <sup>19</sup>

Figure 1. Historical Identification Information

### C. IDENTIFICATION OF PURPOSE

The instructions to EIA-3 state the purpose of the reporting system:<sup>20</sup>

Form EIA-3 is designed to provide the sales and volume data of manufacturing consumers necessary for "fully informed monitoring and guidance" by the U.S. Department of Energy's Energy Information Administration (EIA) in accordance with Section 13 of the Federal Energy Administration Act of 1974, (P.L. 93-275), under provisions of Executive Order 12009 'to effectuate the transfer of functions provided for in the Department of Energy Organization Act' (P.L. 95-91). The data collected will be used in the compilation of public statistical reports with primary efforts providing for continual monitoring of coal production, consumption, and distribution for coal related analysis including energy/environmental studies, energy policy, and implementation of mandated coal programs.

In the justification attached to its September 23, 1977 clearance request for form FEA-C-332-M-0 (renamed EIA-3 by the EIA),<sup>21</sup> the Federal Energy Administration (now part of the Department of Energy) stated:<sup>22</sup>

The objective of monitoring the coal market situation is to provide public, industry, and all levels of government with accurate and unbiased reports of the critical nature and related impacts of coal supply shortage situations, demand for coal, coal stocks held, and location of impacted end users....

Since these data and reports are sensitive to the bargaining process during a coal strike, a further objective will be to provide proper levels of maintenance of confidentiality and data security. The outputs from this system will be the impartial results of monitoring and analysis of the situation. These data, analyses, and reports must be responsive, timely, accurate, and concise.

## D. IDENTIFICATION OF INFORMATION COLLECTED

The following information is collected by the EIA-3:

- Numerical information requested (on a monthly basis):
  - (1) Quantity of fuel consumed in the following fuel categories: bituminous coal, sub-bituminous coal, lignite, anthracite, oil, gas, furnace coke, foundry coke, and other.
  - (2) Quantity received during the month and average price per unit in each of the fuel categories.
  - (3) Beginning and ending stocks in each of the fuel categories except gas.
  - (4) Average Btu content per ton in each of the fuel categories except oil and gas.
  - (5) Average sulfur content in each of the fuel categories except gas.
  - (6) Estimated shipment time and distance for each major coal source.
  - (7) Quantity of waste ash removed after consuming coal.
- Level of resolution: Monthly consumption, receipts, and beginning and ending stocks at individual manufacturing plants or other commercial establishments.
- Descriptive information requested:
  - (1) Plant location.
  - (2) Plant standard industrial classification.
  - (3) Bureau of Mines district of coal origin.
  - (4) Justification of any claim that the information on the form is confidential and will cause substantial competitive injury if released.

## E. IDENTIFICATION OF COLLECTION AND COLLATION PROCESS

### 1. Universe and Sampling Design

The universe for the MFCR system is not clearly defined. Various aspects of system documentation imply each of four definitions which will be referred to as the "form title" definition, "form instructions" definition, "published" definition, and "in-house" definition.

- "Form title" definition:

The title of the EIA-3 reporting form is "Monthly Fuel Consumption Report: Manufacturing Plants."

- "Form instructions" definition:

The instructions for the EIA-3 state that the form "has been sent to all firms and establishments that consume bituminous coal and lignite. Each establishment shall complete and submit this form each month."

The instructions define an establishment as an "economic unit, generally at a single physical location where business is conducted or where services of industrial operations are performed (for example, a factory, mill, store, hotel, movie theater, mine, farm, ranch, bank, railroad depot, airline terminal, sales office, warehouse, or central administrative office)." The instructions define a firm as "any association, company, corporation, state, individual, joint-venture, partnership, or sole proprietorship, or other entity, however organized, including educational or other eleemosynary institutions and the federal government including corporations, departments, federal agencies and other instrumentalities and state and local governments."

Thus, the instructions seem to call for a much broader reporting universe than is implied by the title of the form.

- "Published" definition:

The Energy Data Reports, Weekly Coal Report publishes under two headings the information gathered by the EIA-3. These headings are "steel and rolling mills" and "other manufacturing and mining industries including cement."

As late as 1977, a footnote to the table in which the data are published referred to Weekly Coal Report #2113 (March 14, 1958). In this issue the second heading is implicitly defined as bituminous coal and lignite users in the industries covered by the Census of Manufacturers (SIC 20-39) and the Census of Mineral Industries (SIC 10-14). See Appendix F for the full text of the footnote.

- "In-house" definition:

The "in-house" definition of the universe is apparently<sup>23</sup> all establishments other than electric power utilities and coking plants that consume bituminous coal and lignite and that do not obtain coal from retail dealers. The EIA-3, however, does not ask the respondent to identify the source of the coal or the arrangement under which it was purchased.

The frame primarily consists of a list of establishments that voluntarily submitted the BOM-6-1400-M-1 before reporting became mandatory in December 1977 (retroactive to January 1977). The 1976 data base contained responses from 747 firms, 106 of which did not burn coal. Establishments added to the frame during 1977 and 1978 have increased the size of the frame to over 1,000. The method being used to augment the frame has not yet been studied fully.

Form EIA-3 is completed on a monthly basis and sent to the Coal Statistics Branch of the Division of Coal and Electric Power Statistics in the Office of Energy Data and Interpretation in EIA. Response was voluntary before December 1977 when it became mandatory retroactive to January 1977. The degree of compliance with mandatory reporting requirements has not yet been studied by LBL.

## 2. System Implementation

The processing of EIA-3 data consists of nine stages: collection, initial editing, keypunching and transfer of data to computer tapes, computer editing, tabulation runs and statistical estimation of national consumption and stocks, reconciliation with current results from other coal information systems, publication of preliminary estimates, revision of preliminary estimates, and publication of revised estimates. Figure 2 illustrates these stages. Each stage is also described below; a single description is provided for the similar stages of publication of preliminary and revised estimates.

### a. Data Collection

Near the end of each month EIA-3 forms are mailed to respondent companies. The EIA requests that respondents complete and return the forms within two weeks. Actual turnaround time is one to seven weeks. The statistical assistant in charge of EIA-3 estimates<sup>24</sup> that 5 to 10% of the respondents report after the two-week deadline. An examination of listings of 1978 data found an average response rate of 75% during the first five months of 1978. Computerized examination of the 1976 data base found an average monthly response rate of 86% among the respondents.<sup>25</sup> Late respondents may be contacted by telephone to request the data, but this is not always done because of time constraints and limited staff.

### b. Initial Editing

Editing of the forms is initiated by the statistical assistant in charge of EIA-3, who checks each submitted form for omissions and

STEP	ACTION	PERFORMED BY	DATE * BEGUN	TARGET COMPLETION DATE*
1	Forms mailed out	EIA	-5	-5
	Forms completed and returned	Respondents	0	15
2	Initial editing	EIA	15	45
3	Keypunching and transfer of data to computer tapes	OSI	15	60
4	Computer editing	CSC	15	60
	Correction of updated data tapes	OSI	15	60
5	Tabulation runs	CSC	60	--
	Estimation of national consumption and stocks	EIA	--	--
6	Reconciliation with results from other coal information systems	EIA	--	--
7	Publication of preliminary estimates	EIA	--	90
8	Publication of revisions to preliminary estimates	EIA	--	120
9	Publication of final revised estimates	EIA	--	445

\* Days from end of reporting period.

Figure 2. The Steps in Processing Form EIA-3

obvious errors. The assistant estimates that corrections are made on 30 to 40% of the forms. Most omissions and obvious errors involve sulfur content or energy content. Less than 10% of the forms require corrections in reported coal quantities.<sup>26</sup> Instructions on the form state that the following responses should balance:

beginning stocks + receipts = consumption + ending stocks

If any major discrepancies are found in these items, the reporting company is called to verify the information submitted.

Other corrections made at this stage usually involve filling in omitted data using information from EIA files or, less frequently, by calling the firm. For example, if ash residue, average sulfur content, or average Btu content are omitted, an estimate is made based on average values of these characteristics in the coal from the producing region. (The producing region can be determined from the Bureau of Mines district of coal origin, which is reported on the EIA-3.) Examination of a sample of completed forms indicates that firms often omit entries such as plant identification number, SIC number, or sulfur content. Note that this information is not published by the EIA.

Measures to avoid double-counting include computer checks for similar respondent identification numbers or identical consumption entries. These checks are part of a computer editing process described below. In addition, the statistical assistant catches some double-reporting that the computer editing program cannot find, e.g., a central office and its plant submitting separate EIA-3 forms for the plant.

c. Keypunching and Transfer of Data to Computer Tapes

After the initial editing process, the forms are sent to a keypunch contractor, Optimum Systems Incorporated (OSI). The data tapes are produced and stored at OSI; the original forms and a proof list of the data are returned to the EIA.

d. Computer Editing

Computer Sciences Corporation (CSC) merges the new tape with the existing master file and uses a computer edit program to check the new input data for errors. Examination of flagged items on recent edit listings indicates that data for 5 to 10% of the firms on each new tape require some correction. The most common error involves discrepancies between ending stocks reported on the previous month's form and beginning stocks reported on the current month's form. To correct such discrepancies, the statistical assistant and CSC check the printout against the original forms; remaining discrepancies are resolved by telephoning the reporting firm. A list of corrections is then sent back to OSI and the data tapes are revised. This edit process is repeated three or four times during a six-week period that ends eight to ten weeks after the reporting period.

e. Tabulation Runs and Statistical Estimation of National Consumption and Stocks

Eight to ten weeks after the end of the reporting period, tabulation runs are made by the EIA using the edited data. The data are separated by computer into two categories on the basis of respondent identification numbers. The two categories, denoted B-43 and B-44 for historical reasons, are listed in the Weekly Coal Report as "other manufacturing

and mining industries, including cement" and "steel and rolling mills," respectively. For each category, the program computes total reported consumption and stocks, and the percentage changes in consumption and stocks from the preceding month.

Statistical estimates of national consumption and stocks in the two categories are computed in the following manner:

- (1) The set of respondents that reported in both the current and the previous month is identified (by computer).
- (2) The percentage change in reported consumption and stocks for this set of respondents is computed (by computer).
- (3) The previous month's estimate of consumption and stock is multiplied by the respective percentage changes to obtain the current month's estimated consumption.
- (4) Days' supply is calculated by the following equation:

$$\frac{\text{monthly stocks} \times \text{number of days in month}}{\text{monthly consumption}} = \text{days' supply}$$

The procedure described in steps (1) to (3) is called the link relative method. Appendix G describes this procedure mathematically in a derivation of a lower bound on the variance of the estimates that are generated.

f. Reconciliation with Other Coal Information

These statistical estimates are compared with outputs of other information systems in the Coal Statistics Branch. At this stage, data from all coal information systems are compared for general agreement. It is assumed that the national aggregates of beginning stocks plus production plus imports should equal consumption plus exports plus ending stocks. Discrepancies

are usually found, and the data from each system are then rechecked for possible errors. This is done by comparing current data with past data to identify any major changes in reported quantities that may indicate reporting or processing errors. Through this process, most discrepancies are reconciled.<sup>27</sup> After reconciliation, preliminary estimates are released for publication.

g. Revisions

The estimates described above are considered to be preliminary, and are released about three months after the end of the reporting period. Revised figures are released one year after release of the preliminary figures. Late forms, as well as revisions and corrections, are received by the statistical assistant, who estimates that data from 5 to 10% of the reporting firms must be revised.<sup>28</sup> Having identified the revisions to be made, the assistant authorizes changes in the tapes.

h. Publication of Results

Currently the estimates are sent to other branches of DOE in Washington, D.C. and to the Bureau of Mines in Pittsburgh for publication and distribution. These publications are mentioned further in Section I.F.2.

## F. USES OF OUTPUT

### 1. Direct Uses of Information

No regulatory uses have been found for either the EIA-3 data base or the statistical estimates generated using that information. Further research is needed to identify specific analyses and models that use information collected by EIA-3. Appendix H describes a preliminary attempt to identify users of published EIA-3 information and to determine their needs.

### 2. Publication of Information

Statistical estimates based on information gathered by the form EIA-3 are published monthly in the Energy Data Reports, Weekly Coal Report, and annually in both the Minerals Yearbook and DOE's Annual Report to Congress. Related estimates also appear in Mineral Facts and Problems and the Monthly Energy Review.

In the Weekly Coal Report, estimated consumption, stocks, and days' supply of coal, are presented for the user categories "steel and rolling mills" and "other manufacturing and mining industries, including cement." As an example, Figure 3 contains the tables for consumption and stocks from the Weekly Coal Report of October 13, 1978. The tables present preliminary estimates for June and July 1978, and a revised estimate for July 1977. The Weekly Coal Report is presently sent to about 2,000 individuals or organizations that have requested it. The list of recipients includes government agencies, investment firms, libraries, research groups, and firms associated with the coal industry.

TABLE 8. - Stocks and days' supply of bituminous coal and lignite, by consumer class, in the United States

	July 31, 1978 (preliminary)	June 30, 1978 (preliminary)	July 31, 1977 (revised)	Percent change	
				June 30, 1978	July 31, 1977
STOCKS (thousand short tons)					
Electric power utilities <sup>1/</sup> -----	107,443	107,498	121,052	- 0.1	-11.2
Manufacturing and mining industries:					
Oven coke plants -----	6,604	8,237	9,816	-19.8	-32.7
Steel and rolling mills -----	210	240	175	-12.5	+20.0
Other manufacturing and mining industries including cement -----	5,244	5,303	6,220	- 1.1	-15.7
Total industrial stocks -----	119,501	121,278	137,263	- 1.5	-12.9
Retail dealer stocks -----	290	310	200	- 6.5	+45.0
Grand total -----	119,791	121,588	137,463	- 1.5	-12.9
DAYS' SUPPLY <sup>2/</sup>					
Electric power utilities <sup>1/</sup> -----	76	79	84	- 3.8	- 9.5
Manufacturing and mining industries:					
Oven coke plants -----	32	39	46	-17.9	-30.4
Steel and rolling mills -----	22	21	24	+ 4.8	- 8.3
Other manufacturing and mining industries including cement -----	39	39	48	-	-13.7
Total industrial stocks -----	67	71	76	- 5.6	-11.8
Retail dealer stocks -----	20	20	16	-	+25.0
Grand total -----	67	70	76	- 4.3	-11.8

<sup>1/</sup> Federal Energy Regulatory Commission. <sup>2/</sup> Days' supply is calculated by dividing the total stocks at the end of the month by the daily average rate of consumption during the same month. By this method, seasonal variation in daily average rate of consumption is not reflected.

TABLE 9. - Estimated consumption of bituminous coal and lignite in the United States, in thousand short tons

	July 1978 (preliminary)	June 1978 (preliminary)	July 1977 (revised)	Percent change July 1978 from		January 1 to end of July		
				June 1978	July 1977	1978 (preliminary)	1977 (revised)	Percent change
Electric power utilities <sup>1/</sup> -----	44,035	40,593	44,797	+ 8.5	- 1.7	268,552	273,455	- 1.8
Bunker, foreign and lake vessel <sup>2/</sup> ---	1	1	1	-	-	4	5	-20.0
Manufacturing and mining industries:								
Beehive coke plants -----	40	47	58	-14.9	-31.0	314	377	-16.7
Oven coke plants -----	6,491	6,335	6,621	+ 2.5	- 2.0	71,048	46,575	-18.3
Steel and rolling mills <sup>3/</sup> -----	225	340	230	-13.2	+28.3	2,075	2,033	+ 2.1
Other manufacturing and mining industries including cement <sup>4/</sup> ---	4,117	4,036	4,054	+ 2.0	+ 1.6	32,353	33,516	- 3.5
Total industrial -----	54,979	51,352	55,761	+ 7.1	- 1.4	341,346	385,961	- 4.1
Retail deliveries (shipments to consumers not included in other classification shown) <sup>5/</sup> -----	450	475	380	- 5.3	+18.4	4,396	4,155	+ 5.8
Grand total <sup>6/</sup> -----	55,429	51,827	56,141	+ 7.0	- 1.3	345,742	360,116	- 4.0

<sup>1/</sup> Federal Energy Regulatory Commission.

<sup>2/</sup> Bureau of the Census, U.S. Department of Commerce. Ore and Coal Exchange.

<sup>3/</sup> Estimates based upon reports collected from a selected list of steel and rolling mills.

<sup>4/</sup> Estimates based upon reports collected from a selected list of manufacturing plants.

<sup>5/</sup> Estimates based upon reports collected from a selected list of retailers. Includes some coal shipped by truck from mine to final destination.

<sup>6/</sup> The total of classes shown approximates total consumption. The calculation of consumption from production, imports, exports, and changes in stocks is not as accurate as the "Total of classes shown" because certain significant items of stocks are not included in monthly stocks. These items are: Stocks on lake and Tidewater docks, stocks at other intermediate storage piles between mine and consumer, and coal in transit.

Figure 3. Extract from Energy Data Reports, Weekly Coal Report, October 13, 1978.

The Minerals Yearbook and DOE's Annual Report to Congress contain monthly and annual estimates of coal consumption, stocks, and days' supply taken directly from the Energy Data Reports, Weekly Coal Report. Examples are shown in Figures 4 and 5.

In Mineral Facts and Problems, annual coal consumption estimates from the Weekly Coal Report are disaggregated into industry categories different from those used in the Weekly Coal Report. An example is shown in Figure 6. The categories used in Mineral Facts and Problems are equivalent to the industry groups used by the Bureau of Census. The percentage of coal consumed by each industry group is estimated using data from the BOC's Annual Survey of Manufactures.<sup>29</sup> These percentages are then multiplied by total coal consumption estimated from DOE data to obtain the consumption estimates that are published in categories other than "Electric utilities" and "Household and commercial." Statistical estimates based on EIA-3 information are also used in conjunction with other information in obtaining estimates of industry stocks.

The EIA-3 data base is also used by the Office of Energy Data to obtain estimates of coal consumption by economic sector to be published in the Monthly Energy Review. See Figure 7 for an example of the published output. EIA-3 information is used as a determinant of estimates of coal use in the "residential and commercial" and "industrial" sectors.<sup>30</sup>

Table 40.—Consumption of bituminous coal and lignite, by consumer class, and retail deliveries in the United States  
(Thousand short tons)

Year and month	Manufacturing and mining industries							Total of classes shown <sup>6</sup>
	Electric power utilities <sup>1</sup>	Bunker, lake vessel and foreign <sup>2</sup>	Beehive coke plants	Oven coke plants	Steel and rolling mills <sup>3</sup>	Other manufacturing and mining industries <sup>4</sup>	Retail deliveries to other consumers <sup>5</sup>	
1970	318,921	298	1,423	94,581	5,410	82,909	12,072	515,619
1971	326,259	297	1,278	81,531	5,560	68,655	11,351	494,862
1972	313,612	163	1,359	96,213	4,859	67,131	8,748	516,776
1973:								
January	34,175	--	102	7,718	656	6,029	1,158	49,838
February	30,425	--	99	7,083	577	5,540	928	44,652
March	39,533	2	103	7,847	640	5,106	683	44,814
April	28,393	13	102	7,825	525	5,166	395	42,699
May	29,655	17	166	7,943	650	4,997	360	43,623
June	31,824	15	95	7,673	558	4,563	381	45,115
July	34,629	13	101	7,863	450	4,237	431	47,715
August	35,933	14	113	7,781	425	4,123	416	48,340
September	32,755	12	105	7,498	430	4,019	672	45,471
October	22,253	12	132	7,755	410	5,051	804	46,427
November	31,992	11	124	7,612	575	5,487	932	46,703
December	33,856	7	127	7,921	660	6,520	1,009	50,130
Total	356,879	116	1,310	92,324	6,356	60,837	8,200	556,022
1974:								
January	34,399	--	107	7,870	530	5,830	1,310	50,046
February	39,377	--	102	7,205	605	5,540	1,100	44,929
March	31,460	3	107	7,553	635	5,269	840	45,358
April	29,690	10	111	7,659	725	4,830	520	43,595
May	31,532	8	108	7,796	660	4,420	420	44,951
June	31,552	6	106	7,576	525	4,130	390	44,316
July	35,968	7	99	7,671	460	4,020	380	48,605
August	35,439	9	123	7,588	420	4,464	510	48,579
September	39,756	9	132	7,402	440	4,345	760	43,811
October	31,904	8	139	7,572	425	5,010	810	45,863
November	32,902	15	99	6,482	380	4,800	820	44,593
December	34,961	5	99	6,036	350	5,120	950	47,521
Total	390,968	80	1,337	88,410	6,155	57,819	8,840	552,709

<sup>1</sup> Federal Power Commission.

<sup>2</sup> Bureau of the Census, U.S. Department of Commerce; Ore and Coal Exchange.

<sup>3</sup> Estimates based upon reports collected from a selected list of representative steel and rolling mills.

<sup>4</sup> Estimates based upon reports collected from a selected list of representative manufacturing plants.

<sup>5</sup> Estimates based upon reports collected from a selected list of representative retailers. Includes some coal shipped by truck from mine to final destination.

<sup>6</sup> The total of classes shown approximates total consumption. The calculation of consumption from production, imports, exports, and changes in stocks is not as accurate as the "Total of classes shown" because certain significant items of stocks are not included in monthly stocks. These items are stocks on lake and tidewater docks, stocks at other intermediate storage piles between mine and consumer, and coal in transit.

Table 41.—Stocks and days' supply of bituminous coal and lignite in the United States, in 1974, by consumer class  
(Thousand short tons)

Date	Electric power utilities <sup>1</sup>	Oven coke plants	Steel and rolling mills	Other manufacturing and mining industries	Retail dealers	Total
STOCKS						
Jan. 31	81,927	6,269	400	8,940	300	97,836
Feb. 28	79,768	6,104	430	9,120	390	95,812
Mar. 31	84,923	6,255	530	9,430	430	101,568
Apr. 30	90,095	6,662	475	9,525	410	107,167
May 31	95,184	7,508	490	9,280	420	112,882
June 30	95,430	7,395	420	8,300	390	111,935
July 31	90,449	6,506	395	8,400	410	106,160
Aug. 31	88,468	6,720	440	9,400	450	105,478
Sept. 30	91,528	7,115	510	9,500	520	109,173
Oct. 31	99,422	8,348	569	9,239	510	118,670
Nov. 30	93,272	7,246	420	7,910	344	109,192
Dec. 31	82,631	6,037	360	6,220	280	95,528
DAYS' SUPPLY <sup>2</sup>						
Jan. 31	74	25	23	48	7	61
Feb. 28	74	24	20	46	10	60
Mar. 31	84	26	26	56	16	69
Apr. 30	91	26	20	59	24	74
May 31	94	30	23	65	31	78
June 30	91	29	21	60	30	76
July 31	78	26	27	65	33	69
Aug. 31	77	27	33	65	26	67
Sept. 30	89	29	35	66	21	75
Oct. 31	97	34	41	61	20	80
Nov. 30	87	34	33	49	13	73
Dec. 31	73	31	32	38	9	62

<sup>1</sup> Federal Power Commission.

<sup>2</sup> Days' supply is calculated by dividing the total stocks at the end of the month by the daily average rate of consumption during the same month. By this method, seasonal variations in daily average rate of consumption is not reflected.

Source: Minerals Yearbook, U.S. Dept. of Interior, Bureau of Mines, Washington, D.C., 1976, v.1, pp.392-393.

Figure 4. Use of Estimates from the Weekly Coal Report in the Minerals Yearbook

Consumption of Bituminous Coal and Lignite by End-Use Sector, 1947-1977  
(Million Short Tons)

Year	Electric Utilities	Coke Plants	General Industry and Other	Retail Dealers <sup>1</sup>	Total
1947	86.0	104.8	258.4	96.7	545.9
1948	95.6	107.3	230.2	86.8	519.9
1949	80.6	91.2	185.3	88.4	445.5
1950	88.3	103.8	177.7	84.4	454.2
1951	101.9	113.4	179.2	74.4	468.9
1952	103.3	97.6	151.0	66.9	418.8
1953	112.3	112.9	141.7	60.0	426.8
1954	115.2	85.4	110.6	51.8	363.1
1955	140.6	107.4	122.5	53.0	423.4
1956	155.0	105.9	123.3	48.7	432.9
1957	157.4	108.0	112.5	35.7	413.7
1958	152.9	76.6	101.6	35.6	366.7
1959	165.8	79.2	92.1	29.1	366.3
1960	173.9	81.0	95.1	30.4	380.4
1961	179.6	73.9	93.2	27.7	374.4
1962	190.8	74.3	94.5	28.2	387.8
1963	209.0	77.6	99.0	23.5	409.2
1964	223.0	88.8	99.7	19.6	431.1
1965	242.7	94.8	102.6	19.0	459.2
1966	264.2	95.9	106.2	20.0	486.3
1967	271.8	92.3	99.3	17.1	480.4
1968	294.7	90.8	98.1	15.2	498.8
1969	308.5	92.9	91.2	14.7	507.3
1970	318.9	96.0	88.6	12.1	516.6
1971	326.3	82.8	74.4	11.4	494.9
1972	348.6	87.3	72.1	8.7	516.8
1973	386.9	93.6	67.3	8.2	556.0
1974	390.1	89.7	64.1	8.8	552.7
1975	403.2	83.3	62.5	7.3	556.3
1976	447.0	84.3	60.5	6.9	598.8
1977 <sup>2</sup>	474.8	77.4	60.4	7.0	619.6

<sup>1</sup> Estimated.

<sup>2</sup> Preliminary.

Note: Sum of components may not equal total due to independent rounding.  
Source: Federal Power Commission, Bureau of Mines, and Energy Information Administration.

Year-End Stocks of Bituminous Coal and Lignite by End-Use Sector, 1947-1977  
(Thousand Short Tons)

Year	Electric Utilities	Coke Plants	General Industry and Other <sup>1</sup>	Retail Dealers <sup>2</sup>	Total
1947	16,788	9,148	24,188	2,037	52,161
1948	24,812	12,104	29,751	2,706	69,373
1949	17,794	9,893	16,034	1,390	45,111
1950	27,121	16,776	26,157	2,462	72,516
1951	33,398	15,270	26,218	1,750	76,636
1952	35,891	14,430	24,716	1,709	76,745
1953	39,770	16,486	22,819	1,539	80,614
1954	39,711	12,335	16,345	810	69,201
1955	38,228	13,342	15,855	998	68,423
1956	45,596	13,894	17,396	1,122	78,008
1957	50,289	14,094	15,485	911	80,779
1958	48,752	12,957	13,630	946	76,285
1959	50,107	11,495	13,570	1,030	76,202
1960	49,937	11,029	11,612	666	73,244
1961	48,609	10,393	11,890	526	71,418
1962	48,975	8,305	11,929	482	69,691
1963	49,314	8,014	12,256	499	70,083
1964	52,661	10,081	12,224	376	75,342
1965	53,437	10,506	13,097	353	77,393
1966	52,895	9,206	12,126	239	74,468
1967	69,737	10,940	12,272	179	93,128
1968	64,168	9,537	11,632	188	85,525
1969	60,597	8,962	10,739	184	80,482
1970	71,295	8,924	11,756	300	92,275
1971	76,987	7,199	9,560	275	94,021
1972	98,450	9,032	7,600	290	115,372
1973	85,512	6,875	10,345	290	103,022
1974	82,631	6,037	6,580	280	95,528
1975	109,707	8,671	8,460	277	127,115
1976	116,436	9,804	7,075	240	133,555
1977	130,951	12,721	8,425	220	152,317

<sup>1</sup> Includes transportation, commercial, and miscellaneous end-use sectors.

<sup>2</sup> Estimated.

Source: Bureau of Mines, Federal Power Commission, and Energy Information Administration.

Source: Annual Report to Congress, U.S. DOE, EIA, Washington, D.C., V. 3, 1977, DOE/EIA-0036/3, p. 79-81.

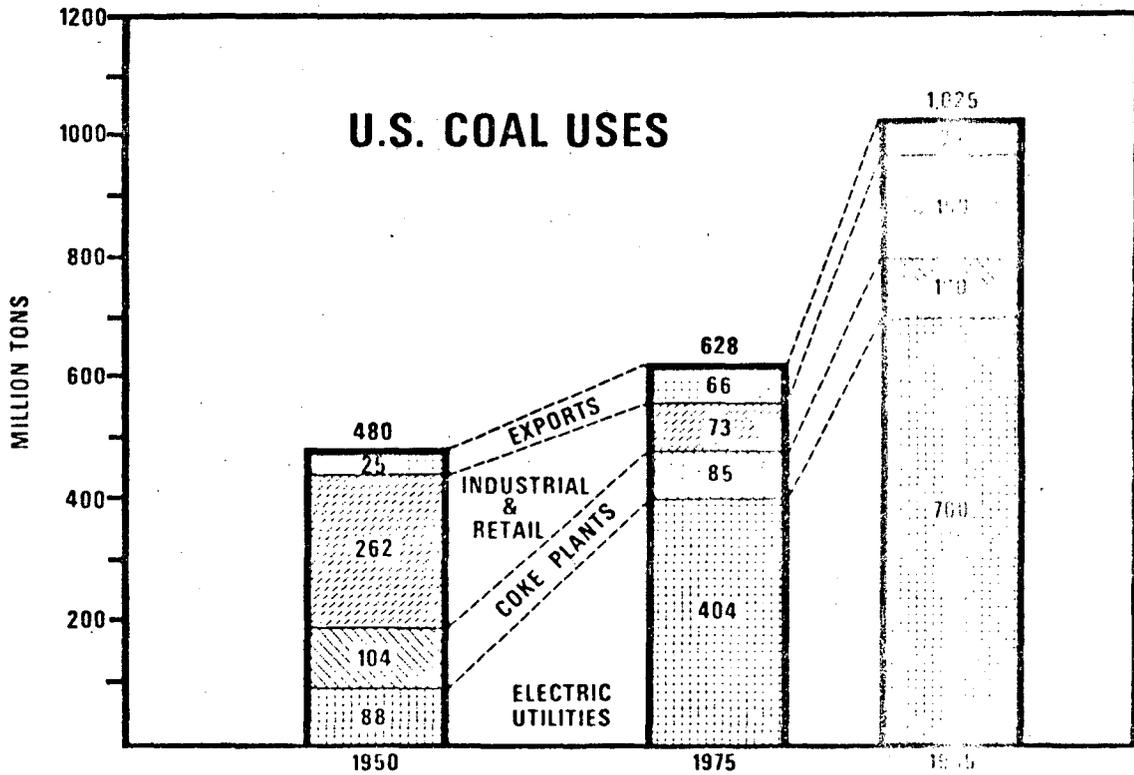
Figure 5. Use of Estimates from the Weekly Coal Report in the Annual Report to Congress of the DOE

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**Table 5.—Bituminous coal and lignite supply-demand relationships, 1964-74**  
(Million short tons)

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974*
<b>World mine production:</b>											
United States .....	487.0	512.1	533.9	552.9	545.2	560.5	602.9	552.2	595.4	591.7	603.4
Rest of world .....	2,334.4	2,355.0	2,365.8	2,244.3	2,344.4	2,410.4	2,484.4	2,558.2	2,564.6	3,208.5	2,604.2
<b>Total .....</b>	<b>2,821.4</b>	<b>2,867.1</b>	<b>2,899.7</b>	<b>2,796.9</b>	<b>2,889.6</b>	<b>2,970.9</b>	<b>3,085.3</b>	<b>3,110.4</b>	<b>3,160.0</b>	<b>3,288.5</b>	<b>3,243.6</b>
<b>Components of U.S. supply:</b>											
Domestic mines .....	487.0	512.1	533.9	552.6	545.2	560.5	603.0	552.2	595.4	591.7	603.4
Imports .....	3	2	2	2	2	1	1	1	1	1	2.1
Industry stocks, Jan. 1 .....	73.0	77.9	79.7	76.8	95.4	87.5	82.0	93.7	91.3	117.5	100.0
<b>Total U.S. supply .....</b>	<b>560.3</b>	<b>590.2</b>	<b>613.8</b>	<b>629.6</b>	<b>640.8</b>	<b>648.1</b>	<b>685.0</b>	<b>646.0</b>	<b>686.7</b>	<b>709.3</b>	<b>708.5</b>
<b>Distribution of U.S. supply</b>											
Industry stocks, Dec. 31 .....	78.0	79.7	76.8	95.4	87.5	82.0	93.7	91.2	117.4	103.0	96.6
Exports .....	48.0	50.2	49.3	49.5	50.6	56.2	71.0	56.4	56.0	52.9	59.9
Demand .....	431.1	459.2	486.3	480.4	498.8	507.3	517.0	494.9	516.8	556.0	552.7
Losses and unaccounted for .....	3.3	1.1	1.4	4.3	3.9	2.6	3.3	3.3	3.5	2.6	7
<b>U.S. demand pattern</b>											
Household and commercial .....	19.6	19.0	20.0	17.1	15.2	12.7	12.1	11.4	8.7	8.2	8.8
Electric utilities .....	223.0	242.7	264.2	271.8	294.7	308.5	320.5	326.3	348.6	386.9	390.1
Food products .....	9.0	9.3	9.7	9.0	8.5	7.8	7.6	6.7	7.5	5.4	5.1
Paper products .....	15.5	16.0	16.7	15.6	14.9	13.6	13.2	10.8	10.2	9.5	9.4
Primary metal industries .....	101.6	108.0	108.0	104.2	99.3	104.1	106.9	93.8	98.7	105.4	95.9
Nonmetallic products .....	2.6	12.9	13.2	12.9	13.0	11.9	11.5	9.5	9.6	8.3	8.1
Transportation .....	.7	7	6	5	4	3	3	2	2	2	1
Chemicals .....	23.2	23.9	24.8	23.2	21.5	19.7	19.1	15.6	14.8	13.7	13.1
Other .....	25.9	26.7	28.3	26.1	31.3	28.7	25.8	21.1	18.5	18.5	22.1
<b>Total U.S. demand .....</b>	<b>431.1</b>	<b>459.2</b>	<b>486.3</b>	<b>480.4</b>	<b>498.8</b>	<b>507.3</b>	<b>517.0</b>	<b>494.9</b>	<b>516.8</b>	<b>556.0</b>	<b>552.7</b>

\* Preliminary.



BUREAU OF MINES  
U.S. DEPARTMENT OF INTERIOR

Source: Mineral Facts and Problems, U.S. Bureau of Mines, Bicentennial Edition, 1976, p. 168.

Figure 6. Publication in Mineral Facts and Problems of Estimates Derived from Information in the Weekly Coal Report

## Energy Consumption by Economic Sector and Primary Source—April 1978 [Quadrillion (10<sup>15</sup>) Btu]

Sector <sup>1</sup>	Primary Energy Source						Primary Energy Consumption	Electricity Distributed <sup>7</sup>	Net Energy Consumption	Electrical Energy Loss Distributed <sup>8</sup>	Ultimate Energy Disposition
	Coal <sup>2</sup>	Natural Gas (dry) <sup>3</sup>	Petroleum <sup>4</sup>	Hydroelectric <sup>5</sup>	Nuclear <sup>6</sup>	Geothermal					
Residential and Commercial	0.020	0.697	0.589	—	—	—	1.306	0.287	1.593	0.680	2.273
Industrial	0.286	0.599	0.573	0.001	—	—	1.459	0.215	1.674	0.510	2.184
Transportation	negl.	0.048	1.550	—	negl.	—	1.598	0.005	1.603	0.012	1.616
Electric Utilities	0.747	0.229	0.263	0.279	0.187	0.004	1.710	—	—	—	—
<b>TOTAL</b>	<b>1.053</b>	<b>1.574</b>	<b>2.975</b>	<b>0.280</b>	<b>0.187</b>	<b>0.004</b>	<b>6.073</b>	<b>0.508</b>	<b>4.871</b>	<b>1.202</b>	<b>6.073</b>

<sup>1</sup> See Explanatory Note 11 for definitions of the Residential and Commercial, Industrial, Transportation, and Electric Utilities Sectors.

<sup>2</sup> Data are from the Energy Information Administration. Includes anthracite, bituminous coal and lignite, and net coke imports.

<sup>3</sup> Aggregate data and data on utility consumption are from the Energy Information Administration. Data from the American Gas Association are used for the Residential and Commercial Sector, which includes 100 percent of the AGA "Other" category. Natural gas used in transportation, mostly for pipeline use, is estimated to be 3.6 percent of total natural gas consumption less electric utilities. This percentage is derived from 1974, 1975, and 1976 Bureau of Mines data on consumption. The Industrial Sector is then the difference between the total and the sum of the other sectors.

<sup>4</sup> Aggregate petroleum data and data on oil consumed by electric utilities are from the Energy Infor-

mation Administration. Petroleum consumed in transportation was calculated based on Department of Transportation data as follows: Motor gasoline - 100 percent; naphtha jet fuel - 100 percent; kerosene jet fuel - 97 percent; distillate fuel oil - 30.3 percent; residual fuel oil - 11.2 percent; all other products - 4.7 percent. The remainder is distributed to economic sectors using the following percentage shares, derived from 1974, 1975, and 1976 Bureau of Mines data on consumption: Residential and Commercial - 50.7 percent; Industrial - 49.3 percent.

<sup>5</sup> EIA hydroelectric power production plus net imports of electricity. These imports are assumed to be from hydroelectric power sources and are estimated at 0.011 quadrillion Btu per month in 1974, 0.005 quadrillion Btu per month for 1975, and 0.007 quadrillion Btu per month for 1976 and 0.015 quadrillion Btu per month for 1977 and 1978. Monthly industrial hydroelectric power consumption is estimated to be one-twelfth of the preliminary Bureau of Mines annual

figure for 1976.

<sup>6</sup> EIA nuclear power production.

<sup>7</sup> Electricity was distributed using EIA data on kilowatt-hour sales to ultimate customers. Electrical energy consumed by railroads and for street and highway lighting was distributed to the Transportation Sector. All "Other" sales, largely for use in government buildings, were distributed to the Residential and Commercial Sector.

<sup>8</sup> In generating electricity with nuclear or fossil fuels, approximately 65 percent of the energy is lost in the form of heat. Transmission and distribution losses consume about an additional 3 percent of the energy inputs of the utility industry. In order to fully account for all energy consumed both directly and indirectly (i.e., ultimate energy disposition), the electricity losses are allocated to the final end-use sectors in proportion to their direct kilowatt-hour usage.

Source: Monthly Energy Review, Energy Information Administration, U.S. Department of Energy, DOE/EIA-0035/8, NTISUB/D/127-008, August 1978, p. 46.

Figure 7. Publication in the Monthly Energy Review of Estimates Derived from Information Collected by Form EIA-3

## G. RELATED INFORMATION SYSTEMS

The EIA obtains coal data primarily from EIA forms 1 through 7, 20, and 210. The Bureau of Census (BOC) also obtains coal data through its Census of Manufactures and Annual Survey of Manufactures. Consumption data for other fossil fuels is currently collected by the BOC through its Census and Annual Survey, and by the Environmental Protection Agency (EPA) through its National Emissions Data System (NEDS). The relationship between form EIA-3 and these other information systems is discussed in this section.

### 1. EIA Coal Reporting Systems

The EIA's coal reporting system is based primarily on forms EIA-1 through EIA-7, EIA-20, and EIA-210. Forms EIA-1, EIA-4, and EIA-20 are weekly forms used in emergency situations, while the others are monthly forms completed on a regular basis. Each of these forms is used to obtain information on one component of coal consumption. The information obtained by these forms is published jointly with EIA-3 information in the following publications: Energy Data Reports, Weekly Coal Report, Monthly Energy Review, DOE's Annual Report to Congress, Minerals Yearbook, and Mineral Facts and Problems. Information obtained from forms EIA-1 through EIA-7 is summarized in Figure 8. Information concerning coal storage and consumption by electric utilities is collected by EIA-210 and, during emergencies, EIA-20. Data on the export of coal are not collected by EIA; these data are collected by the Department of Commerce.

<u>Form</u>	<u>Primary data elements</u>	<u>Sector</u>	<u>Fuels</u>	<u>Ranks of coal</u>	<u>Other data collected</u>	<u>Frequency</u>	<u>Reporting Situation</u>	<u>Threshold</u>
EIA-1	stocks, consumption	general industry, blast furnaces	coal, coke	not broken out by rank	price	weekly	emergency	none
EIA-2	stocks, deliveries	retail dealers, upper Lake docks	coal	bituminous sub-bituminous lignite anthracite	district of origin, sulfur content, price	monthly	standard	none
EIA-3	stocks, consumption	general industry, steel and rolling mills	coal, other fossil fuels	bituminous sub-bituminous lignite anthracite	district of origin, sulfur content, price, energy content	monthly	standard	none
EIA-4	stocks, consumption	coke plants	coal, coke	not broken out by rank	price	weekly	emergency	none
EIA-5	stocks, distribution, consumption	coke plants	coal, coal-chemical materials	bituminous anthracite	end use (sector)	monthly	standard	none
EIA-6	stocks, consumption	producers, brokers, wholesalers, distributors	coal	sum of bituminous coal and lignite	district of origin, end use (sector), destination	quarterly	standard	50,000 tons/year
EIA-7	production, processing	coal mines, processing plants	coal	sum of bituminous coal and lignite	district of origin, sulfur content, end use (sector), destination	annual	standard	1000 tons/year

Figure 8. Information Collected by Forms EIA-1 through EIA-7

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## 2. Other Coal Information Systems

A comprehensive parallel coal consumption reporting system is administered by the BOC through its Census of Manufactures and its Annual Survey of Manufactures. The Census of Manufactures is an extensive survey of manufacturing plants -- Standard Industrial Classifications (SIC) 20 through 39 -- conducted every five years. It reports coal consumption in physical units and by dollar values, broken down by SIC and location of the consuming establishment. The Annual Survey of Manufactures is based on a statistical sample of manufacturing plants and is conducted yearly. The output format is similar to the Census output.

Significant differences between the BOC and MFCR systems follow:

- The BOC and MFCR system universes overlap, but do not coincide exactly.
- The BOC frame is much more extensive than the MFCR frame.
- Coal consumption is broken down by SIC in the BOC system. In the MFCR system it is divided into five categories: electric utilities, coking, steel and rolling mills, other manufacturing and institutional uses, and retail deliveries.
- BOC systems do not report coal stockpiles.
- No monthly breakdown of BOC data is available.
- The BOC system has a three-year lag between reporting and publication, while the MFCR time lag is approximately three months for preliminary data and fifteen months for revised data.
- Physical characteristics of coal (e.g., Btu and sulfur content) are not collected by BOC, but are collected by MFCR.

- The extent of BOC coverage allows greater latitude in publication of information without violating confidentiality requirements.

A comparison of the MFCR system to the BOC system is summarized in Figure 9.

3. Other Fuel Reporting Systems

The present MFCR system collects, but does not publish, information on the consumption of fuels other than coal. (Collection of this information will be discontinued if the currently proposed changes are made in form EIA-3.) In addition to MFCR, at least three other systems either do collect or have collected information on consumption of both coal and other fuels:

- The Environmental Protection Agency (EPA) collects fuel consumption information through the National Emissions Data System (NEDS).
- The Federal Energy Administration (FEA) collected similar information through the Major Fuel Burning Installation (MFBI) system.
- The BOC collects data on the consumption of other fuels through the Census of Manufactures and Annual Survey of Manufactures.

The relationship between the MFCR system and other related systems is currently being studied.

<u>Attribute</u>	<u>MFCR</u>	<u>BOC: Census of Manufactures</u>	<u>BOC: Annual Survey of Manufactures</u>
reporting form	EIA-3	MC-36B MA-100	MA-100
coal activities reported	consumption, stocks, receipts	receipts	receipts
respondents	"other manufacturing and mining" "steel and rolling mills"	manufacturing plants (SIC 20-39)	manufacturing plants (SIC 20-39)
universe size	3,700 establishments	313,000 establishments	313,000 establishments
frame	>1,000 establishments	192,000 establishments	70,000 establishments
reporting mode	mandatory	mandatory	mandatory
frequency	monthly	quinquennial	annual
coal ranks included	anthracite, bituminous, sub-bituminous, lignite	coal ranks not differentiated	coal ranks not differentiated
<u>other data collected</u>			
<ul style="list-style-type: none"> <li>● Btu content</li> <li>● sulfur content</li> <li>● price</li> <li>● respondent's SIC</li> <li>● district of origin</li> <li>● transportation time and distance</li> </ul>	<ul style="list-style-type: none"> <li>yes</li> <li>yes</li> <li>yes</li> <li>yes</li> <li>yes</li> <li>yes</li> </ul>	<ul style="list-style-type: none"> <li>no</li> <li>no</li> <li>yes</li> <li>yes</li> <li>no</li> <li>no</li> </ul>	<ul style="list-style-type: none"> <li>no</li> <li>no</li> <li>yes</li> <li>yes</li> <li>no</li> <li>no</li> </ul>
published reports	<u>Energy Data Reports,</u> <u>Weekly Coal Report</u>	<u>Census of Manufacturers</u>	<u>Annual Survey of Manufacturers</u>

Figure 9. Comparison of the MFCR System with Bureau of Census Systems Reporting Coal Usage

## II. SYSTEM VALIDATION

Form EIA-3 is part of an information system whose purpose is quite general -- to provide for "continual monitoring of coal production, consumption, and distribution for coal-related analysis including energy/environmental studies, energy policy, and implementation of mandated coal program."<sup>31</sup> Since no regulatory processes have been identified that make direct use of information gathered by the form EIA-3, the following two validation criteria are applied:

- Usefulness: Based on the statements or actual behavior of users of the published information, to what extent does this information provide significant input for coal-related analysis including energy/environmental studies and energy policy?
- Accuracy: To what extent does the information represent the reality it purports to represent?

### A. USEFULNESS

Appendix H describes the results of exploratory interviews with recipients of the Energy Data Reports, Weekly Coal Report and with other users of coal information. These results lead to the following qualitative conclusions:

- (1) Many recipients are libraries or individuals primarily concerned with the collection of published information for potential use by others.
- (2) Of the recipients who express an interest in the information itself, most are concerned with the overall coal situation, and do not articulate a special need for or interest in the two lines of estimates of coal consumption and stocks generated from EIA-3 information.
- (3) Many individuals who describe needs for coal-related information state that the published EIA-3 information is not useful to them for one or more of the following reasons:

- It is not timely.
  - It is too highly aggregated.
  - It is not believed to be accurate.
- (4) Many individuals who describe needs for coal-related information state that their needs are partly met by alternative sources, but that information is not currently available to meet all of their needs.

As indicated below in Section II.B, LBL research to date indicates that past time series generated by the MFCR system are highly suspect. Since form EIA-3 is but part of an information system designed to monitor the U.S. coal situation, and since definitive research on related forms and on overall needs for coal information has not yet been performed, it is not yet possible to draw conclusions about whether information collected using form EIA-3 would meet user needs if it were accurate.

## B. ACCURACY

Research to date on the accuracy of the information gathered by form EIA-3 is based on the following:

- Published estimates in the Weekly Coal Report.
- A tape of revised 1976 information. This is the most recent year for which complete information is available. (Data tapes for 1973-1975 have not yet been analyzed.)
- Examination of form EIA-3 and the accompanying instructions.
- Exploratory source interviews.
- Interviews at the Coal Statistics Branch of the Division of Coal and Electric Power Statistics.

Research to date has focused on information collected about coal consumers in "other manufacturing and mining," to the virtual exclusion of information about "steel and rolling mills." This section describes the findings of data quality explorations performed to date. Results of data quality explorations are presented for each of the following components of the MFCR system:

- Universe
- Frame
- Form EIA-3
- Data base
- Estimation procedures
- Published estimates

### 1. Universe

Section I.E cites four possible definitions of the universe implied by documentation of various aspects of the MFCR system. Referring only to the universe of coal consumers categorized within "other manufacturing and mining," these four definitions are:

- "Form title" definition: Manufacturing plants.
- "Form instructions" definition: All establishments and firms that consume bituminous coal or lignite.
- "Published" definition: Bituminous coal and lignite consumers in the industries covered by the Census of Manufactures (SIC 20-39) and the Census of Mineral Industries (SIC 10-14).
- "In-house" definition: All establishments other than electric power utilities and coking plants that consume bituminous coal or lignite and that do not obtain coal from retail dealers.

Because the universe is not defined clearly, it is not possible to assess the accuracy of the statistical estimates in a straightforward manner.

## 2. Frame

The frame primarily consists of a list of establishments that voluntarily submitted the BOM-6-1400-M-1 before reporting became mandatory in December 1977 (retroactive to January 1977). The only rationale found thus far for membership in the frame prior to 1977 is a willingness to report voluntarily. It is not known whether this resulted in selection bias in the information collected.

The 1976 data base contains responses from 747 establishments, 722 categorized within "other manufacturing and mining" and 25 within "steel and rolling mills." Of these, 106 did not report consumption of coal. Since the only available record of the frame during 1976 is the 1976 data base, it is not known whether the actual size of the frame was larger than 747.

The EIA-3 form clearance request, dated September 23, 1977, cites 2,200 as the estimated number of (potential) respondents. An internal

DOE memo<sup>32</sup> dated April 4, 1978, cites an estimated 3,700-member universe. How these estimates were generated is not known by LBL.

Establishments added to the frame during 1977 and 1978 have increased the size of the frame to over 1,000. However, the method being used to augment the frame is not yet fully understood by LBL.

### 3. Form EIA-3

Appendix I summarizes a series of exploratory respondent interviews conducted to identify sources of error related to the process by which form EIA-3 is filled out. The findings to date are qualitative.

The most pertinent are:

- The report is simple and easy to complete.
- Most of the reported information is also prepared for management, in some cases from internal reports.
- In some instances, balancing of consumption, stocks, and receipts seems to be given higher priority than accuracy.

When estimated stockpile sizes are corrected, the deviation is often treated as an adjustment to consumption.

- In some instances, the boundary between bituminous and sub-bituminous coal is not fully understood.
- Information from multi-plant facilities may differ systematically from information submitted by single-plant facilities.
- Coal stockpiles are irregularly shaped and difficult to measure. They are surveyed periodically by outside surveyors.

#### 4. The 1976 Data Base

As was mentioned earlier, 1976 is the most recent year for which complete information is available in computer-readable form. This information has been preliminarily explored and is being analyzed further; similar analyses will be performed using information from 1973-1975, the other years for which complete computer-readable information is available.

The 1976 data base contains responses from 747 establishments, 722 categorized within "other manufacturing and mining" and 25 within "steel and rolling mills." Of these, 106 did not report consumption of coal. The average monthly response rate was 86%.<sup>33</sup> The total coal consumption reported in the data base for "other manufacturing and mining" is 26.3 million tons, compared to 54.8 million tons in revised estimates published in the Weekly Coal Report in 1977. Thus, the data base appears to capture 48% of total coal consumption in this category.

Figure 10 contains a cumulative listing relating total 1976 coal consumption reported in the data base to the amount of coal consumed by

<u>Range of Reported Coal Consumption</u> (tons/yr)	<u>Number of Establishments</u>	<u>Total Reported Coal Consumption</u> (10 <sup>3</sup> tons/yr)
0	106	0
0-500	178	12
0-1,000	205	31
0-5,000	290	258
0-10,000	375	887
0-15,000	428	1,527
0-20,000	473	2,295
0-25,000	508	3,078
0-50,000	581	5,675
0-100,000	645	10,062
0-200,000	696	17,088
0-500,000	718	23,470
0-1,000,000	721	25,366
0-2,000,000	722	26,693

Figure 10. Cumulative Number of Establishments and Total Reported Coal Consumption for Various Reported Consumption Rates (1976 data)

individual establishments. It indicates that 25% of the establishments in the category "other manufacturing and mining" consume 75% of the coal for this category.

Since the data base apparently accounts for around 48% of total coal consumption in this category, and since the 722 establishments reporting in this category constitute less than 20% of the estimated membership of the universe,<sup>34</sup> it is likely that the average coal consumption of individual establishments not represented in the data base is comparatively small.

This observation may be significant because coal consumption by consumers of small amounts of coal is considerably more seasonal than coal consumption by consumers of large amounts. This is demonstrated by Figure 11, which lists the month-to-month ratio of total coal consumption by three groups of coal consumers: all establishments, all establishments consuming less than 50,000 tons, and all establishments consuming less than 25,000 tons. As can be seen, the monthly ratios are more variable among the establishments consuming less coal. To the extent to which the data base underrepresents users of small amounts of coal, it may underrepresent seasonality in coal consumption. Thus, non-coverage by the frame may bias the published results.

##### 5. Estimation Procedures

The linked relative estimation procedure is based on the following recursive formula:

$$E_n = E_{n-1} * \frac{U_n}{V_n}$$

$E_1$  = baseline estimate

Month	Number* of "identical" establishments consuming less than:			Month-to month consumption ratio among establishments consuming less than:			Cumulative consumption ratio (relative to January) for establishments consuming less than:		
	<u>no limit</u>	<u>50,000 ton/yr.</u>	<u>25,000 ton/yr.</u>	<u>no limit</u>	<u>50,000 ton/yr.</u>	<u>25,000 ton/yr.</u>	<u>no limit</u>	<u>50,000 ton/yr.</u>	<u>25,000 ton/yr.</u>
1	-	-	-	-	-	-	100.0	100.0	100.0
2	268	205	170	0.897	0.852	0.812	89.7	85.2	81.2
3	283	220	184	1.000	0.969	0.961	89.7	82.5	78.0
4	278	213	176	0.895	0.862	0.855	80.2	71.1	66.6
5	283	217	178	0.966	0.900	0.833	77.4	63.9	55.4
6	281	216	177	0.959	0.891	0.880	74.2	56.9	48.7
7	280	217	179	0.982	0.866	0.852	72.8	49.2	41.4
8	274	210	172	0.944	1.105	1.092	68.7	54.3	45.2
9	276	210	172	1.017	1.029	0.978	69.8	55.8	44.2
10	275	212	175	1.140	1.240	1.325	79.5	69.1	58.5
11	279	217	180	1.117	1.206	1.318	88.8	83.3	77.1
12	272	207	168	1.119	1.167	1.206	99.3	97.2	92.9

\*Due to restrictions in computer storage, it was necessary to process the 1976 MFCR data base using two tapes, each containing about half of the data base. This figure is based on information for 354 of the 722 firms that responded in 1976.

Figure 11. Calculated Link Relative Ratios

In words, the estimate in period  $n$  equals the estimate in period  $n-1$  times the ratio of total consumption in period  $n$  ( $U_n$ ) to total consumption in period  $n-1$  ( $V_n$ ) by those respondents who respond in both periods. (The respondents who respond in both periods are referred to as the set of "identicals.") The purpose of this procedure is to reduce or eliminate the impact of non-response by individual respondents. Inherent in the definition of the estimation procedure are two possible sources of error:

- The baseline
- The computational formula

Each of these will be examined in turn.

a. The Baseline

The baseline cited in published statistical estimates from 1958 through 1977 does not correspond precisely to the quantity apparently being estimated. During these years, the Weekly Coal Report references a 1954 baseline that includes only mining and manufacturing firms (see Appendix F). The baseline for "other manufacturing and mining" using census data and other information is shown in Figure 12. The baseline for "steel and rolling mills" was taken directly from the 1954 Census of Manufactures.

In spite of the recent references to a baseline containing only mining and manufacturing industries, the information currently gathered by EIA-3 is apparently used to estimate coal consumption of a group of users including establishments that are not engaged in mining or manufacturing.

(1) Begin with 1954 Census of Manufactures, coal consumed for heat and power.	( 91,457,000 tons)
(2) Subtract anthracite consumption.	(- 3,800,000 tons)
(3) Add estimated consumption for SIC 23 and 27. (These were not determined by the Census.)	( 1,000,000 tons)
(4) Add raw material for briquets and packaged fuel.	( 1,022,000 tons)
(5) Subtract consumption determined by Census for cement mills. (Cement mills were reported separately until 1970.)	(- 7,701,000 tons)
(6) Subtract consumption determined by Census for "steel and rolling mills."	(- 6,983,000 tons)
(7) Add consumption for mineral industries as determined by the Census of Mineral Industries.	( 2,127,000 tons)
For a total of	77,122,000 tons*

\*This total unaccountably differs from the BOM total by 7,000 tons.

Figure 12. Procedure used for Constructing the 1954 Baseline  
for "Other Manufacturing and Mining"

Some adjustments to the baseline have apparently been made over the last 20 years. The most recent of these adjustments was made in 1978 (Energy Data Reports, Weekly Coal Report #25, March 24, 1978). One of the past adjustments may have compensated for the inclusion of non-industrial establishments. However, we have been unable to find any documentation of such a change. In fact, as noted, the available documentation (footnotes in the data tables) is misleading on this point since it refers to the original 1958 documentation of the 1954 baseline.

A new baseline is reportedly being developed with assistance from the Bureau of the Census which is intended to improve the accuracy of future estimates.

b. The Computational Formula

The computational formula used in the link relative estimation procedure has at least two serious problems. It does not adequately reflect births and deaths in the respondent population and it has high variance if applied for many periods.

- Births and deaths in the frame: As it is specified above, the link relative method does not reflect births and deaths in the population of respondents. The first time a new respondent submits information, this information does not enter the estimate because no response existed in the previous month. If the second response is equal to the first, it has no effect on the estimate since the estimate is based on period-to-period changes. Thus, the effects of changes in the membership of the frame are systematically underrepresented. It is likely that this technical bias in the system had the effect of underrepresenting trends, first away from coal use in the 1960s and early 1970s, and later toward coal use in the mid and late 1970s.

- Variance of the estimate: Appendix G contains a derivation of an algebraic expression for estimating a lower bound on the variance of  $W_n$  where:

the estimate at stage  $n$  = the true value \*  $\exp^{W_n}$

By substituting 1976 population statistics into this expression, and assuming the link relative method has been used for twenty years, one obtains a lower bound equivalent to a standard deviation of approximately 32 percent of the estimate. If the link relative procedure were followed strictly for twenty years (i.e., from 1958 to 1978) without changing the baseline the standard deviation of the estimates generated for 1978 would be so large as to make the estimates useless for monitoring coal consumption.

#### 6. Published Information

The estimates published in the Weekly Coal Report are examined below for both internal consistency with the MFCR data base and external consistency with other published information.

##### a. Internal Consistency

The information published in the Weekly Coal Report is based on the application of the link relative estimation procedure to information gathered by form EIA-3. It is appropriate to compare published estimates with estimates reconstructed from the information in the data base. Thus far, this has been done only for 1976, the most recent year for which complete information is available.

Figure 13 compares both preliminary and revised estimates of monthly 1976 bituminous coal consumption with estimates computed directly from the information in the data base. As can be seen, the cumulative ratio of consumption changes in the identical set through December is 0.998. However, the cumulative ratio of revised consumption

Month	Reported Consumption		Ratio <sup>c</sup>	Predicted Total <sup>d</sup> (10 <sup>3</sup> tons)	Preliminary		Revised	
	Month N-1 <sup>a</sup>	Month N <sup>b</sup>			Ratio <sup>e</sup>	Published Total <sup>f</sup>	Ratio <sup>g</sup>	Published Total
	(tons)	(tons)				(10 <sup>3</sup> tons)	(10 <sup>3</sup> tons)	(10 <sup>3</sup> tons)
1	-	-	-	5094	-	5094	-	5094
2	2,260,799	2,016,758	0.892	4544	0.899	4579	0.899	4579
3	2,068,855	2,082,129	1.006	4573	1.009	4621	1.009	4621
4	2,203,999	1,972,476	0.895	4092	0.908	4196	1.054	4869
5	2,004,769	1,942,017	0.969	3964	0.999	4194	0.999	4866
6	1,984,450	1,835,711	0.925	3667	0.927	3889	0.927	4512
7	1,833,605	1,754,722	0.957	3509	0.922	3584	0.957	4316
8	1,744,184	1,723,318	0.988	3407	1.115	3995	0.988	4266
9	1,763,670	1,806,484	1.024	3551	1.098	4385	1.026	4377
10	1,742,079	2,067,524	1.187	4215	1.083	4750	1.085	4750
11	2,044,090	2,252,483	1.102	4645	1.095	5200	1.095	5200
12	2,279,051	2,494,189	1.094	5083	1.212	6300	1.212	6300

<sup>a</sup> Reported consumption by the "identical set" in the month prior to that under consideration.

<sup>b</sup> Reported consumption by the "identical set" in the month under consideration.

<sup>c</sup> Column (2) divided by Column (1).

<sup>d</sup> January total is taken from published information. Each subsequent entry is equal to the previous entry times the ratio in Column (3).

<sup>e</sup> The ratio of the entry in Column (6) to the previous entry in Column (6).

<sup>f</sup> From Mineral Industry Survey, BOM.

<sup>g</sup> The ratio of the entry in Column (8) to the previous entry in Column (8).

Figure 13. Comparison of Published Information and Link Relative Simulation for 1976 Data Base

estimates published for January through December is 1.237. Thus, the published estimate for December is 24% higher than the estimate computed using the information in the data base. This discrepancy has not been explained in the Weekly Coal Report.

b. External Consistency

Information published by the Bureau of Census (BOC) and Bureau of Mines (BOM) is used in performing an external check on the annual aggregate of estimates published in the Weekly Coal Report for 1974, 1975, and 1976. This is accomplished by substituting BOC and BOM information for these years into the formula used to calculate the 1958 baseline (see Figure 12). The specific sources of information are:

- BOC's Annual Survey of Manufactures, which estimates information on coal consumption in manufacturing for each of these years.
- BOM's Mineral Facts and Problems, which estimates 1974 anthracite consumption in manufacturing.
- BOC's 1972 Census of Mineral Industries, which estimates coal consumption in mining for 1972.

Figure 14 presents a comparison of MFCR estimates of annual consumption versus estimates derived from the above sources<sup>35</sup> using the formula for the baseline described earlier. The estimates cover the two categories of coal consumption about which form EIA-3 collects information. Column 3 of Figure 14 states that the 1974, 1975, and 1976 ratios of apparently comparable<sup>36</sup> estimates concerning "steel and rollings mills" were 1.31, 0.62, and 0.64. Column 9 of Figure 14 compares MFCR estimates for "other manufacturing and mining" with

	Steel Industry (Coal Consumption for Heat and Power in 1000s of short tons)		3	Other Manufacturing and Mining (Coal consumption for Heat and Power in 1000s of short tons)					9	All Manufacturing and Mining (Coal Consumption for Heat and Power in 1000s of short tons)			12
	1	2		4	5	6	7	8		10	11		
				Col. 2	Columns 4 - 5 + 6 - 1			Col. 8		Columns 4 - 5 + Col. 2 + Col. 8		Col. 11	
		Col. 1				Col. 7	Col. 6	Col. 8	Col. 10				
1976	4318 <sup>a</sup>	2743 <sup>d</sup>	0.64	47,817 <sup>a</sup>	(700) <sup>g</sup>	(1600) <sup>i</sup>	44,399	57,750 <sup>d</sup>	1.30	48,717	60,493	1.24	
1975	4373 <sup>b</sup>	2715 <sup>e</sup>	0.62	44,623 <sup>b</sup>	(700) <sup>g</sup>	(1600) <sup>i</sup>	41,150	59,759 <sup>e</sup>	1.45	45,523	62,474	1.37	
1974	4686 <sup>c</sup>	6155 <sup>f</sup>	1.31	47,806 <sup>c</sup>	(700) <sup>h</sup>	(1600) <sup>i</sup>	44,020	57,819 <sup>f</sup>	1.31	48,706	63,974	1.31	

The columns represent the following values.

- Col. 1: "Basic Steel" (SIC 331) from the ASM. (This may include some anthracite. Source (h) gives 700,000 tons for anthracite used in "iron and steel production" in 1974 but we have assumed that this is all for coking and sintering which the source identifies as major uses in this industry.)
- Col. 2: Bituminous and lignite in "steel and rolling mills" from the MFCR.
- Col. 3: Ratio MFCR/ASM (for category "steel and rolling mills").
- Col. 4: All Manufacturing (SIC 20-39) from the ASM.
- Col. 5: Anthracite in "chemicals," "nonferrous metal production," and "nonmetallic products" from the BOM.
- Col. 6: All Mining (SIC 10-14) from the Census of Mineral Industries (may include some anthracite).
- Col. 7: Bituminous and lignite in Other Manufacturing and Mining from the ASM and other sources.
- Col. 8: Bituminous and lignite in "Other Manufacturing and Mining" from the MFCR.
- Col. 9: Ratio MFCR/ASM (for category "Other Manufacturing and Mining").
- Col. 10: Bituminous and lignite in All Manufacturing and Mining from the ASM and Other Sources.
- Col. 11: Bituminous and lignite in "Other Manufacturing and Mining" from the MFCR.
- Col. 12: Ratio MFCR/ASM for sum of both categories

SOURCES: <sup>a</sup>U.S. Bureau of the Census, Annual Survey of Manufactures 1976, Fuels and Electric Energy Consumed, U.S. Govt. Print. Off. Washington, D.C. (1978).

<sup>b</sup>U.S. Bureau of the Census, Annual Survey of Manufactures 1975, Fuels and Electric Energy Consumed, U.S. Govt. Print. Off. Washington, D.C. (1977).

<sup>c</sup>U.S. Bureau of the Census, Annual Survey of Manufactures 1974, Fuels and Electric Energy Consumed, U.S. Govt. Print. Off. Washington, D.C. (1977).

<sup>d</sup>U.S. Energy Information Administration, Energy Data Reports, Weekly Coal Report (various numbers in 1978) [Pittsburgh?] and U.S. Bureau of Mines, Mineral Industry Surveys, Weekly Coal Report (various numbers in 1978 and 1977) [Pittsburgh?].

<sup>e</sup>U.S. Bureau of Mines, Mineral Industry Surveys, Weekly Coal Report (various numbers in 1977 and 1976) [Pittsburgh?].

<sup>f</sup>U.S. Bureau of Mines, Mineral Industry Surveys, Weekly Coal Report (various numbers in 1976 and 1975) [Pittsburgh?].

<sup>g</sup>Assumed equal to the 1974 value.

<sup>h</sup>U.S. Bureau of Mines, Mineral Facts and Problems, Bicentennial Edition, U.S. Govt. Print. Off. Washington, D.C. (1976).

<sup>i</sup>Assumed equal to the 1972 value published in U.S. Bureau of the Census, Census of Mineral Industries, 1972, Subject Series: Fuels and Electric Energy Consumed, U.S. Govt. Print. Off. Washington, D.C. (1975).

Figure 14. Comparison of Data from MFCR with Data from the Annual Survey of Manufactures and Other Sources

comparable external information that is roughly consistent with the "published" definition of the MFCR universe. (As can be seen from Figure 14, the comparable external information consists of coal consumption in manufacturing and mining minus consumption of anthracite and minus consumption of coal for "basic steel.") The ratios of 1.30, 1.45, and 1.31 obtained for this category might be reasonable if the MFCR data in fact reflect the "in-house" definition of the MFCR universe, i.e., if the data include consumption by commercial and institutional establishments and if this consumption is on the order of 30% to 40% of consumption in "other manufacturing and mining" as defined by the formula for the baseline.

Column 12 of Figure 14 contains the ratio of total consumption estimated by the MFCR system to total comparable consumption from external sources. On the face of it, and assuming that the Census estimates are accurate, the ratios in Column 12 state that the MFCR estimates for 1974 to 1976 are between 24% and 37% high. As mentioned earlier, changes in the MFCR baseline may explain part of the discrepancy, although these changes have not been documented adequately.

## III. CONCLUSIONS AND RECOMMENDATIONS

## A. CONCLUSIONS

1. Usefulness

- Preliminary user interviews indicate that the published outputs of the MFCR system are not generally considered useful by individuals concerned with monitoring or analyzing long-term trends in coal demand and availability. Many users and potential users of coal information state that the MFCR outputs are not timely, are too highly aggregated, and are perceived to be inaccurate. (Additional work will be done to confirm initial findings.)
- If the MFCR system were accurate, it might provide potentially useful information that would, however, constitute only part of the information required for monitoring or analyzing long-term trends in coal demand and availability.

2. Accuracy

The accuracy of time series produced to date by the MFCR system is highly suspect for the following reasons:

- (1) Ill-defined universe: The definition of the universe implied by the instructions for the EIA-3 conforms neither to the baseline cited in published statistical estimates nor to the "in-house" definition used in collecting the information.
- (2) Inappropriate and outdated baseline: The baseline cited in published statistical estimates from 1958 through 1977 does not correspond precisely to the quantity apparently being estimated. During these years, the Weekly Coal Report references a 1954 baseline including only manufacturing and mining firms. However, the information gathered by the EIA-3 is currently used to estimate coal consumption of a group of users including establishments that are not manufacturers. Although several adjustments to the baseline have apparently been made, at least one (for inclusion of institutional users of fuel) has not been documented. A new baseline is now being developed by the Bureau of Census to improve the accuracy of future estimates.
- (3) Technical bias: The link relative procedure used

to estimate national consumption and stocks is most appropriate when the population of respondents does not change. Although estimates based on this procedure would reflect changes in coal consumption within an established population of respondents, these estimates would not reflect the impact of the entry to and exit from the respondent population. Consequently, significant trends first away from coal use (in the 1960s and early 1970s) and later toward coal use (in the mid and late 1970s) should be underrepresented in estimates generated by the MFCR system.

- (4) Disagreement with Bureau of Census estimates: The statistical estimates generated by the MFCR system in the years 1974, 1975, and 1976 are 24%, 37%, and 31% higher than comparable estimates published in the Annual Survey of Manufactures (1974, 1975, 1976).
- (5) Disagreement between the data base and the information published: Monthly percentage changes in consumption for 1976 were computed by applying the linked relative procedure to the 1976 information in the data base. These percentage changes differed from percentage changes published in the Weekly Coal Report. The cumulative effect of these differences was quite significant. The ratio of December 1976 consumption to January 1976 consumption in the published report is 1.237; the comparable ratio computed from the data base is 0.998. Thus, the published December 1976 consumption is 24% higher than the 1976 information in the data base would suggest. (A similar analysis for previous years is in process.)
- (6) Possible non-coverage bias: The following combination of LBL findings and past DOE estimates raise suspicions about, but does not conclusively prove the existence of, possible non-coverage bias related to the effects of seasonality. The information in the data base for 1976 covers approximately one-half of total estimated bituminous coal consumption in 1976 (26 million of a total 55 million tons). Histograms of 1976 information indicate that consumption is highly skewed. Approximately 25% of the coal users who responded consumed 75% of the total amount consumed. April 1978 DOE estimates of the size of the 1978 MFCR universe (3,700 to 4,000) indicate that the 1976 data base (containing 616 coal users among 722 respondents) may have missed on the order of 80% of coal users. Assuming that these users used the 29 million tons not accounted for in the data base, it is likely that the

majority of these users are small. Since preliminary comparisons of seasonal consumption patterns suggest that coal usage by small users has stronger seasonality than that of large users, it is possible that the published information systematically underrepresents the seasonality of coal usage.

- (7) Possible selection bias: Until December 1977, reporting was voluntary. It is not known whether this affected the estimates that were generated by the system.
- (8) High variance of the estimate: A mathematical formula has been derived for a lower bound variance of an estimate generated using the link relative method for M periods. Substitution of 1976 population statistics into this formula indicates that the application of the link relative method for twenty years would result in monthly estimates for the last year whose standard deviation is at least 32% of the estimated value.

## B. RECOMMENDATIONS

### 1. Caveats

- The information generated by the MFCR system is highly suspect for reasons cited above. Whenever possible, annual consumption information generated by the Bureau of Census should be used in its stead.

### 2. System Design

- The purpose of the MFCR system is to provide information rather than to support a specific regulatory process. Consequently, recommendations concerning system design cannot be made until a thorough study of the need for coal information has been performed.

### 3. Continuing Research

- Completion of data quality investigations
- Design and execution of a study of needs for coal information. Such a study is required in order to make recommendations about the redesign of the MFCR system.

## IV. NOTES AND REFERENCES

1. Computed from revised 1977 information in Energy Data Reports, Weekly Coal Report, October 13, 1978.
2. United States Geological Survey, Thirty-Eighth Annual Report of the Director of the United States Geological Survey to the Secretary of the Interior for the Fiscal Year ended June 30, 1917, 11. This page is contained in Appendix E, Excerpts from Historical Documents.
3. United States Fuel Administration, Report of the Distribution Division 1918-1919 (part 1, The Distribution of Coal and Coke by C.E. Leshner), 118. Excerpts from this report are contained in Appendix E, Excerpts from Historical Documents.
4. Ibid., pp. 118-119.
5. Executive Order No. 4239 (June 4, 1925).
6. Ibid.
7. United States Government Printing Office, Monthly Catalog of United States Government Publications, Serials Supplement 1978 175.
8. 36 Stat. 369, codified, as amended, at 30 U.S.C.A. §1, et seq. (1978).
9. The Organic Act of 1910 granted the Bureau of Mines the authority to conduct inquiries concerning mining, the utilization of mineral substances, and the economic conditions affecting these industries. §2, 36 Stat. 369, 370, codified, as amended at 30 U.S.C.A. §3 (1978). The Bureau of Mines also has the authority to disseminate information concerning these subjects. §3,5, 36 Stat. 369, 370, codified, as amended, at 30 U.S.C.A. §3,5 (1978).
10. Executive Order No. 6611 (February 22, 1934).
11. See the excerpts from the Bureau of Mines' "1958 Revision of Statistics on Consumption of Bituminous Coal and Lignite," contained in Appendix F.
12. Ibid.
13. Interview notes, Eric Mohr, June 1978.
14. See Appendix D, The Bureau of Mines Form 6-1400-M-1 and its Clearance Request.
15. Section 302(d) of the Department of Energy Organization Act [Pub. L. No. 95-91, 91 Stat. 565, 579 (August 4, 1977), codified, as amended, at 42 U.S.C.A. §7152(d) (1978)] "transferred to, and vested in, the

Secretary [of the Department of Energy] those functions of the Secretary of the Interior, the Department of the Interior, and officers and components of that Department under the Act of May 16, 1910, and other authorities, exercised by the Bureau of Mines, but limited to- (1) fuel supply and demand analysis and data gathering;..." The Energy Information Administration also publishes Monthly Fuel Consumption Report data in its Monthly Energy Review. These data are also used in the preparation of the Bureau of Mines' Mineral Yearbook and Mineral Facts and Problems and the Department of Energy's Annual Report to Congress.

16. 42 F.R. 62418 (December 12, 1977).

17. Ibid.

18. Pub. L. No. 93-275, 88 Stat. 96 (May 7, 1974), codified, as amended, at 15 U.S.C.A. Section 761, et seq. (1978). The instructions to form EIA-3 cite Section 13 of the Act. Sections 4, 14, and 51 also contain relevant grants of authority. Section 51 was added by the Energy Conservation and Production Act, Pub. L. No. 94-385 Section 142 (August 14, 1976), 90 Stat. 1125, 1135, codified at 15 U.S.C.A. Section 790 (1978). See Appendix C for the text of these statutes.

19. Pub. L. No. 95-91, 91 Stat. 565 (August 4, 1977), codified, as amended, at 42 U.S.C.A. Section 7101, et seq. (1978). Sections 205, 301, and 302 of the Act contain relevant grants of authority. Executive Order No. 12009 (September 13, 1977), 3 C.F.R. 142 (1978), provided for the effectuation of the Act. See Appendix C for the text of these statutes and the executive order.

20. This purpose is also cited in the Energy Information Administration's notice providing for the mandatory submission of form EIA-3. Note 15 above. Form EIA-3 and the instructions thereto are contained in Appendix A.

21. Conversation with Connie Dutcher of the Energy Information Administration on December 14, 1978.

22. See Appendix B, The Clearance Request for Form FEA-C332-M-0.

23. Interview notes, Steve Sullivan, November 15-16, 1978, at the Coal Statistics Branch.

24. Ibid.

25. This is the response rate for respondents who appeared in the data base because they responded at least once.

26. Interview notes, Steve Sullivan, November 15-16, 1978, at the Coal Statistics Branch.

27. Ibid.

28. Ibid.

29. Since primary SIC codes are requested on form EIA-3, in principle it should be possible to use EIA-3 information to determine proportional consumption by BOC industry group. This was not done in the past because the reliability of such estimates would be limited by the degree to which the frame reliably reflected the proportional representation of these groups among coal consumers.
30. Brief LBL interviews with DOE personnel recently assigned to generate these estimates were not sufficient to clarify how the EIA-3 information is used.
31. See Appendices A and B, which contain the instructions for the form and the justification attached to the clearance request.
32. The estimate of 3,700 members of the universe appeared in a memorandum from Chuck Heath for Al Linden through Jimmie Peterson. The subject of this April 4, 1978 memo was "EIA-3 Monthly Fuel Consumption Report - Manufacturing Plants Burden Reduction."
33. Average monthly response rate is computed by dividing the total number of monthly responses by 12 times the total number of respondents. This assumes that the frame was virtually constant during 1976 and that each member of the frame responded at least once, thereby appearing in the data base.
34. See 32.
35. Both anthracite consumption and coal consumption in mining are relatively small. Consequently, it is assumed that 1974 data from Mineral Facts and Problems and 1972 data from the Census of Mineral Industries are representative of consumption in 1974-1976. LBL has found no recent data on the consumption of briquets or packaged fuels. However, if consumption of these commodities fell as rapidly from 1954 to 1976 as did retail deliveries of coal, briquets and packaged fuels would contribute less than 200,000 tons to total consumption.
36. It is not clear that the tabulated values for BOC's "basic steel" (SIC 331) category are strictly comparable to the MFCR's "steel and rolling mills." It is difficult to see how differences in categorization could explain the ratios of 1.31, 0.62, and 0.64.

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LBL-8435  
Interim Report

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INTERIM VALIDATION REPORT

APPENDICES

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A-1

APPENDIX A

MONTHLY FUEL CONSUMPTION REPORT

MANUFACTURING PLANTS - EIA-3, Instructions and Form

U.S. DEPARTMENT OF ENERGY  
Energy Information Administration  
Washington, D.C. 20241

Form Approved  
O.M.C. Inv. 038-R0193

EIA 3  
10/77  
Supersedes  
BOM Form 6-1400-M-1

MONTHLY FUEL CONSUMPTION  
REPORT MANUFACTURING PLANTS

A. Purpose

Form EIA 3 is designed to provide the sales and volume data of manufacturing consumers necessary for "fully informed monitoring and guidance" by the U.S. Department of Energy's Energy Information Administration (EIA) in accordance with Section 13 of the Federal Energy Administration Act of 1974, (P.L. 93-275), under provisions of Executive Order 12009 "to effectuate the transfer of functions provided for in the Department of Energy Organization Act" (P.L. 95-91). The data collected will be used in the compilation of public statistical reports with the primary efforts providing for continual monitoring of coal production, consumption, and distribution for coal related analysis including energy/environmental studies, energy policy, and implementation of mandated coal programs.

B. Who Must Submit

Form EIA 3 has been sent to all firms and establishments that consume bituminous coal and lignite. Each establishment shall complete and submit this form each month.

C. When to Submit

Form EIA 3 must be submitted to the address below no later than fifteen (15) days after the close of the reporting month.

D. Where to Submit

Firms must send Form EIA 3 to:

U.S. Department of Energy  
Energy Information Administration  
Branch of Coal Statistics  
2401 "E" Street, N.W., Room 619  
Washington D.C. 20241

E. Definitions

1. BBLs- abbreviation for a 42 gallon barrel.

2. ESTABLISHMENT - For purposes of this classification, an establishment is an economic unit, generally at a single physical location where business is conducted or where services or industrial operations are performed. (For example, a factory, mill, store, hotel, movie theater, mine, farm, ranch, bank, railroad depot, airline terminal, sales office, warehouse or central administrative office.)

3. FIRMS - any association, company, corporation, state, individual, joint-venture, partnership or sole proprietorship or any other entity, however organized, including charitable, educational or other eleemosynary institutions and the Federal government including corporations, departments, Federal agencies and other instrumentalities and State and local governments.

4. Fuel Descriptions

a. ANTHRACITE - includes metaanthracite, semianthracite and anthracite. Classified in conformance with ASTM Specification D338.

b. BITUMINOUS COAL - Low-volatile, medium-volatile and high-volatile bituminous coal classified in conformance with ASTM Specification D338.

a. COKE - Bituminous coal from which the volatile constituents have been driven off by heat, so that the fixed carbon and the ash are fused together.

d. FOUNDRY COKE - A premium grade of metallurgical coke used in cupolas for the production of metals for casting. With respect to other grades, foundry coke is characterized by its larger size and higher reactivity and strength.

e. FURNACE COKE - Metallurgical coke used in furnaces for reducing metal oxides. Furnace coke, in general, has less rigid chemical and physical specifications than those for foundry coke.

f. GAS - Natural Gas with volumes at a pressure base of 14.73 pounds per square inch absolute at 60° F.

g. LIGNITE - Coal with 6,300 or more British Thermal Units (BTU) per pound classified in conformance with ASTM Specification D338.

h. OIL - Either Distillate Fuel Oil, No. 4 Fuel Oil, or Residual Fuel Oil. Classified in conformance with ASTM Specifications D396, D975, and D396.

i. SUB BITUMINOUS - Coal with 8,300 or more British Thermal Units (BTU) per pound, but less than 11,500 (BTU) per pound classified in conformance with ASTM Specification D338.

5. MCF - Abbreviation for one thousand (1,000) cubic feet.

6. PLANT STANDARD INDUSTRIAL CLASSIFICATION - The four digit code pertaining to the primary activity of the establishment as specified by the "Standard Industrial Classification Manual - 1972" prepared by the Office of Management and Budget, Executive Office of the President.

7. PRIMARY DISTRICT - The Bureau of Mines District that is the major coal supply area for the establishment.

8. REPORT MONTH - The period of time which begins at 12:01 AM the first day of each calendar month and ends at midnight the last day of the same month.

9. SECONDARY DISTRICT - The Bureau of Mines District that is the second major coal supply area for the establishment.

F. General Instructions

A separate report must be submitted for each manufacturing establishment. Complete all nonshaded blanks of the form for those items applicable to your establishment. If a line is not applicable leave blank. Report all fuel weights or volumes in the units specified in column 2, rounded to the nearest whole number; fractions or decimals are not to be used.

G. Specific Instructions

1. Plant Identification - Enter the manufacturing establishment's name and the city, county and state where the plant is located.

2. Plant Standard Industrial Classification - Enter the four digit code from the Standard Industrial Classification Manual (see definition).

3. Line 2A(1) - Enter Bureau of Mines District (see Definition).

4. Line 2A(2) - Enter Bureau of Mines District (see definition).

5. Line 2B(1) - Enter the average number of days that it took coal shipments to reach your establishment from the Primary District during the report month.

6. Line 2B(2) - Enter the number of miles from the Primary District to your establishment.

7. Line 2C - Enter the weight of ash removed from your establishment.

Enter the information requested in columns 3 through 9 for those fuels listed in column 1.

8. Column 3 - Enter stocks (in whole numbers in the unit specified in column 2) at the beginning of the report month.

9. Column 4 - Enter quantity (in units specified in column 2) received by establishment during the report month.

10. Column 5 - Enter the average sulfur content for all receipts during the report month by percent of sulfur by weight. Report the sulfur content to the nearest tenth of a percent (for example: 0.7; 1.3).

11. Column 6 - Enter the weighted f.o.b. plant price per unit of the quantities entered in column 4. Price should be reported to nearest one hundredth of a dollar (example: \$25.29).

12. Column 7 - Enter the quantity consumed at the establishment during the report month.

13. Column 8 - Enter the average BTU content of coal or coke consumed at this plant during the report month. Report heat content in millions of British Thermal Units (BTU) per ton of consumption. For example, 40,000,000 BTU is reported as 40.

14. Column 9 - Enter the stocks (in units specified in column 2) at the end of the report month.

H. Disclosure - Some of the information requested on this form may be confidential commercial information which EIA may withhold from public disclosure, because its release will cause substantial competitive injury. If you believe that any information is covered by the exemption to the Freedom of Information Act (5 U.S.C. 552) disclosure requirements for trade secrets and confidential commercial information contained in 5 U.S.C. 552(b) (4), and if you do not wish EIA to disclose such information to the public, you should inform EIA by letter accompanying the submission of this form. This must 1) cite briefly and specifically, by item number, which information you believe is confidential commercial information 2) state that release of the information would be likely to cause substantial competitive injury resulting from release of each item and explain the basis of this statement and 3) explain whether each item of information which you believe is confidential is customarily treated as confidential by your company and in your industry. EIA needs a detailed explanation of the competitive injury resulting from public disclosure rather than a general assertion of injury--before it can evaluate or accept claims of confidentiality. EIA retains the right to make its own determination with regard to any claim of confidentiality.

If, with your response, we do not receive a request with substantial justification, that the information submitted not be released to the public, the EIA may assume that you do not object to disclosure to the public of any information submitted by your Company on the form.

I. Certification

This part must be completed each time the form is submitted.

Type or print in block letters the name and title of the individual designated by the company to sign the certification and the date of signing the spaces provided on the form.

EIA 3  
10/77  
Supersedes  
BOM Form 6-1400-M-1

U.S. DEPARTMENT OF ENERGY  
Energy Information Administration  
Washington, D.C. 20241

Form Approved  
O.M.B. No. 038-R0193

**MONTHLY FUEL CONSUMPTION REPORT  
MANUFACTURING PLANTS**

This report is being collected under mandatory authorities vested in the U.S. Department of Energy under Public Law 93-275 pursuant to Public Law 95-91.

(Please correct if name or address has changed.)

If the mailing address appearing on this form covers more than one plant, please complete a separate form for each plant, being sure to enter the name and location of the plant for which the report is filed. Your cooperation is needed to make the results of this survey comprehensive, meaningful, accurate and timely. (SEE REVERSE SIDE FOR DEFINITIONS AND INSTRUCTIONS)

PLANT IDENTIFICATION: Name \_\_\_\_\_ Nearest City or Town \_\_\_\_\_  
County \_\_\_\_\_ State \_\_\_\_\_

1. PLANT STANDARD INDUSTRIAL CLASSIFICATION: Principal Function \_\_\_\_\_ (\_\_\_\_\_.4 Digits)

2. FUEL CONSUMPTION, RECEIPTS AND STOCKS

A. BOM DISTRICT of coal origin (enter State of origin if BOM DISTRICT is unknown)

(1) Primary \_\_\_\_\_ (2) Secondary \_\_\_\_\_

B. Estimated shipment time and distance from major source of coal supply

(1) Shipment Time \_\_\_\_\_ :Days (2) Distance \_\_\_\_\_ :Miles

C. Quantity of waste (ASH removed after consuming COAL) \_\_\_\_\_ Tons

Entry in column 3 plus entry in column 4 (if any), minus entry in column 7 should equal entry in column 9.

Item 1	Code	Unit (2)	Stocks at beginning of month 3	Receipts			Consumption		Stocks at end of month 9
				Quantity received during month (4)	Avg sulfur content % (5)	Avg price per unit f.o.b. plant (6)	Quantity consumed during month (7)	Avg B <sup>1</sup> U content million per ton (8)	
Bituminous .....	103	Short tons							
Sub bituminous .....	104	Short tons							
Lignite .....	106	Short tons							
Anthracite .....	110	Short tons							
Oil .....	112	BBLS							
Gas .....	113	MCF							
Coke:									
Furnace .....	114	Short tons							
Foundry .....	115	Short tons							
Other (specify):									

OVER

Remarks:

H. Information requested on this form is confidential and if released will cause substantial competitive injury.

YES  NO

Written justification is attached.

YES  NO

I. Certification

I certify that the information provided herein and appended hereto is true and accurate to the best of my knowledge.	
Name	Title
Signature	Date
Title 18, USC 1001. Makes it a crime for any person knowingly and willingly to make to any Agency or Department of the United States any false, fictitious or fraudulent statements as to any matter within its jurisdiction.	

0 0 0 0 5 2 0 5 8 5 7

B-1

APPENDIX B

THE CLEARANCE REQUEST FOR THE EIA-3\*

\*Under its original name: Form FEA-C-332-M-0.

(Under the Federal Reports Act and Office of Management and Budget Circular No. A-40, as amended)

**IMPORTANT—READ INSTRUCTIONS BEFORE COMPLETING FORM.**  
Submit the required number of copies of SF-83, together with the material for which appraisal is requested to:

CLEARANCE OFFICER  
OFFICE OF MANAGEMENT AND BUDGET  
WASHINGTON, D.C. 20503

**PART A—REQUEST BY FEDERAL AGENCY FOR CLEARANCE**

\*Items marked with asterisk may be omitted for preliminary plans or recordkeeping requirements

<p>1. SEND "NOTICE OF ACTION" TO: (Name and mailing address)</p> <p>Nathan H. Finch Division of Printing Management Office of Administration Programs Federal Energy Administration Federal Building, Room 6500 12th &amp; Pennsylvania Avenue, N.W. Washington, D.C. 20461</p>		<p>2. BUREAU AND DIVISION OR OFFICE ORIGINATING REQUEST</p> <p>Federal Energy Administration Div., BOM, Fuels Div.</p>	
<p>3. NAME(S), TITLE(S), AND TELEPHONE NO(S) OF PERSON(S) WHO CAN BEST ANSWER QUESTIONS REGARDING REQUEST</p> <p>Connie Dutcher Office of Data Services 254-7321</p>			
<p>4. TITLE OF FORM OR DOCUMENT SUBMITTED</p> <p>Monthly Fuel Consumption Report Manufacturing Plants</p>		<p>5. AGENCY FORM NUMBER(S)</p> <p>FEA-C332-M-0</p>	
<p>6. TYPE OF FORM OR DOCUMENT</p> <p> <input type="checkbox"/> Application                    <input type="checkbox"/> Program evaluation                    <input type="checkbox"/> Other management report                    <input checked="" type="checkbox"/> Statistical survey or report                    <input type="checkbox"/> Record-keeping requirement                    <input type="checkbox"/> Other Specify             </p>			
<p>7. CURRENT (or former) OMB CLEARANCE NUMBER</p> <p>042-R1744</p> <p>EXPIRATION DATE</p> <p>January 1978</p>		<p>8. REQUESTED EXPIRATION DATE</p> <p>January 1, 1980</p>	
<p>9. TYPE OF REQUEST</p> <p> <input checked="" type="checkbox"/> New                    <input type="checkbox"/> Revision                    <input type="checkbox"/> Extension (No change)                    <input type="checkbox"/> Reinstatement                    <input type="checkbox"/> Preliminary plan or contract             </p>			
<p>10. FREQUENCY OF USE</p> <p> <input type="checkbox"/> Single time                    <input type="checkbox"/> On occasion                    <input type="checkbox"/> Weekly                    <input checked="" type="checkbox"/> Monthly                    <input type="checkbox"/> Quarterly                    <input type="checkbox"/> Semi-annually                    <input type="checkbox"/> Annually                    <input type="checkbox"/> Other (see instructions)             </p>			
<p>11. RELATED FORMS OR DOCUMENTS (Give OMB Number. Enclose in parentheses any to be replaced.)</p>		<p>12. CATALOG OF FEDERAL DOMESTIC ASSISTANCE PROGRAM NUMBER</p>	
<p>*13A. COLLECTION METHOD (Check as many as apply)</p> <p> <input checked="" type="checkbox"/> Mail                    <input type="checkbox"/> Personal interview                    <input type="checkbox"/> Other—Describe             </p>		<p>*13B. COLLECTED BY—</p> <p> <input checked="" type="checkbox"/> Agency                    <input type="checkbox"/> Contractor                    <input type="checkbox"/> Other—Describe             </p>	
<p>14A. TYPE OF RESPONDENTS (Check predominant one)</p> <p> <input type="checkbox"/> Individuals or households                    <input checked="" type="checkbox"/> Business firms (non-farm)                    <input type="checkbox"/> Farms                    <input type="checkbox"/> Government agencies                    <input type="checkbox"/> Other—Describe             </p>		<p>14B. BRIEF DESCRIPTION OF RESPONDENTS (i.e., "households in 50 largest SMSA's," "retail grocery stores")</p> <p>Coal Consumers</p>	
<p>*15A. ESTIMATED NUMBER OF RESPONDENTS</p> <p>2,200</p>		<p>15B. APPROXIMATE NUMBER OF UNIVERSE (If sample)</p>	
<p>15D. TOTAL ANNUAL RESPONSES (Item 15A x 15C)</p> <p>26,400</p>		<p>15E. ESTIMATED AVERAGE NUMBER OF HOURS REQUIRED PER RESPONSE</p> <p>5</p>	
		<p>15C. REPORTS FILED ANNUALLY BY EACH RESPONDENT (Item 10)</p> <p>12</p>	
		<p>15F. ESTIMATED TOTAL HOURS OF RESPONDENT BURDEN (Item 15D x 15E)</p> <p>13,200</p>	
<p>AUTHORITY AND CONFIDENTIALITY</p> <p>*16A. IS REPORT FORM:</p> <p> <input type="checkbox"/> Voluntary?                    <input type="checkbox"/> Required to obtain benefits?                    <input checked="" type="checkbox"/> Mandatory?—Cite statute             </p> <p>FEA Act P.L. 93-275 P.L. 94-163 P.L. 93-319</p>		<p>16B. DOES YOUR AGENCY PLEDGE CONFIDENTIALITY?</p> <p> <input type="checkbox"/> YES                    <input checked="" type="checkbox"/> NO             </p>	
<p>CONSULTATIONS OUTSIDE AGENCY</p> <p>17. In developing the report form or other documents, were consultations held with individuals or organizations outside your own agency?</p> <p>The Dept. of the Interior, Bureau of</p>		<p> <input checked="" type="checkbox"/> YES—Identify persons and describe outcome in SUPPORTING STATEMENT. (See instructions)  <input type="checkbox"/> NO Mines             </p>	
<p>CERTIFICATION BY AUTHORIZED OFFICIALS SUBMITTING REQUEST—We certify that the form or other document submitted for approval is necessary for the proper performance of the agency's functions, that the proposed data collection represents the minimum burden on respondents consistent with the need for information, that the information collected is not available from any other source, to the best of our knowledge, that the collection instrument contains no hidden identifiers, that the request complies with requirements of the Freedom of Information Act and the Privacy Act of 1974 and is consistent with applicable O.M.B. and agency policy directives. Signature and initials:</p>			
<p>APPROVING OFFICIAL FOR AGENCY</p> <p>Jim Gate L. Petersen, Acting DAA for Data Services</p>		<p>DATE</p> <p>23 SEP 1977</p>	
		<p>AGENCY CLEARANCE OFFICER</p> <p>Officer, Federal Energy Administration</p>	

(1) JUSTIFICATION

The Federal Energy Administration Act of 1974 (P.L. 93-275) states that the Administrator should . . . assess the adequacy of energy resources to meet demands in the immediate and long range . . . develop plans and programs for dealing with energy production shortages . . . collect, evaluate, assemble and analyze energy information on reserves, production, demand, and related economic data . . . Sec. 5(b)(2)(4)(9) . . . the Administrator shall make public, on a continuing basis, any statistical and economic analyses, data, information, and whatever reports and summaries are necessary to keep the public fully and currently informed as to the nature, extent and projected duration of shortages and the steps being taken to minimize such impacts . . . Sec. 14(a).

The FEA Act of 1974 (P.L. 93-275) states that the Administrator shall collect, evaluate, and analyze energy information by categorical grouping . . . of sufficient comprehensiveness and particularity to permit fully informed monitoring and policy guidance . . . with respect to energy (Sec. 13(a)).

The Energy Supply and Environmental Coordination Act of 1974 (P.L. 93-319) states that . . . In order to obtain energy information . . . the Federal Energy Administration is authorized . . . to require by rule, any person who is engaged in the

production, processing . . . of energy resources to submit reports . . . Sec. 11(b)(1)(A) with authority extended through December 31, 1979, as amended by the Energy Policy and Conservation Act of 1975 (P.L. 94-163) Sec. 506, Section 52 of the FEA Act as amended, and under the Energy Conservation and Production Act (Public Law 94-385) to establish an Energy Information System which "shall contain such energy information as is necessary to carry out the Administrator's statistical and forecasting activities at the earliest date . . .". The section continues by outlining "such information as is required to define and permit analysis of --

the consumption of mineral fuels, non-mineral energy resources, and electricity by such classes, sectors, and regions as may be appropriate . . .".

In the past the Federal Energy Administration (FEA) has reacted to each energy crisis by designing monitoring systems to meet surfacing information needs. Many of these past situations could not be forecasted, were previously unexperienced, and have not historically reoccurred. In each instance, a specific short or long term information collection system has been implemented to meet the management and operational needs of the agency at that time.

Preceding the 1974 United Mine Workers Association (UMWA) coal miners strike, the FEA began to assess its coal data requirements necessary to monitor the coal situation and estimate the impact of the pending strike. FEA contacted Federal agencies known to have coal information and asked them to provide the data on tape.

Two agencies, the Federal Power Commission (FPC) and the Bureau of Mines (BOM) were the major holders of data of use to FEA. The BOM supplied data concerning coal and coke production, consumption, stocks, receipts and distribution. They also provided a master list of all known operating coal mines, coke producers and coal suppliers. The FPC sent data which includes the utilities' use and planned use of coal, source and price of coal, a master list of utilities and generating capacities. BOM, FPC, and FEA cooperated in a joint effort to monitor the coal situation during the coal strike. Weekly surveys were made of major coal consumers, utilities and industries and automated for use by the agencies.

A Coal Task Force was established in August of 1974. Under the guidance of this committee a data system was developed that encompassed a number of Government agencies but the primary responsibilities resided with BOM and FEA. The Task Force approved data system development in mid-year 1974 and the system was operational in November 1974. The data system covered the areas of coal supply, coal demand, and economic impact (employment).

Data problems experienced by FEA in its coal monitoring effort during the UMWA strike with respect to six of the major segments in the coal industry were as follows:

- Coal production data;
- Coal distribution data;
- Utility consumption data;

- Coking industry consumption data;
- Other industrial consumption data; and
- Export data.

Further, the problems observed fall into three basic areas of data effort. These areas include:

- Data collection and reporting, i.e., industry coverage, completeness of responses, and the definition and measurement of specific data elements;
- Data processing and validation; and
- Data manipulation and analysis.

By far the greatest problems experienced in FEA's coal monitoring effort were the first area of data effort listed above. While FEA did much to improve and expand both the quantity and quality of available data, many shortcomings remained. Certain key data elements were still missing, e.g., data on coal in transit, and others suffered from poor industry coverage and incomplete or confused responses.

Unfortunately, many of the above problems were permitted to permeate the usable data due to inadequate validation and edit procedures in the processing aspect of the data effort. Responses with no answers to a given question were often confused with zero values. In addition, many numbers entered into the system were far beyond reasonable bounds for the fields in which they appeared.

Hence, the FEA monitoring system was capable of providing reasonable indications of the basic aggregate coal supply and demand situation during the UMWA strike. However, with an important exception (i.e., utility coal consumption and stocks) it could not provide a reasonable level of precision on a more detailed basis.

The FEA and BOM data acquisition procedures were less than optimum. However, given time and resource constraints, a large amount of data was collected, processed and analyzed. Validation had to be done on a case-by-case basis. It was identified that a greater effort was needed, probably through a joint FEA/BOM venture, to get a solid, and presumably better, data base with all the known problems understood by both organizations.

(ii) In March 1976 the FEA and BOM entered into an agreement for the purpose of expediting the collection and processing of coal data. The Letter of Agreement stated that the working agreement would be superseded at a later date by a formal interagency agreement. Pursuant to the intent of that working agreement a formal interagency agreement has been constituted between the two agencies to facilitate the collection, validation, processing and analysis of coal related energy data in compliance with the guidelines of the Office of Management and Budget for coordination of programs among Federal agencies. Cooperative efforts will be undertaken, when feasible, with the primary efforts providing for the

continual monitoring of coal production, consumption, and distribution. It is mutually agreed that under this agreement, upon concurrence by OMB and GAO, BOM will assume responsibilities as the designated collection agency for FEA using the FEA mandatory collection authority. Existing data collection forms used by BOM requiring a mandatory reporting media include:

A. BOM Form 6-1400-M Monthly Coal Report

The BOM Form 1400, B40B42 and B43B44 series, provide data on a monthly basis for receipts, disposition, and stocks of bituminous coal and anthracite for manufacturers, retail dealers, steel plants, and upper lake docks.

A reporting universe of 600 is estimated for Form 6-1400-M-B40B42. Of the 600, 300 have been identified and are receiving forms for voluntary submission to BOM. Only 35% of those that receive the form report.

A reporting universe of 2,200+ is estimated for the Form 6-1400-M-B43B44. Of these, 1,400 are receiving forms for voluntary submission to BOM. Approximately 50% of the 1,400 identified respond.

B. BOM Form 1365-M Coke and Coal Chemical Materials

Provides data on a monthly basis for production, consumption, distribution and stocks for coke, breeze, and coking coal. Data is also available covering the production, receipts, disposition, and stocks for coal chemical materials. The data may be for more than 1 plant if a company operates more than 1 plant in a state. A reporting universe of 67 is estimated for the Form 6-1365-M-B31; 66 report voluntarily.

C. BOM Form 1419-Q Distribution of Bituminous Coal and Lignite Shipments

Provides data on a quarterly basis for the shipment of Bituminous coal and Lignite by company and BOM district to electric utilities; coke and gas plants; retail dealers, and others by state. The data is available for shipments by all rail; river and ex-river; Great Lakes ports; Tidewater ports; truck; tramway, conveyor and private RR; for RR fuel; and others. A reporting universe of 1,200 is estimated for the Form 6-1419-Q-B45; 70% report voluntarily.

D. BOM Form 1401 Bituminous Coal and Lignite Production and Mine Operation

Provides data annually for each coal mine reporting to BOM. Data covers the mine operation, equipment, status,

type of coal, disposition of coal, value of coal (FOB mine), and sulfur content. It should be noted that every mine reporting does not necessarily supply all the information requested. Also, some companies consolidate their reporting of a number of mines into one form.

A reporting universe of 7,000 has been identified for the Form 6-1401-A(S) with an additional 1,200 estimated. Of the 7,000 identified 50% report voluntarily.

E. The FEA and BOM have jointly devised a telephone survey which will be used to collect certain data elements by phone from November 1977 through the end of February 1980. This survey is designed to provide an improved baseline data source regarding production, consumption and supply, and allow both agencies to have up-to-date input for the critical decision making process during possible supply interruptions should they occur.

(iii) There is a need to increase the responsiveness in collection and dissemination of information on energy shortages caused by disruptions (i.e., gasoline shortages, coal strike, natural gas shortage, petroleum embargo).

Up-to-date data should provide information on production capability, prices, and a baseline for forecasts of supply and demand of commodities in short supply.

In view of this multi-dimensional information gathering effort, and in view of anticipated shortages the coming months, system definitional tasks and procedures, i.e., forms clearance, must be started at the earliest possible date.

Through cooperative programs for mandatory collection, validation, processing and dissemination of coal data, BOM and FEA will be able to provide an improved baseline data source for coal related analysis including energy/environmental studies, energy policy, and implementation of mandated coal programs. Any additional data collection deemed necessary will be determined jointly by FEA and BOM. This may involve design of new forms as well as use or revision of existing forms for mandatory reporting. The forms used for data collection will carry the FEA/BOM logotype and letterhead.

(2) Description of the Survey Plan

(i) Objectives of a Coal Monitoring System

The objective of monitoring the coal market situation is to provide public, industry and all levels of government with accurate and unbiased reports of the critical nature and related impacts of coal supply shortage situations, demand for coal, coal stocks held and location of impacted end users. Four

"end-use" sectors shall be addressed by the monitoring system. They are the Utilities, Coking Industry, General Industry and Steel Industry. Coal for export shall be monitored separately for detection of significant changes in coal exported or held in storage at ports.

Since these data and reports are sensitive to the bargaining process during a coal strike a further objective of this system will be to provide proper levels of maintenance of confidentiality and data security. The outputs from this system will be the impartial results of monitoring and analysis of the situation. These data, analyses and reports must be responsive, timely, accurate and concise.

(a) Data Requirements

In order to guarantee timely identification, receipt and validation of required data cooperative agreements covering the transfer of information between the Bureau of Mines, Federal Power Commission, Bureau of Labor Statistics, Mine Enforcement and Safety Administration and the Federal Energy Administration are being established. Interagency agreements between organizations which collect and process data elements key to the objectives of coal monitoring should expedite the data transfer process. Additional benefits are to be expected in avoidance of duplication of the data

collection effort, expediting forms clearance, division of labor and in coordination of released information and results of analyses.

The system will monitor mine status, production, consumption, stock drawdown rates at industries and utilities, prices and stocks. These shall indicate economic sectors and geographic locations where shortages can be expected to occur.

Coal monitoring objectives generally require coal data describing reserves, production, distribution, consumption, alternate fuels capability, contingency plans, environmental constraints and demand forecasting. Geographic detail is most desirable at the state level and if that is not possible, at the BOM district and FEA region level.

## 2. Data Sources

Sources of coal related data required for developing the desired monitoring capability are most importantly from the Bureau of Mines (BOM), Federal Power Commission (FPC), Bureau of Labor Statistics (BLS), Mine Enforcement and Safety Administration (MESA), and the Federal Energy Administration (FEA).

The source for mine production data will include the Bureau of Mines forms 6-1401-A(S) and 1419Q for historical data. Integration of these forms with other systems will provide mine name and location data, parent affiliation, mine type, fixed coal characteristics, production of clean and raw coal, transportation, employment, and man hours worked.

The Bureau of Mines will be the best point of coordination of coal production information from MESA and BOM forms. The FEA coal analysts and forecasters will be required to support production data estimation during the monitoring period. Modelers and analysts could attempt to back into production numbers by using transportation and consumption data to show reduced flow of coal in the system. They will be required to formulate impact assessments and adjust production data for input to forecasting models.

(b) Consumption Data

While it is anticipated that the Short Term Coal Model will supply the FEA with demand estimates for the strike baseline period, these estimates will require corroboration with recent actual data. Monitored end using sectors have been defined as the electric utilities, coke producers, industrial plants and exports.

(b.1) 1. Utility Steam Coal:

The source of most required utility sector data is the FPC. The FPC 423 is the source of coal receipts, spot and contract purchase data, price FOB utility, other fuel purchases and price paid. The data are reported by plant with power producing capacity of 25 MW or greater. Limited environmental and fuel quality data are also available from this form. The FPC 4 is a source of fuel consumption and net power generation data by fuel type and prime mover for each utility. Net dependable capacity and nameplate ratings can be taken from the FPC 383 and updates to capacity additions and deletions can be made from the FPC 12E-2. Other data of interest are stocks of all fuels from the FPC 4, peak load demand, and price of electricity for end use from the FPC 5. Other baseline data are available from the FPC 67 and other information carried in FPC's Reports Information System (RIS). Three key data forms are necessary to understanding the current situation at electric utilities; the FPC 4, 423 and 383. The other forms help clarify the utility situation.

(b.2) Coking Coal and Coke Production and Consumption

Coke and Coal-Chemicals Materials production and consumption could be the most critically impacted sector in the event of coking coal shortages.

The reporting universe consists of only 67 plants which consume about 15% of the coal output. However, their product of coke is essential to the operation of the steel industry. Fortunately, the BOM has an excellent historical data base for this sector. The BOM Form 6-1365-M provides data for production of coke, coal carbonized, coke sales, receipts and stocks of coke and coal. The data are broken out by product, type of coal and end use.

(b.3) General Industry, Foundries and Blast Furnances:

Other industrial users of coal and coke (especially the steel industry) are potentially the first to be impacted by a coal strike of duration longer than four weeks. Their stocks of coal and coke are generally kept low and they are vulnerable if they have no alternate fuel burning capability. Again, the BOM is the best source for information concerning this sector. The BOM survey Form 6-1400-M-1 is mailed to some 1,400 reporting industries. It captures information by plant and location for 4 digit SIC. Primary data are fuel consumption (coal by type, oil, gas, coke and other), receipts and stocks. Average BTU is reported as well as price: F.O.B. plant, % sulfur and beginning and ending stocks. Depending on the completeness of this survey by SIC and geographic location it is the logical choice for baselining the pre-strike industrial coal situation.

Existing data collection forms mentioned above will be used as the mandatory reporting media. Any additional data collection deemed necessary will be determined jointly by FEA and BOM. BOM will receive, edit and validate (both manually and by machine) the reported data and provide FEA automated files, reports and listings in a form acceptable to FEA and BOM. BOM will provide FEA with a list of non-respondents during each reporting period and FEA will provide appropriate assistance in collecting data from such non-respondents. BOM will provide updates to data files as changes and additions are made. BOM will provide FEA with a report during each reporting cycle which contains statistics regarding number of forms received, number of non-respondents, and number of respondents entered into the files. The FEA will provide resources, when feasible, for preparation of these data as required by BOM.

FEA data and computer personnel will be assigned to work with BOM to the maximum extent practical to assure that the information system complies with the above terms. FEA will review, with BOM, data processing and validation procedures being used, data quality standards, and methods used for handling problems which arise.

FEA will conduct periodic audits of company records used to supply data to the system.

In the interim BOM will provide FEA with data files as reported on the above forms in the current BOM format covering quarterly and monthly reporting through the most current period.

Special requirements, i.e., validation, clarification, and interpretation of information supplied on coal data forms will be provided to the FEA by their regional offices (10) and to the BOM by their State Liaison Offices (38). In each case, contact will be made by the respective headquarters office in Washington, D.C. The FEA will provide remote data entry support from its regional offices as necessary.

A detailed cover letter and accompanying form and instructions will be mailed to every selected firm. Data will be requested retroactive to January 1, 1977, for those companies that have not previously responded. During the following months these companies will be required to file the completed forms according to the instructions until such time as that Federal Government shall deem it unnecessary.

### (3) Tabulation and Publication Plans

The FEA will utilize their forecasting systems to analyze and determine prospective consumption and distribution patterns of coal during normal and emergency period. The FEA will make reports and analysis produced by their systems, including the

National Coal Model, the Short Term Coal Demand Model, and Project Independence Evaluation System (PIES).

Dissemination of coal data by BOM through periodic reports (weekly, monthly, and annually) is predicted upon long standing requirements from many users. Continuation of these reports and other special coal publications necessitated by legislation and Department of the Interior or BOM mandates will be continued using the data reported.

BOM will refer to FEA, for FEA's determination, all requests for release of disaggregated data and aggregated data in which it is possible to identify the data from any individual person or company. An exception to this limitation will be made for those cases where the persons or companies concerned provide expressed, written permission to BOM for the disclosure of the data. A copy of such written permission will be sent to FEA by BOM prior to the release of the aggregated data.

(4) Time Schedule for Data Collection and Publications

Submission of forms will be required retroactive to January 1, 1977, for all reporters that have not previously reported.

Respondents for the FEA-C331-M-0, FEA-C332-M-0, and the FEA-C333-M-0 will be required to file the completed forms fifteen (15) days after the close of the month.

(8) Provisions for Confidentiality of Information

As stated in section 11(d) of the Energy Supply and Environmental Coordination Act of 1974 (P.L. 93-319) data will be treated as confidential "upon a showing satisfactory to the Federal Energy Administration by any person that energy information obtained under this section from such person would, if made public, divulge methods or processes entitled to protection as trade secrets or other proprietary information of such person, such information, or portion thereof shall be confidential in accordance with the provisions of section 1905 of Title 18, United States Code . . ."

The following statement will be printed in the FEA-C331-M-0, FEA-C332-M-0, FEA-C333-M-0, FEA-C331-W-0, FEA-C333-W-0, FEA-C334-Q-0, and FEA-C335-A-0 Instructions:

"Some of the information requested on this form may be confidential commercial information which FEA may withhold from public disclosure, because its release will cause substantial competitive injury. If you believe that any information is covered by the exemption to the Freedom of Information Act (5 U.S.C 522) disclosure requirements for trade secrets and confidential commercial information contained in 5 U.S.C. 552 (b) (4),

and if you do not wish FEA to disclose such information to the public, you should inform FEA by letter accompanying the submission of this form. The letter must (1) cite briefly and specifically, by item number, which information you believe is confidential commercial information (2) state that release of the information would be likely to cause substantial competitive injury resulting from release of each item and explain the basis of this statement and (3) explain whether each item of information which you believe is confidential is customarily treated as confidential by your company and in your industry. FEA needs a detailed explanation of the competitive injury resulting from public disclosure rather than a general assertion of injury - before it can evaluate or accept claims of confidentiality. FEA retains the right to make its own determination with regard to any claim of confidentiality.

If, with your response, we do not receive a request with substantial justification, that the information submitted not be released to the public, the FEA may assume that you do not object to disclosure to the public of any information submitted by your company on the form."

SUPPORTING STATEMENT  
CLEARANCE REQUEST AND NOTICE OF ACTION

SUPPORTING STATEMENT FOR FORM FEA-C331-M-0: Monthly Coal Report  
Retail Dealers - Upper  
Lake Docks

FEA-C332-M-0: Monthly Fuel Consumption  
Report - Manufacturing  
Plants

FEA-C331-W-0: Weekly Coal Monitoring  
Report - General Industri:  
and Blast Furnaces

FEA-C333-M-0: Coke and Coal - Chemical  
Materials

FEA-C333-W-0: Weekly Coal Monitoring  
Report - Coke Plants

FEA-C334-Q-0: Distribution of Bituminou  
Coal and Lignite Shipments

FEA-C335-A-0: Bituminous Coal and Lignite  
Production and Mine  
Operation

0 0 5 2 0 3 8 6 8

C-1

APPENDIX C

EXCERPTS FROM:

THE FEDERAL ENERGY ADMINISTRATION ACT OF 1974

THE DEPARTMENT OF ENERGY ACT OF 1977

AND

EXECUTIVE ORDER NO. 12009

(D) the establishment of facilities for the treatment of nuclear wastes;

(E) the establishment of programs for the treatment, management, storage, and disposal of nuclear wastes;

(F) the establishment of fees or user charges for nuclear waste treatment or storage facilities, including fees to be charged Government agencies; and

(G) the promulgation of such rules and regulations to implement the authority described in this paragraph, except that nothing in this section shall be construed as granting to the Department regulatory functions presently within the Nuclear Regulatory Commission, or any additional functions than those already conferred by law.

(9) Energy conservation functions, including the development of comprehensive energy conservation strategies for the Nation, the planning and implementation of major research and demonstration programs for the development of technologies and processes to reduce total energy consumption, the administration of voluntary and mandatory energy conservation programs, and the dissemination to the public of all available information on energy conservation programs and measures.

(10) Power marketing functions, including responsibility for marketing and transmission of Federal power.

(11) Public and congressional relations functions, including responsibilities for providing a continuing liaison between the Department and the Congress and the Department and the public.

(b) At the time the name of any individual is submitted for confirmation to the position of Assistant Secretary, the President shall identify with particularity the function or functions described in subsection (a) (or any portion thereof) for which such individual will be responsible.

#### [ § 10,308 ]

##### FEDERAL ENERGY REGULATORY COMMISSION

Sec. 204. There shall be within the Department, a Federal Energy Regulatory Commission established by title IV of this Act (hereinafter referred to in this Act as the "Commission"). The Chairman shall be compensated at the rate provided for level III of the Executive Schedule under section 5314 of title 5, United States Code. The other members of the Commission shall be compensated at the rate provided for level IV of the Executive Schedule under section 5315 of title 5, United States Code. The Chairman and members of the Commission shall be individuals who, by demonstrated ability, background, training, or experience, are specially qualified to assess fairly the needs and concerns of all interests affected by Federal energy policy.

#### [ § 10,309 ]

##### ENERGY INFORMATION ADMINISTRATION

Sec. 205. (a)(1) There shall be within the Department an Energy Information Administration to be headed by an Administrator who

shall be appointed by the President, by and with the advice and consent of the Senate, and who shall be compensated at the rate provided for in level IV of the Executive Schedule under section 5315 of title 5, United States Code. The Administrator shall be a person who, by reason of professional background and experience, is specially qualified to manage an energy information system.

(2) The Administrator shall be responsible for carrying out a central, comprehensive, and unified energy data and information program which will collect, evaluate, assemble, analyze, and disseminate data and information which is relevant to energy resource reserves, energy production, demand, and technology, and related economic and statistical information, or which is relevant to the adequacy of energy resources to meet demands in the near and longer term future for the Nation's economic and social needs.

(b) The Secretary shall delegate to the Administrator (which delegation may be on a nonexclusive basis as the Secretary may determine may be necessary to assure the faithful execution of his authorities and responsibilities under law) the functions vested in him by law relating to gathering, analysis, and dissemination of energy information (as defined in section 11 of the Energy Supply and Environmental Coordination Act of 1974) and the Administrator may act in the name of the Secretary for the purpose of obtaining enforcement of such delegated functions.

(c) In addition to, and not in limitation of the functions delegated to the Administrator pursuant to other subsections of this section, there shall be vested in the Administrator, and he shall perform, the functions assigned to the Director of the Office of Energy Information and Analysis under part B of the Federal Energy Administration Act of 1974, and the provisions of sections 53(d) and 59 thereof shall be applicable to the Administrator in the performance of any function under this Act.

(d) The Administrator shall not be required to obtain the approval of any other officer or employee of the Department in connection with the collection or analysis of any information; nor shall the Administrator be required, prior to publication, to obtain the approval of any other officer or employee of the United States with respect to the substance of any statistical or forecasting technical reports which he has prepared in accordance with law.

(e) The Energy Information Administration shall be subject to an annual professional audit review of performance as described in section 55 of part B of the Federal Energy Administration Act of 1974.

(f) The Administrator shall, upon request, promptly provide any information or analysis in his possession pursuant to this section to any other administration, commission, or office within the Department which such administration, commission, or office determines relates to the functions of such administration, commission, or office.

(g) Information collected by the Energy Information Administration shall be cataloged and, upon request, any such information shall be promptly made available to the public in a form and manner easily adaptable for public use, except that this subsection shall not require disclosure of matters exempted from mandatory disclosure by section 552(b) of title 5, United States Code. The provisions of section 11(d)

of the Energy Supply and Environmental Coordination Act of 1974, and section 17 of the Federal Nonnuclear Energy Research and Development Act of 1974, shall continue to apply to any information obtained by the Administrator under such provisions.

(h) (1) (A) In addition to the acquisition, collection, analysis, and dissemination of energy information pursuant to this section, the Administrator shall identify and designate "major energy-producing companies" which alone or with their affiliates are involved in one or more lines of commerce in the energy industry so that the energy information collected from such major energy-producing companies shall provide a statistically accurate profile of each line of commerce in the energy industry in the United States.

(B) In fulfilling the requirements of this subsection the Administrator shall—

(i) utilize, to the maximum extent practicable, consistent with the faithful execution of his responsibilities under this Act, reliable statistical sampling techniques; and

(ii) otherwise give priority to the minimization of the reporting of energy information by small business.

(2) The Administrator shall develop and make effective for use during the second full calendar year following the date of enactment of this Act the format for an energy-producing company financial report. Such report shall be designed to allow comparison on a uniform and standardized basis among energy-producing companies and shall permit for the energy-related activities of such companies—

(A) an evaluation of company revenues, profits, cash flow, and investments in total, for the energy-related lines of commerce in which such company is engaged and for all significant energy-related functions within such company;

(B) an analysis of the competitive structure of sectors and functional groupings within the energy industry;

(C) the segregation of energy information, including financial information, describing company operations by energy source and geographic area;

(D) the determination of costs associated with exploration, development, production, processing, transportation, and marketing and other significant energy-related functions within such company; and

(E) such other analyses or evaluations as the Administrator finds is necessary to achieve the purposes of this Act.

(3) The Administrator shall consult with the Chairman of the Securities and Exchange Commission with respect to the development of accounting practices required by the Energy Policy and Conservation Act to be followed by persons engaged in whole or in part in the production of crude oil and natural gas and shall endeavor to assure that the energy-producing company financial report described in paragraph (2) of this subsection, to the extent practicable and consistent with the purposes and provisions of this Act, is consistent with such accounting practices where applicable.

(4) The Administrator shall require each major energy-producing company to file with the Administrator an energy-producing company financial report on at least an annual basis and may request energy

information described in such report on a quarterly basis if he determines that such quarterly report of information will substantially assist in achieving the purposes of this Act.

(5) A summary of information gathered pursuant to this section, accompanied by such analysis as the Administrator deems appropriate, shall be included in the annual report of the Department required by subsection (a) of section 657 of this Act.

(6) As used in this subsection the term—

(A) "energy-producing company" means a person engaged in:

(i) ownership or control of mineral fuel resources or non-mineral energy resources;

(ii) exploration for, or development of, mineral fuel resources;

(iii) extraction of mineral fuel or nonmineral energy resources;

(iv) refining, milling, or otherwise processing mineral fuels or nonmineral energy resources;

(v) storage of mineral fuels or nonmineral energy resources;

(vi) the generation, transmission, or storage of electrical energy;

(vii) transportation of mineral fuels or nonmineral energy resources by any means whatever; or

(viii) wholesale or retail distribution of mineral fuels, non-mineral energy resources or electrical energy;

(B) "energy industry" means all energy-producing companies; and

(C) "person" has the meaning as set forth in section 11 of the Energy Supply and Environmental Coordination Act of 1974.

(7) The provisions of section 1905 of title 18, United States Code, shall apply in accordance with its terms to any information obtained by the Administration pursuant to this subsection.

### [§ 10,310]

#### ECONOMIC REGULATORY ADMINISTRATION

Sec. 206. (a) There shall be within the Department an Economic Regulatory Administration to be headed by an Administrator, who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall be compensated at a rate provided for level IV of the Executive Schedule under section 5315 of title 5, United States Code. Such Administrator shall be, by demonstrated ability, background, training, or experience, an individual who is specially qualified to assess fairly the needs and concerns of all interests affected by Federal energy policy. The Secretary shall by rule provide for a separation of regulatory and enforcement functions assigned to, or vested in, the Administration.

(b) Consistent with the provisions of title IV, the Secretary shall utilize the Economic Regulatory Administration to administer such functions as he may consider appropriate.

## TITLE III—TRANSFERS OF FUNCTIONS

## [§ 10,315]

## GENERAL TRANSFERS

SEC. 301. (a) Except as otherwise provided in this Act, there are hereby transferred to, and vested in, the Secretary all of the functions vested by law in the Administrator of the Federal Energy Administration or the Federal Energy Administration, the Administrator of the Energy Research and Development Administration or the Energy Research and Development Administration; and the functions vested by law in the officers and components of either such Administration.

(b) Except as provided in title IV, there are hereby transferred to, and vested in, the Secretary the function of the Federal Power Commission, or of the members, officers, or components thereof. The Secretary may exercise any power described in section 402(a)(2) to the extent the Secretary determines such power to be necessary to the exercise of any function within his jurisdiction pursuant to the preceding sentence.

## [§ 10,316]

## TRANSFERS FROM THE DEPARTMENT OF THE INTERIOR

SEC. 302. (a) (1) There are hereby transferred to, and vested in, the Secretary all functions of the Secretary of the Interior under section 5 of the Flood Control Act of 1944, and all other functions of the Secretary of the Interior, and officers and components of the Department of the Interior, with respect to—

(A) the Southeastern Power Administration;

(B) the Southwestern Power Administration;

(C) the Alaska Power Administration;

(D) the Bonneville Power Administration including but not limited to the authority contained in the Bonneville Project Act of 1937 and the Federal Columbia River Transmission System Act;

(E) the power marketing functions of the Bureau of Reclamation, including the construction, operation, and maintenance of transmission lines and attendant facilities; and

(F) the transmission and disposition of the electric power and energy generated at Falcon Dam and Amistad Dam, international storage reservoir projects on the Rio Grande, pursuant to the Act of June 18, 1954, as amended by the Act of December 23, 1963.

(2) The Southeastern Power Administration, the Southwestern Power Administration, the Bonneville Power Administration, and the Alaska Power Administration shall be preserved as separate and distinct organizational entities within the Department. Each such entity shall be headed by an Administrator appointed by the Secretary. The functions transferred to the Secretary in paragraphs (1)(A), (1)(B), (1)(C), and (1)(D) shall be exercised by the Secretary, acting by and through such Administrators. Each such Administrator shall maintain his principal office at a place located in the region served by his respective Federal power marketing entity.

(3) The functions transferred in paragraphs (1)(E) and (1)(F) of this subsection shall be exercised by the Secretary, acting by and through a separate and distinct Administration within the Department which shall be headed by an Administrator appointed by the Secretary. The Administrator shall establish and shall maintain such regional offices as necessary to facilitate the performance of such functions. Neither the transfer of functions effected by paragraph (1)(E) of this subsection nor any changes in cost allocation or project evaluation standards shall be deemed to authorize the reallocation of joint costs of multipurpose facilities theretofore allocated unless and to the extent that such change is hereafter approved by Congress.

(b) There are hereby transferred to, and vested in, the Secretary the functions of the Secretary of the Interior to promulgate regulations under the Outer Continental Shelf Lands Act, the Mineral Lands Leasing Act, the Mineral Leasing Act for Acquired Lands, the Geothermal Steam Act of 1970, and the Energy Policy and Conservation Act, which relate to the--

(1) fostering of competition for Federal leases (including, but not limited to, prohibition on bidding for development rights by certain types of joint ventures);

(2) implementation of alternative bidding systems authorized for the award of Federal leases;

(3) establishment of diligence requirements for operations conducted on Federal leases (including, but not limited to, procedures relating to the granting or ordering by the Secretary of the Interior of suspension of operations or production as they relate to such requirements);

(4) setting rates of production for Federal leases; and

(5) specifying the procedures, terms, and conditions for the acquisition and disposition of Federal royalty interests taken in kind.

(c) There are hereby transferred to, and vested in, the Secretary all the functions of the Secretary of the Interior to establish production rates for all Federal leases.

(d) There are hereby transferred to, and vested in, the Secretary those functions of the Secretary of the Interior, the Department of the Interior, and officers and components of that Department under the Act of May 15, 1910, and other authorities, exercised by the Bureau of Mines, but limited to--

(1) fuel supply and demand analysis and data gathering;

(2) research and development relating to increased efficiency of production technology of solid fuel minerals, other than research relating to mine health and safety and research relating to the environmental and leasing consequences of solid fuel mining (which shall remain in the Department of the Interior); and

(3) coal preparation and analysis.

#### [ § 10,317 ]

##### ADMINISTRATION OF LEASING TRANSFERS

Sec. 303. (a) The Secretary of the Interior shall retain any authorities not transferred under section 302(b) of this Act and shall be

exemption set forth in clause (1) of such subsection, the nature of an officer's or employee's financial interest; or in the case of an exemption set forth in clause (2) of such subsection, the name and statement of financial interest of each person who will come within such exemption; and

(B) such written report is published in the Federal Register.

(2) Nothing contained in this subsection shall affect in any way the applicability or operation of other laws relating to officers and employees of the United States Government.

(j) No individual holding any of the positions described in subsections (a), (c), (d), and (e) of this section may also hold any other position in the executive branch during the same period.

### [ 10,555 ]

#### FUNCTIONS AND PURPOSES OF THE FEDERAL ENERGY ADMINISTRATION

SEC. 5. (a) Subject to the provisions and procedures set forth in this Act, the Administrator shall be responsible for such actions as are taken to assure that adequate provision is made to meet the energy needs of the Nation. To that end, he shall make such plans and direct and conduct such programs related to the production, conservation, use, control, distribution, rationing, and allocation of all forms of energy as are appropriate in connection with only those authorities or functions—

(1) specifically transferred to or vested in him by or pursuant to this Act;

(2) delegated to him by the President pursuant to specific authority vested in the President by law; and

(3) otherwise specifically vested in the Administrator by the Congress.

(b) To the extent authorized by subsection (a) of this section, the Administrator shall—

(1) advise the President and the Congress with respect to the establishment of a comprehensive national energy policy in relation to the energy matters for which the Administration has responsibility, and, in coordination with the Secretary of State, the integration of domestic and foreign policies relating to energy resource management;

(2) assess the adequacy of energy resources to meet demands in the immediate and longer range future for all sectors of the economy and for the general public;

(3) develop effective arrangements for the participation of State and local governments in the resolution of energy problems;

(4) develop plans and programs for dealing with energy production shortages;

(5) promote stability in energy prices to the consumer, promote free and open competition in all aspects of the energy field, prevent unreasonable profits within the various segments of the energy industry, and promote free enterprise;

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(6) assure that energy programs are designed and implemented in a fair and efficient manner so as to minimize hardship and inequity while assuring that the priority needs of the Nation are met;

(7) develop and oversee the implementation of equitable voluntary and mandatory energy conservation programs and promote efficiencies in the use of energy resources;

(8) develop and recommend policies on the import and export of energy resources;

(9) collect, evaluate, assemble, and analyze energy information on reserves, production, demand, and related economic data;

(10) work with business, labor, consumer and other interests and obtain their cooperation;

(11) in administering any pricing authority, provide by rule, for equitable allocation of all component costs of producing propane gas. Such rules may require that (a) only those costs directly related to the production of propane may be allocated by any producer to such gas for purposes of establishing any price for propane, and (b) prices for propane shall be based on the prices for propane in effect on May 15, 1973. The Administrator shall not allow costs attributable to changes in ownership and movement of propane gas where, in the opinion of the Administrator, such changes in ownership and movement occur primarily for the purpose of establishing a higher price; and

(12) perform such other functions as may be prescribed by law.

(c)(1) The Administrator shall not exercise the discretion delegated to him by the President, pursuant to section 5(b) of the Emergency Petroleum Allocation Act of 1973, to submit to the Congress as one energy action any amendment to the regulation under section 4(a) of such Act, pursuant to section 12 of such Act, which amendment exempts any oil, refined petroleum product, or refined product category from both the allocation and pricing provisions of the regulation under section 4 of such Act.

(2) Nothing in this subsection shall prevent the Administrator from concurrently submitting an energy action relating to price together with an energy action relating to allocation of the same oil, refined petroleum product, or refined product category.

.01 Section 5(c) was added by Sec. 102 of P. L. 94-385, August 14, 1976.

## [¶ 10,556]

## TRANSFERS

SEC. 6. (a) There are hereby transferred to and vested in the Administrator all functions of the Secretary of the Interior, the Department of the Interior, and officers and components of that Department—

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- (1) to other Federal Government departments, agencies, and officials for official use upon request;
- (2) to committees of Congress upon request; and
- (3) to a court in any judicial proceeding under court order.

[¶ 10,563]

**INFORMATION-GATHERING POWER**

SEC. 13. (a) The Administrator shall collect, assemble, evaluate, and analyze energy information by categorical groupings, established by the Administrator, of sufficient comprehensiveness and particularity to permit fully informed monitoring and policy guidance with respect to the exercise of his functions under this Act.

(b) All persons owning or operating facilities or business premises who are engaged in any phase of energy supply or major energy consumption shall make available to the Administrator such information and periodic reports, records, documents, and other data, relating to the purposes of this Act, including full identification of all data and projections as to source, time, and methodology of development, as the Administrator may prescribe by regulation or order as necessary or appropriate for the proper exercise of functions under this Act.

(c) The Administrator may require, by general or special orders, any person engaged in any phase of energy supply or major energy consumption to file with the Administrator in such form as he may prescribe, reports or answers in writing to such specific questions, surveys, or questionnaires as may be necessary to enable the Administrator to carry out his functions under this Act. Such reports and answers shall be made under oath, or otherwise, as the Administrator may prescribe, and shall be filed with the Administrator within such reasonable period as he may prescribe.

(d) The Administrator, to verify the accuracy of information he has received or otherwise to obtain information necessary to perform his functions under this Act, is authorized to conduct investigations, and in connection therewith, to conduct, at reasonable times and in a reasonable manner, physical inspections at energy facilities and business premises, to inventory and sample any stock of fuels or energy sources therein, to inspect and copy records, reports, and documents from which energy information has been or is being compiled, and to question such persons as he may deem necessary.

(e)(1) The Administrator, or any of his duly authorized agents, shall have the power to require by subpoena the attendance and testimony of witnesses, and the production of all information, documents, reports, answers, records, accounts, papers, and other data and documentary evidence which the Administrator is authorized to obtain pursuant to this section.

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(2) Any appropriate United States district court may, in case of contumacy or refusal to obey a subpoena issued pursuant to this section, issue an order requiring the party to whom such subpoena is directed to appear before the Administration and to give testimony touching on the matter in question, or to produce any matter described in paragraph (1) of this subsection, and any failure to obey such order of the court may be punished by such court as a contempt thereof.

(f) The Administrator shall collect from departments, agencies and instrumentalities of the executive branch of the Government (including independent agencies), and each such department, agency, and instrumentality is authorized and directed to furnish, upon his request, information concerning energy resources on lands owned by the Government of the United States. Such information shall include, but not be limited to, quantities of reserves, current or proposed leasing agreements, environmental considerations, and economic impact analyses.

(g) With respect to any person who is subject to any rule, regulation, or order promulgated by the Administrator or to any provision of law the administration of which is vested in or transferred or delegated to the Administrator, the Administrator may require, by rule, the keeping of such accounts or records as he determines are necessary or appropriate for determining compliance with such rule, regulation, order, or any applicable provision of law.

(h) In exercising his authority under this Act and any other provision of law relating to the collection of energy information, the Administrator shall take into account the size of businesses required to submit reports with the Administrator so as to avoid, to the greatest extent practicable, overly burdensome reporting requirements on small marketers and distributors of petroleum products and other small business concerns required to submit reports to the Administrator.

(i) Any failure to make information available to the Administrator under subsection (b), any failure to comply with any general or special order under subsection (c), or any failure to allow the Administrator to act under subsection (d) shall be subject to the same penalties as any violation of section 11 of the Energy Supply and Environmental Coordination Act of 1974 or any rule, regulation, or order issued under such section.

.01 Sections 13(g) and (h) were added by Sec. 107 of P. L. 94-385, August 14, 1976. | Section 13(i) was added by Sec. 108 of P. L. 94-385, August 14, 1976.

[ § 10,564 ]

**PUBLIC DISCLOSURE OF INFORMATION**

SEC. 14. (a) The Administrator shall make public, on a continuing basis, any statistical and economic analyses, data, information, and whatever reports and summaries are necessary to keep the public

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fully and currently informed as to the nature, extent, and projected duration of shortages of energy supplies, the impact of such shortages, and the steps being taken to minimize such impacts.

(b) Subject to the provisions of this Act, section 552 of title 5, United State Code, shall apply to public disclosure of information by the Administrator: *Provided*, That notwithstanding said section, the provisions of section 1905 of title 18, United States Code, or any other provision of law, (1) all matters reported to, or otherwise obtained by, any person exercising authority under this Act containing trade secrets or other matters referred to in section 1905 of title 18, United States Code, may be disclosed to other persons authorized to perform functions under this Act solely to carry out the purposes of the Act, or when relevant in any proceeding under this Act; and (2) the Administrator shall disclose to the public, at a reasonable cost, and upon a request which reasonably describes the matter sought, any matter of the type which could not be excluded from public annual reports to the Securities and Exchange Commission pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 by a business enterprise exclusively engaged in the manufacture or sale of a single product, unless such matter concerns or relates to the trade secrets, processes, operations, style of work, or apparatus of a business enterprise.

(c) To protect and assure privacy of individuals and confidentiality of personal information, the Administrator is directed to establish guidelines and procedures for handling any information which the Administration obtains pertaining to individuals. He shall provide, to the extent practicable, in such guidelines and procedures a method for allowing any such individual to gain access to such information pertaining to himself.

## [§ 10,565]

## REPORTS AND RECOMMENDATIONS

Sec. 15 (a) Not later than one year after the effective date of this Act, the Administrator shall submit a report to the President and Congress which will provide a complete and independent analysis of actual oil and gas reserves and resources in the United States and its Outer Continental Shelf, as well as of the existing productive capacity and the extent to which such capacity could be increased for crude oil and each major petroleum product each year for the next ten years through full utilization of available technology and capacity. The report shall also contain the Administration's recommendations for improving the utilization and effectiveness of Federal energy data and its manner of collection. The data collection and analysis portion of this report shall be prepared by the Federal Trade Commission for the Administration. Unless specifically prohibited by law, all Federal agencies shall make available estimates, statistics, data and other information in their files

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mation provided under subsection (a) and any other information otherwise available to him that—

(1) it is unlikely that a conflict of interest would exist, or

(2) such conflict has been avoided after appropriate conditions have been included in such contract, agreement, or arrangement; except that if he determines that such conflict of interest exists and that such conflict of interest cannot be avoided by including appropriate conditions therein, the Administrator may enter into such contract, agreement, or arrangement, if he determines that it is in the best interests of the United States to do so and includes appropriate conditions in such contract, agreement, or arrangement to mitigate such conflict.

(c) The Administrator shall publish rules for the implementation of this section, in accordance with section 553 of title 5, United States Code (without regard to subsection (a)(2) thereof) as soon as practicable after the date of the enactment of this section, but in no event later than 120 days after such date.

.01 Section 33 was added by Sec. 10 of P. L. 95-70, July 21, 1977.

#### PART B—OFFICE OF ENERGY INFORMATION AND ANALYSIS

#### [§ 10,582]

#### ESTABLISHMENT OF OFFICE OF ENERGY INFORMATION AND ANALYSIS

SEC. 51. (a)(1) There is established within the Federal Energy Administration an Office of Energy Information and Analysis (hereinafter in this Act referred to as the "Office") which shall be headed by a Director who shall be appointed by the President, by and with the advice and consent of the Senate.

(2) The Director shall be a person who, by reason of professional background and experience, is specially qualified to manage an energy information system.

(b) The Administrator shall delegate (which delegation may be on a nonexclusive basis as the Administrator may determine may be necessary to assure the faithful execution of his authorities and responsibilities under law) the authority vested in him under section 11 of the Energy Supply and Environmental Coordination Act of 1974 and section 13 of this Act and the Director may act in the name of the Administrator under section 12 of the Energy Supply and Environmental Coordination Act of 1974 and section 13 of this Act for the purpose of obtaining enforcement of the authorities delegated to him.

(c) As used in this Act the term "energy information" shall have the meaning described in section 11 of the Energy Supply and Environmental Coordination Act of 1974.

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.01 Section 51 was added by Sec. 142 of P. L. 94-385, August 14, 1976, effective January 11, 1977.

[¶ 10,583]

### NATIONAL ENERGY INFORMATION SYSTEM

SEC. 52. (a) It shall be the duty of the Director to establish a National Energy Information System (hereinafter referred to in this Act as the "System"), which shall be operated and maintained by the Office. The System shall contain such information as is required to provide a description of and facilitate analysis of energy supply and consumption within and affecting the United States on the basis of such geographic areas and economic sectors as may be appropriate to meet adequately the needs of—

- (1) the Federal Energy Administration in carrying out its lawful functions;
- (2) the Congress;
- (3) other officers and employees of the United States in whom have been vested, or to whom have been delegated, energy-related policy decisionmaking responsibilities; and
- (4) the States to the extent required by the Natural Gas Act and the Federal Power Act.

(b) At a minimum, the System shall contain such energy information as is necessary to carry out the Administration's statistical and forecasting activities, and shall include, at the earliest date and to the maximum extent practical subject to the resources available and the Director's ordering of those resources to meet the responsibilities of his Office, such energy information as is required to define and permit analysis of—

- (1) the institutional structure of the energy supply system including patterns of ownership and control of mineral fuel and nonmineral energy resources and the production, distribution, and marketing of mineral fuels and electricity;
- (2) the consumption of mineral fuels, nonmineral energy resources, and electricity by such classes, sectors, and regions as may be appropriate for the purposes of this Act;
- (3) the sensitivity of energy resource reserves, exploration, development, production, transportation, and consumption to economic factors, environmental constraints, technological improvements, and substitutability of alternate energy sources;
- (4) the comparability of energy information and statistics that are supplied by different sources;

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**¶ 12,151 Executive Order No. 12009****Providing for the Effectuation of The  
Department of Energy Organization Act**

By virtue of the authority vested in me by the Constitution and statutes of the United States of America, including the Department of Energy Organization Act (Public Law 95-91; 91 Stat. 565), and as President of the United States of America, it is hereby ordered as follows:

**[¶ 12,152]**

Section 1. Pursuant to Section 901 of the Department of Energy Organization Act, I hereby prescribe October 1, 1977, as the effective date of that Act.

**[¶ 12,153]**

Sec. 2. The Director of the Office of Management and Budget, in consultation with the Secretary of Energy and the Federal Energy Regulatory Commission, as appropriate, shall take all steps necessary or appropriate to ensure or effectuate the transfer of functions provided for in the Department of Energy Organization Act, to the extent required or permitted by law, including transfers of funds, personnel and positions, assets, liabilities, contracts, property, records and other items related to the transfer of functions, programs, or authorities.

**[¶ 12,154]**

Sec. 3. As required by Section 901 of the Department of Energy Organization Act, this Order shall be published in the FEDERAL REGISTER.

.01 42 F. R. 46267 (September 15, 1977).

D O O O S 2 O O 8 7 6

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APPENDIX D

THE BUREAU OF MINES FORM 6-1400-M-1 AND ITS CLEARANCE REQUEST

(This form was the predecessor to the EIA-3.)

00005200877

DEPARTMENT OF THE INTERIOR  
BUREAU OF MINES  
WASHINGTON D.C. 20241



B43  
B44

MONTHLY FUEL CONSUMPTION REPORT  
MANUFACTURING PLANTS

INDIVIDUAL COMPANY  
DATA—CONFIDENTIAL

The data furnished in this report will be treated in confidence by the Department of the Interior, except that they may be disclosed to Federal defense agencies, or to the Congress upon official request for appropriate purposes.

Please separate forms at perforations

An extra copy is provided for your files

SEE REVERSE SIDE FOR DEFINITIONS AND INSTRUCTIONS

(Please correct if name or address has changed.)

If the mailing address appearing on this form covers more than one plant, please complete a separate form for each plant, being sure to enter the name and location of the plant for which the report is filed. This report is authorized by Public Law 62-386. While you are not required to respond, your cooperation is needed to make the results of this survey comprehensive, accurate and timely.

PLANT IDENTIFICATION: Name \_\_\_\_\_ Nearest City or Town \_\_\_\_\_  
County \_\_\_\_\_ State \_\_\_\_\_

1. PLANT STANDARD INDUSTRIAL CLASSIFICATION: Principal Function.....( \_\_\_\_\_ )  
(4 Digits)

2. FUEL CONSUMPTION, RECEIPTS AND STOCKS

A. BOM DISTRICT of coal origin (enter State of origin if BOM DISTRICT is unknown)

(1) Primary \_\_\_\_\_ (2) Secondary \_\_\_\_\_

B. Estimated shipment time and distance from major source of coal supply

(1) Shipment Time \_\_\_\_\_ (Days) (2) Distance \_\_\_\_\_ (Miles)

C. Quantity of waste (ASH removed after consuming COAL) \_\_\_\_\_ Tons

Entry in column 3 plus entry in column 4 (if any), minus entry in column 7 should equal entry in column 9.

Item (1)	Code	Unit (2)	Stocks at beginning of month (3)	Receipts			Consumption		Stocks at end of month (9)
				Quantity received during month (4)	Avg. sulfur content % (5)	Avg. price per unit f.o.b. plant (6)	Quantity consumed during month (7)	Avg. BTU content (million per ton) (8)	
Bituminous .....	103	Short tons							
Sub bituminous .....	104	Short tons							
Lignite .....	106	Short tons							
Anthracite.....	110	Short tons							
Oil .....	112	BBLs							
Gas.....	113	MCF							
Coke:									
Furnace.....	114	Short tons							
Foundry.....	115	Short tons							
Other (specify) .....									

OVER

Col. 1. Item (1). COAL DEFINITIONS

**BITUMINOUS:** Includes low-volatile, medium-volatile and high-volatile bituminous coal.

**SUB BITUMINOUS:** Coal with 8,300 or more British Thermal Units (BTU) per pound, but less than 11,500 (BTU) per pound.

**LIGNITE:** Coal with 6,300 or more British Thermal Units (BTU) per pound, but less than 8,300 (BTU) per pound.

**ANTHRACITE:** Includes metaanthracite, semianthracite and anthracite.

**COKE:**

**Furnace:** Metallurgical coke used in furnaces for reducing metal oxides. Furnace coke, in general, has less rigid chemical and physical specifications than those for foundry coke.

**Foundry:** A premium grade of metallurgical coke used in cupolas for the production of metals for casting. With respect to other grades, foundry coke is characterized by its larger size and higher reactivity and strength.

Col. 2. BBLs means barrels

MCF means one thousand (1,000) cubic feet.

Col. 3. Stocks at beginning of month

Report all stocks you have on hand at this plant at the beginning of the report month. Entries in col. 3 should equal the ending stocks (col. 9) of preceding month.

Col. 4. Receipts—Quantity received during month

Report all receipts at this plant during the report month.

Col. 5. Receipts—Average sulfur content (%)

Report the average sulfur content for all receipts during the report month by percent of sulfur by weight. Report the sulfur content to the nearest tenth of a percent (for example: 0.7; 1.3).

Col. 6. Receipts—Average price per unit f.o.b. plant

Report the average price per unit for all receipts during the report month as received at this plant. The price will include freight rates.

Col. 7. Consumption—Quantity consumed during month

Report all fuel consumption at this plant during the report month

Col. 8. Consumption—Average BTU content (million per ton)

Report the average heat content of coal or coke consumed at this plant during the report month. Report heat content in million of British Thermal Units (BTU) per ton of consumption.

Col. 9. Stocks at end of month)

Report all stocks you have on hand at this plant at the end of the report month. Entries in col. 9 should equal col. 3 plus col. 4 minus col. 7.

Remarks

Name of person to be contacted regarding this report			Tel. area code		No.		Ext.				
Address		No.		Street		City		State		Zip	
Signature						Title				Date	

STANDARD FORM NO. 83 OFFICE OF MANAGEMENT AND BUDGET 2-1-75	<b>CLEARANCE REQUEST AND NOTICE OF ACTION</b> (Under Federal Reports Act and Bureau of the Budget Circular No. A-40, as amended)	FOR O.M.B. USE
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<b>IMPORTANT</b> - Submit the required number of copies of SF-83, together with the material for which approval is requested to:  READ INSTRUCTIONS BEFORE COMPLETING FORM	CLEARANCE OFFICER OFFICE OF MANAGEMENT AND BUDGET WASHINGTON, D.C. 20503
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**PART A - REQUEST BY FEDERAL AGENCY FOR CLEARANCE**  
 \*Items marked with asterisk may be omitted for preliminary plans or recordkeeping requirements

<b>1. SEND "NOTICE OF ACTION" TO:</b> Name and mailing address  Bureau of Mines Office of Statistics Department of the Interior - Room 2622 18th & C Streets, N. W. Washington, D. C. 20240	<b>2. Bureau and division or office originating request</b>  Bureau of Mines  <b>3. Name(s), title(s), and telephone numbers of person(s) who can best answer questions regarding request.</b> Arthur Berger, Chief Statistical Standards Staff Code 183 - 8511 (Outside - 343)
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<b>FORM OR DOCUMENT IDENTIFICATION</b>	<b>4. Title of form or document submitted</b> Monthly Fuel Consumption Report Manufacturing Plants	<b>*5. Agency Form Number(s)</b>  6-1400-34-1	<b>7. Current (or former) O.M.B. clearance - Number</b> 042-RI499 Expiration date January 1976  <b>8. Requested expiration date</b> January 1979	<b>9. Type of request</b> 1 <input type="checkbox"/> New 2 <input checked="" type="checkbox"/> Revision 1/ 3 <input type="checkbox"/> Extension (No change) 4 <input type="checkbox"/> Reinstatement
<b>6. Type of form or document</b> 1 <input type="checkbox"/> Application 2 <input type="checkbox"/> Program evaluation 3 <input type="checkbox"/> Other management report 4 <input checked="" type="checkbox"/> Statistical survey or report 5 <input type="checkbox"/> Preliminary plan or contract 6 <input type="checkbox"/> Recordkeeping requirement 7 <input type="checkbox"/> Other - Specify $\rightarrow$		<b>*10. Frequency of use</b> 1 <input type="checkbox"/> Single time 2 <input type="checkbox"/> On occasion 3 <input type="checkbox"/> Weekly 4 <input checked="" type="checkbox"/> Monthly 5 <input type="checkbox"/> Quarterly 6 <input type="checkbox"/> Semi-annually 7 <input type="checkbox"/> Annually 8 <input type="checkbox"/> Other (See instructions)		
<b>*11. Related forms or documents (Give O.M.B. number. Enclose in parentheses only to be replaced)</b>  N.A.		<b>12. Catalog of Federal Domestic Assistance program number (if applicable)</b>  N.A.		

<b>COLLECTION AND RESPONDENTS</b>	<b>*13a. Collection method (Check as many as apply)</b> 1 <input checked="" type="checkbox"/> Mail 2 <input type="checkbox"/> Personal interview 3 <input type="checkbox"/> Other - Describe $\rightarrow$	<b>14a. Type of respondents involved (Check predominant one)</b> 1 <input type="checkbox"/> Individuals or households 2 <input checked="" type="checkbox"/> Business firms (non-farm) 3 <input type="checkbox"/> Farms 4 <input type="checkbox"/> Government agencies 5 <input type="checkbox"/> Other - Describe $\rightarrow$	<b>*15. Summary of estimated respondent burden</b> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:70%;">a. Estimated number of respondents</td> <td style="width:30%; text-align: center;">1,337</td> </tr> <tr> <td>b. If sample, approximate number in universe</td> <td style="text-align: center;">N.A.</td> </tr> <tr> <td>c. Reports filed annually by each respondent (item 10)</td> <td style="text-align: center;">12</td> </tr> <tr> <td>d. Total annual responses (a X c)</td> <td style="text-align: center;">16,044</td> </tr> <tr> <td>e. Estimated average number of man-hours required per response</td> <td style="text-align: center;">1/4</td> </tr> <tr> <td>f. Estimated TOTAL MAN-HOURS of respondent burden (d X e)</td> <td style="text-align: center;">8,072</td> </tr> </table>	a. Estimated number of respondents	1,337	b. If sample, approximate number in universe	N.A.	c. Reports filed annually by each respondent (item 10)	12	d. Total annual responses (a X c)	16,044	e. Estimated average number of man-hours required per response	1/4	f. Estimated TOTAL MAN-HOURS of respondent burden (d X e)	8,072
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f. Estimated TOTAL MAN-HOURS of respondent burden (d X e)	8,072														
<b>*13b. Collected by -</b> 4 <input checked="" type="checkbox"/> Agency 5 <input type="checkbox"/> Contractor 6 <input type="checkbox"/> Other - Describe $\rightarrow$		<b>14b. Brief description of respondents (i.e., "households in 50 largest SMSA's"; "retail grocery stores")</b>  Manufacturing consumers													

<b>AUTHORITY AND CONFIDENTIALITY</b>	<b>*16a. Is report form -</b> 1 <input checked="" type="checkbox"/> Voluntary? 2 <input type="checkbox"/> Required to obtain benefit? 3 <input type="checkbox"/> Mandatory? Cite statute $\rightarrow$	<b>*16b. Does your agency pledge confidentiality?</b> 1 <input checked="" type="checkbox"/> Yes 2 <input type="checkbox"/> No
<b>CONSULTATIONS OUTSIDE AGENCY</b>	<b>17. In developing the report form or other documents, were consultations held with individuals or organizations outside your agency?</b> 1 <input checked="" type="checkbox"/> Yes - If "yes," identify persons and describe outcome in SUPPORTING STATEMENT. (See instructions) 2 <input type="checkbox"/> No	

**CERTIFICATION BY AUTHORIZED OFFICIALS SUBMITTING REQUEST** - We certify that the form or other document submitted for approval is necessary for the proper performance of this agency's functions, that the information requested is not available from any other source, to the best of our knowledge, and that the request is consistent with applicable O.M.B. and agency policy directives. Signature and title of:

Approving official for agency? Arthur Berger, Chief Statistical Standards Staff	Date 11-19-75	Agency clearance officer or other agency official? M. H. Schuster, Jr. Chief, Office of Statistics	Date 11-20-75
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Supplementary statement of why two forms rather than one, (Item 8a).

GAO FORM 275 (4-74) (0-119399)			U.S. GENERAL ACCOUNTING OFFICE PROGRAM ANALYSIS DIVISION SOURCE/SYSTEM STANDARD INVENTORY DATA		
1. AGENCY Department of the Interior Bureau of Mines Division of Fuels Data			2. ACCESSION NO. S CAO USE ONLY		
3. TITLE OF SOURCE/SYSTEM (name and acronym) Monthly Fuel Consumption Report-Manufacturing Plants			4. AGENCY ID NUMBER (if applicable)		
5. TYPE OF SUBMISSION <input checked="" type="checkbox"/> INITIAL  <input type="checkbox"/> DELETION  <input type="checkbox"/> MODIFICATION	6. CATEGORY OF SUBMISSION <input type="checkbox"/> SOURCE  <input checked="" type="checkbox"/> INFORMATION SYSTEM	7. SCOPE OF APPLICATION <input type="checkbox"/> DEPARTMENT-WIDE  <input checked="" type="checkbox"/> COMPONENT LEVEL  <input type="checkbox"/> MULTI-COMPONENT			
8. PROCESSING MODE <input checked="" type="checkbox"/> AUTOMATED <input type="checkbox"/> MANUAL <input type="checkbox"/> COMBINATION					
9. SOURCE SYSTEM STATUS <input checked="" type="checkbox"/> OPERATIONAL <input type="checkbox"/> UNDER DEVELOPMENT					
10. PROGRAM(S) SUPPORTED BY SOURCE/SYSTEM (Refer to Appendix, The Budget of the United States Government)					
AGENCY PROGRAM(S)		OMB FUNDING TITLE		OMB ID CODE	
Data Collection and Analysis		Mines and Minerals		10-32-0959-0-1-300	
11. AGENCY CONTACT NAME: William G. Park, Chief ORGANIZATION: Division of Fuels Data ADDRESS: 2401 E St., NW., Room 619, Washington, D.C. 20241 TELEPHONE NO.: (202) 634-1047					

**12. ABSTRACT OR DESCRIPTION****SECTION A: PURPOSE /FUNCTION***(Requirement for source/system)*

The collection of fuel consumption, receipts and stock data provides the Bureau with information relating to industry for monthly publication as a Mineral Industry Survey and other reports of the Bureau for the information and guidance of industry, Government, and the public.

**SECTION B: SOURCE SYSTEM INPUTS***(External and Internal)*

The source of data for this system is the monthly canvass form 6-1400-M-1 (B43,B44) Monthly Fuel Consumption Reports Manufacturing Plants. Responses from approximately 862 companies are received monthly.

**SECTION C: SOURCE /SYSTEM INFORMATION CONTENT***(List scope, subsystems, time reference, geographic coverage, and update cycle)*

Types of data in this system include monthly fuel receipts, consumption, sulfur content, and Btu content at manufacturing plants. Data are available by individual company, or aggregated by product or State.

*(Continues on next page)*

13. KEY WORDS AND DESCRIPTORS *(Significant subject areas - if data)*

Fuels, bituminous coal, consumption, stocks, receipts, sulfur content, market value

14. PRINCIPAL REPORTS OR OUTPUTS

*(Major report types, frequency, format; output medium - hardcopy, machine-readable; query capability)*

Data from this system are included in the following Bureau publications:

- Weekly Coal Report
- Minerals Yearbook Chapter
- Special projects and reports of the Bureau

15. OUTPUT(S) AVAILABILITY *(Publicly available, internal use only, classified)*

All information is generally made available in summary format to all requestors. However, individual company data are regarded as confidential.

16. GAO USE ONLY

OMB ID CODE:

AUTHORIZING LEGISLATION:

COMMITTEE RESPONSIBILITY:

SUBCOMMITTEE(S):

0 0 0 0 5 2 0 0 8 8 0

E-1

APPENDIX E  
EXCERPTS FROM HISTORICAL DOCUMENTS  
RELATED TO THE INITIAL IMPLEMENTATION  
OF THE MFCR SYSTEM

0 0 4 0 5 2 0 5 8 8 1

E-3

DEPARTMENT OF THE INTERIOR

FRANKLIN K. LANE, Secretary

UNITED STATES GEOLOGICAL SURVEY

GEORGE OTIS SMITH, Director

THIRTY-EIGHTH ANNUAL REPORT

OF THE

DIRECTOR OF THE UNITED STATES  
GEOLOGICAL SURVEY

TO THE

SECRETARY OF THE INTERIOR

FOR THE FISCAL YEAR

ENDED JUNE 30

1917



40588

WASHINGTON

GOVERNMENT PRINTING OFFICE

1917

## REPORT OF DISTRIBUTION DIVISION.

## SPECIAL FEATURES.

relieves the country's shipping shortage to the extent of one ship for 38 days, not including the necessary time for loading and unloading the cargo of Brazilian ore.

Finally, the proposition that present expansion of business must take into account the future is almost self-evident, although often overlooked. Opening up pyrite mines must be based upon an assured supply of ore in the ground and an assured demand for the product for a period long enough and at prices high enough to justify the development. It is not enough for the geologist to point out the ore: the acid manufacturer needs to contract both to buy the pyrite and to sell the acid. New development must rest upon a basis of something more than risk, lest expansion of productive capacity involve after-the-war losses that will swallow up war profits.

To make America industrially independent is an aim perhaps even more desirable now than three years ago and possibly also even more of a problem than was then realized.

## SPECIAL PUBLICATIONS.

Among the publications of the year several deserve special mention. The entrance of the United States into the war served to increase the already large demand for information concerning the Nation's mineral resources, and a bulletin entitled "Our mineral supplies" (Bulletin 666), was prepared to meet this need. The purpose of this publication is to supplement Bulletin 599, "Our mineral reserves," published in September, 1914. A comparison of this summary of the ability of the mineral industry to meet present-day demands with the earlier and less complete review of the mineral situation serves to make plain the larger degree of national independence which has been attained in the mining, metallurgic, and chemical industries. Twenty geologists have contributed to the present bulletin, which has been published first in separate chapters, each devoted to a "war mineral" or to some mineral product important under present conditions.

Official and general demand for up to date statistics on several of the more important minerals has been met by further response by the geologists and statisticians of the Survey. The monthly statements of railroad movement of coal and coke first issued in August, 1916, were followed in June, 1917, by the compilation of weekly statements of bituminous coal and coke production, with an analysis of causes of change in rate of output. The purpose of these statistics is to serve both the Government and the trade with an authoritative index of industrial conditions.

For similar reasons the Survey began in January the issue of monthly statements of petroleum production and consumption, these statistics showing the quantity of oil moved from field sources, the

REPORT OF DISTRIBUTION DIVISION.

the situation. Certain basic data were available in the older bureaus of the Government—in the Geological Survey, production records in detail, and distribution statistics, extending over a long period of time, together with the weekly reports of coal production begun in June, 1917, for the committee on coal production of the Council of National Defense; in the Federal Trade Commission, the beginnings of a record of costs of mining; and in the Bureau of Mines, analyses and complete facilities for sampling and analyzing coal.

The administrative control of the coal industry in a period of stress required much more in the way of current reports than had ever been contemplated by the older bureaus. As policies were formulated by the staff to solve the problems of this control, the demands for information furnished the incentive and purpose of the statistical work.

The information called for was of two general kinds. The first required broad general data covering such features as the productive capacity of the coal mines and the requirements of the country, data for the determination of a budget and a zone system, the supply of labor, the factors affecting and limiting the production and distribution of coal, and all other such data as were required as bases for outlining policy. The second type of data was operating reports—daily and weekly reports of a kind to show in detail how the programs were being met. These reports were for the most part maintained in close touch with the operating sections of the administration, as, for instance, the daily and weekly reports of all features of the Lake coal movement which were maintained in cooperation with the section on Lake and Canadian coal. Recognition of these two lines of statistical effort and of the general principle that the statistical organization should not be an operating office was delayed until after the operating organization was fully developed early in 1918.

The pressing problem in the fall of 1917 was to find coal to meet the urgent demands of those consumers, domestic, public utility, industrial, and railroad, who really needed help or who were fearful of running out of coal. At first the requests for assistance were few, but as winter came on many who feared a shortage of fuel at their plants, or who complained of the failure of producers to ship, turned to the newly created Fuel Administration for help.

Men with experience in the distribution of coal were called in, whose intimate knowledge of affairs in local areas enabled them to take care of the few difficulties first encountered. But when each had exhausted the possibility of his personal acquaintance, when his company and those companies with which he was familiar had been called upon to ship in these emergencies all the coal they could spare from their own trade, it became necessary to obtain information regarding free coal from other sources. To meet this

need a "fuel supplies department" was organized and the operators were called upon to submit reports on their contract requirements and capacity and production of their mines.

It was the duty of the fuel supplies department, later designated the "statistical department," to assemble, examine, and file the reports furnished in response to this demand, and to inform the members of the administration what coal-producing companies were producing coal in excess of their contractual requirements. The reports of each company, whether producer or jobber, were examined, and the contracts as reported were reduced to monthly rates of required delivery and compared with monthly rate of production. If the average monthly rate of production exceeded the calculated contracted obligations against this production, the difference was assumed to be "free" coal and subject to the disposition of the Fuel Administration to meet emergency needs.

Difficulty was early encountered in applying this method of distributing coal. But a small proportion of the output was found to be theoretically free coal. The theoretically free coal was not always free; the same coal was often simultaneously ordered to more than one consumer by different authorities; allotments placed pro rata among the mines for such generally recognized prior needs, as the railroads, shipping board, and Navy, resulted in throwing out of adjustment the contracted source of supply of many consumers; and the lack of adequate administrative control in Washington prevented coordination of effort and correction of errors in detail.

It was the duty of the statistical department in this period, namely, from October, 1917, to January, 1918, inclusive, to furnish information as to what companies and mines should be called upon to supply coal for emergency needs, to record the orders placed, and ascertain, record, and report on the performance of the shippers on these orders. The records of this type are incomplete, but the following will indicate in a measure the extent of these activities:

*Orders for the shipment of bituminous coal issued by the Washington office of the Fuel Administration, as recorded in the Statistical Department between Nov. 2, 1917, and Feb. 16, 1918.*

Number of orders.....	9,976
Number of coal shippers.....	1,784
Number of consignees:	
United States Government.....	122
Railroads.....	7
United States Shipping Board.....	20
Public utilities.....	53
Hospitals, etc.....	69
Industrials.....	499
Retail dealers.....	72
Total.....	842

Cooperation with the United States Geological Survey in the matter of statistics was effected by an agreement entered into on October 15, 1917, by which

## DISTRIBUTION OF COAL AND COKE.

the records and trained personnel of that bureau were made completely available. The agreement was expressed as follows:

To facilitate the work of the United States Fuel Administration, and in line with the policy of utilizing to the fullest extent in this work existing governmental agencies, the United States Geological Survey will collect, assemble, and record for the Fuel Administration all necessary statistics of production, distribution, and consumption of coal and coke; will keep the necessary records, by mines of coal and coke under contract, under order, and free; and will advise the Fuel Administration where suitable coal or coke may be available to be applied on emergency needs and will furnish other information. Through this cooperation unnecessary duplication of requests on producers, distributors, and consumers for data is eliminated, and full advantage is had of the going organization in the Geological Survey under Mr. C. E. Leshner and his associates, and of the records and facilities for handling statistical investigations possessed by that bureau as a result of years of experience in this special line.

The Fuel Administration will assume the additional expense necessary to enable the Geological Survey to meet the demands of the situation, thus supplementing the work already in progress.

The following extracts from instructions given the statistical department shortly after this date indicate the needs and purposes of the administration with respect to distribution in the earlier period of its activities:

- \* \* \* To obtain information on production, contracts, free coal \* \* \* to ascertain as quickly as possible the quantity of free coal available by individual companies.
- \* \* \* To obtain information at once from manufacturing plants as to quantity of coal on hand and extent of monthly requirements. \* \* \* Some plants have sufficient coal to run them several months and are continuing to add to their surplus. Shipments will be suspended to such plants, thereby adding to the free coal available without interfering with other obligations.

By having copies of shipping notices sent to indicate compliance with these orders it was attempted to ascertain the results of this system of distributing coal. The data compiled from the reports made indicated that aside from the railroad priority orders that were self-administering, and the allotments for the Shipping Board and the Navy, shipments were never made on more than 10 per cent of the many orders given. The reasons for the failure of this method of distributing coal were many and were recognized at the time, though for a long time no better way was devised or tried. There were more cars of coal being called for than there were cars being produced and shipped. Every call received was treated by itself, few if any applicants were positively refused assistance, and each of 20 or more assistants in the Washington office were daily and nightly sending out formal orders to shippers directing coal to consumers who had applied, or were "requesting" shippers to ship coal to this and that consignee, either on a contract or as free coal. In some instances orders were placed for more coal than the shipper was producing; in many instances, to fill an order of the administration, coal was diverted from a consumer,

who at once appealed for assistance, necessitating additional orders with other shippers. There was no one to determine the preference between consumers, particularly industrials, and having to choose between filling an order from the administration and taking care of regular customers, many shippers ignored the order, judging that the trade being supplied was as important as that covered by the order. Some may have ignored orders because they were shipping on contracts at prices above the Government price at which requisitioned coal must be consigned.

The pursuit of free coal and the consequent demands on the statistical department lessened during the winter, not so much because emergency requests were less as because this method of meeting those requests were not effective. Early in December the failure of this method of distributing coal was recognized by the administration as complete, and a considerable portion of the efforts of those connected with the statistical work was directed toward developing more effective methods and organization. The board of directors of the National Coal Association rendered active assistance in this task and a corps of commercial engineers from the American Telephone & Telegraph Co. engaged in studying the organization of the Fuel Administration joined in the work the latter part of December. The first important decision reached was for the decentralization of the direction of the details of distribution and for the setting up of offices in the coal fields to administer these details, which previously had been handled in the Washington office. The organization of the field offices, known as the district representatives' offices, was conducted by the bureau of statistics.<sup>1</sup>

The organization program in process of formation in January, 1918, called for definite statistics of distribution of coal during the previous year as a basis for a detailed budget and as a means of testing out the proposed bituminous coal zones. From the 1st of January to April, 1918, the entire efforts of those engaged in the statistical work of the Fuel Administration were directed toward the completion of the field organization, the determination of the budget, the outlining of the zones, the completion of the statistical record of production and distribution in 1917, the compilation of the weekly reports on production, and the completion of the records of consumption in 1917.

As the distribution program of the Fuel Administration was developed new problems in statistics and in organization were presented. The distribution program contemplated a control regulated by the budget and policed by the zone embargoes. The district representatives in the coal fields were to report weekly on the distribution of their coal, and thus a constant check could be had on the shipments com-

<sup>1</sup> The designation of bureau was not officially given for about a year after the work was begun and until after the personnel represented one-fourth of the total in the Washington office.

## FINAL REPORT OF THE UNITED STATES FUEL ADMINISTRATOR.

correspondingly higher prices. Some of this coal has been sold for export, and the observations made upon diversion of the southern export coal applies also to this field.

The condition in several of the other fields is substantially like that in the Hazard (Ky.) Field. Are we not bound to take account of available production in the present crisis? The Government's position will be seriously weakened if we do not meet this situation. If, in other words, the Attorney General finds that the operators in any field are not resuming production, we must give them no excuse on the plea that we are asking them to produce at a loss.

Government maximum prices remained in force and effect until the 1st of April, 1920. The Executive order suspending them was signed by the President March 19, 1920, and will be found on page 30 of the Supplement to the General Orders, Regulations, and Rulings of the United States Fuel Administration.

## CONSUMER'S STOCKS OF COAL.

On October 1, 1917, the total commercial stocks of bituminous coal in the hands of consumers throughout the country was approximately 28,000,000 tons. It was realized that this amount was an insufficient reserve in the face of the war demand, but what constituted a normal reserve for the country was not known. Statistics were not available. Prior to 1917 there was no demand for the information, the fact being that for many years with certain well-defined and easily explained exceptions the supply of coal throughout the country was ample. Suddenly the burden was shifted from the seller to the buyer, and something like a consumer's panic ensued. The Geological Survey had furnished much admirable data, especially in its report for the year 1915, but current data was lacking. To secure it required a larger force and far greater expense than the Government had ever contemplated as reasonable. Through the courtesy of the Secretary of Interior, C. E. Leshner and six of his associates were virtually loaned to the Fuel Administration by the Geological Survey.<sup>15</sup>

The Survey had the technical training, but no funds sufficient for the work. The Fuel Administration had funds, but lacked men of technical training in this particular field of statistics. The combination proved a most fortunate one for the object sought. One can not read the account of the organization and development of the Bureau of Statistics of the Fuel Administration<sup>16</sup> without appreciating the character and excellent quality of the service rendered. The six members of the Bureau became 600. The most approved types of machines for computing and tabulating statistics were installed. Each week before going to the meeting at the White House the Fuel Administrator received from Mr. Leshner a brief report showing stocks of anthracite, bituminous coal, and coke on hand throughout the country. This information was compiled from reports of nearly 90,000 consumers and dealers. About 33,000 reports were handled each week and the results tabulated.

The President had said, at the time of establishing the White House meetings, that he wished each week to look down the industrial line and see where the sags were. It was therefore of first importance to be able to report not only that so many million tons of coal had been produced during the then past week, but that definitely ascertained supplies were on hand, especially in those sections of the country remote from mines and engaged in the manufacture of munitions.

The statistics served also another purpose. They enabled the Fuel Administrator to speak with accurate knowledge when complaints were made that certain manufacturing interests were short of coal and would be compelled to cease operations unless immediate relief were found. During the first months of the Fuel Administration there was nothing to go by, except the known or unknown reputation for honesty of those making complaint. After the Bureau of Statistics was in running order the case was entirely different. On many an occasion the representative of an important industry manufacturing munitions came to the Fuel Administration with the alarming statement that his factory had less than a week's supply of coal on hand and that without the assistance of the Administration the mills would be compelled to close. It took less than five minutes to have in hand the card of the complainant and to inform him of the number of tons on hand the previous week, the weekly average for the year, the actual consumption and receipts during the week, and the stocks then on hand and en route. The facts were of course secured from the company itself and were not questioned. The surprise consisted in the speed with which the information had been made available. Convinced that the Fuel Administration knew the facts concerning the affairs of the company complaining, it was not difficult to persuade its representative of the accuracy of the further information that the supplies his company had on hand were quite equal to those of his competitors and represented a fair distribution in the section of the country in which the mills were located. Human nature demands equality of treatment. When this is guaranteed, competitors are usually content.

The building up of the force of the Bureau of Statistics and its reduction during the winding-up process is well shown in the diagram on page 123 of the Report of the Distribution Division, Part I. The diagram is fairly illustrative of the rate of progress of the entire Fuel Administration, both in the mobilization and the

<sup>15</sup> Report of Distribution Division, Pt. I, p. 119.

<sup>16</sup> Report of Distribution Division, Pt. I, pp. 117-126.

## FINAL REPORT OF THE UNITED STATES FUEL ADMINISTRATOR.

demobilization of its forces. Only indirectly, of course, did the Bureau of Statistics stimulate the production of coal, but its weekly reports were of the greatest assistance to the Production Bureau, which was able to set before the operators and mine workers definite statements of results, which were in themselves stimulating. The commercial stocks of bituminous coal in the United States on the 1st of October, 1917, was, as above stated, about 28,000,000 tons. This was more than doubled on October 1 of the following year, and on the day of the armistice had reached a total of about 63,000,000 tons. With this amount of bituminous coal in the stock piles of the country the Fuel Administration was warranted in assuring the country, as was done on the 1st of October, that the country was prepared to go through the winter without halting the manufacture of munitions and without privation to domestic consumers, even if the winter should prove to be as severe as its predecessor.

Immediately after the signing of the armistice manufacturers and dealers ceased buying coal. Production dropped from 13,000,000 tons per week to less than 8,000,000 tons. Heavy drafts were made upon stocks in hand. In some cases manufacturers ceased buying altogether and depended upon their stock piles. Production was everywhere cut down and in many cases mines were closed for longer or shorter periods. Men were thrown out of employment or their earnings seriously curtailed. For it should be remembered that the miner—the workman who actually digs the coal—is paid by the ton and not by the day, and because bituminous coal can not in most instances be stocked at the pit mouth the miner can work only when orders are received and cars are supplied. Reference to the production tables above (p. 22) is the best indication of the rate of production downward between Armistice Day and midsummer, 1919. But a more serious factor was the encroachment upon the stocks of coal on hand. About 23,000,000 tons were consumed from the stock piles between Armistice Day and the 1st of April, 1919. By midsummer less than half the amount in stock on Armistice Day remained. Foreseeing trouble when the stock piles were gone and bins empty, the Fuel Administrator warned the public in June, 1919, that if the buying of coal was not promptly resumed the country would find itself in serious plight by August or September; that the surplus stocks would be exhausted; that the demand for coal would come at the period when the car supply would be absorbed by the crop movement; and that if the shutdown of mines continued too long the labor supply at the mines could not be easily and quickly provided.

This was commented upon at the time as playing into the hands of the operators, but the event amply justified the warning. Apparently we have not yet learned that if we wish to prevent seasons of coal shortage it is necessary to continue the purchase of coal throughout the year to a much greater extent than at present. In other words, the public should learn the wisdom of not living from hand to mouth in providing itself with fuel. The great service of the Bureau of Statistics consisted in bringing these facts to the attention of the public.

It was most unfortunate that no appropriation was made for the continuation of this statistical work after the 30th of June, 1919. There is, therefore, an hiatus in the data necessary to the solution of the coal problem and one which the Congress ought promptly to bridge over by enacting legislation authorizing the Geological Survey or some other suitable bureau of Government to conduct a continuous survey of stocks of coal on hand and their distribution throughout the country. It is of first importance that we know the facts of the fuel industry, and the Government is the best agency to find them.

## DISTRIBUTION OF FUEL.

The report of the Distribution Division, Part I, dealing with coal and coke, and Part II, dealing with the zone system, need little further comment. Each tells the story completely. But a brief observation upon the fundamental method pursued may be of value. By January, 1918, the Distribution Division of the Fuel Administration was established under J. D. A. Morrow as General Director. A few weeks before the railroads had been taken over by the Government. From that time on it was a simple matter to establish contracts and secure close cooperation between the Government, the operators, and the railroads. At the outset, however, that is to say, in September 1917, the case was quite otherwise. Garvin N. Snider, coal traffic manager of the New York Central Railroad Co., had come to Washington as transportation adviser of the Fuel Administrator. He and Bentley W. Warren, chief legal adviser of the Administration, formed the point of contact with the railroad systems represented by the Car Service Commission of the Railway Bureau. This was before the railroads had been taken over by the Government. The fullest use was not being made of cars, tracks, or terminals and apparently could not be under the several systems operating separately. At his invitation, Samuel Rea, president of the Pennsylvania Railroad, A. H. Smith, president of the New York Central Railroad, and Daniel Willard, president of the Baltimore and Ohio Railroad, met the Fuel Administrator in Washington on the evening of November 15, and considered eight specific questions<sup>17</sup> presented by him. The questions sought to discover whether maximum distribution efficiency had been reached in the several sections of the country and

<sup>17</sup> Report of the Distribution Division, Pt. II, p. 9, in letter of Nov. 16, 1917, to Mr. Samuel Rea.

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APPENDIX F  
1958 REVISION OF STATISTICS ON CONSUMPTION OF  
BITUMINOUS COAL AND LIGNITE

## REVISION OF STATISTICS ON CONSUMPTION OF BITUMINOUS COAL AND LIGNITE

The statistics of the Bureau of Mines on the consumption of bituminous coal and lignite have been revised to bring into closer conformity the figures estimated by the Bureau and the figures shown in the Census of Manufacturers and in the periodic Census of Mineral Industries. In addition to the establishment of new benchmarks for certain consumer groups, based on 1954 Census figures, the new procedure will allow for more periodic checking against benchmark data.

A brief description of the procedure followed in establishing the new benchmark for certain consumer categories is given below. The Census of Manufactures shows a single amount of 91,457,000 tons for all coal (Anthracite, bituminous, and lignite) consumed for heat and power. Accordingly, it is necessary to deduct an estimated amount for anthracite in order to arrive at the consumption of bituminous coal and lignite. The amount deducted for anthracite for 1954 was 3,800,000 tons, leaving a balance of 87,657,000 tons. As figures are not available in the Census of Manufactures, however, for the consumption of coal by Census Groups 23 (Apparel and related products) and 27 (Printing and publishing), an estimate of 1,000,000 tons has been used for these two groups, bringing the total of bituminous coal and lignite consumed for heat and power for all manufacturing industries to 88,657,000 tons. To this total must be added Census figures for the following: Bituminous coal used as raw material in byproduct coke ovens - 82,840,000 tons, bituminous coal used as raw material by beehive coke ovens - 973,000 tons, and bituminous coal and lignite used as raw material for fuel briquets and packaged fuel - 1,022,000 tons, making a preliminary grand total of 173,492,000 tons of bituminous coal and lignite consumed as fuel and used as raw material by all manufacturing industries. As this is an accumulated total, it will reflect any errors resulting from the estimates referred to above.

Adjustments have been made for two consumer groups included above - byproduct coke ovens and cement mills - to conform to Bureau of Mines figures for these consumer categories. Mines' figures include byproduct coke plants "operated in conjunction with utilities," which were not included in Census figures for byproduct coke plants. Accordingly, the Bureau of Mines figure of 84,411,000 tons has been used in the new benchmark instead of the 82,840,000 tons reported by Census, a difference of 1,571,000 tons. Census shows 972,953 tons of bituminous coal used at beehive ovens in 1954 while Mines shows 980,000 tons, a difference of only 7,047 tons. As the difference is so small, Mines figure has been used.

The adjustments necessary for cement mills are a little more complex. In the past Mines figure for cement mills has included the total of both anthracite and bituminous coal. In establishing the new benchmark, anthracite has been excluded from Mines figures for cement mills. Accordingly, Mines figure for bituminous coal consumption at cement mills in 1954 has been revised to 7,924,000 tons. The corresponding Census figure is 7,701,000 tons. Census states, however, that "the variation between the two sets of data is due primarily to differences in the reports from individual companies submitted to the two agencies." Accordingly, since Mines canvasses all cement operations every year, Mines figure has been used in the new benchmark.

On the basis of the above adjustments for coke ovens and cement mills, the preliminary total referred to above becomes a grand total of 175,286,000 tons of bituminous coal and lignite consumed as fuel and used as raw material for all manufacturing industries.

Since Mines publishes monthly data separately for four of the Manufactures consumer groups - "Oven coke plants," "Beehive coke plants," "Cement mills," and "Steel and rolling mills" - it is necessary to subtract the bituminous coal for these four groups from the grand total of 175,286,000 tons in order to determine the amount for "Other manufacturing industries." As indicated above, Mines figures are used for the first three groups. Census figures are used for the group "Steel and rolling mills." Census shows 6,983,000 tons in 1954 for "Steel and rolling mills" and Mines shows 4,944,000 tons, a difference of 2,039,000 tons. It is believed that this difference is due to definition and classification and that the Census figure represents a more complete coverage. Accordingly, the Census figure of 6,983,000 tons is used for the new benchmark. Mines' monthly canvass will be continued as an adequate and representative sample for application to the new benchmark.

In summary, the total of the four above mentioned groups is 100,298,000 tons which, subtracted from 175,286,000 tons, leaves 74,988,000 tons of bituminous coal and lignite for "Other manufacturing industries." To this must be added 2,127,000 tons of bituminous coal and lignite consumed by all Mineral industries, as reported by Census, making a NEW benchmark for all bituminous coal and lignite for "Other manufacturing and mining industries" of 77,115,000 tons.

Another of the historical series - "Bunker, foreign trade" - has been revised by the addition of bituminous coal consumed by lake vessels, so that the new benchmark for vessel fuel becomes "Bunker, foreign and lake vessels."

As all ascertainable tonnage consumed by manufacturing plants and mines presumably has been covered in the Census and Mines figures referred to above, and as bituminous coal and lignite consumption data for electric power utilities and railroads are obtained from the Federal Power Commission and the Association of American Railroads, the remainder of consumption has been classified as "Retail deliveries to other consumers." As total consumption of bituminous coal and lignite in 1954 was 363,060,000 tons and the total of all classes other than "Retail deliveries to other consumers," is 311,262,000 tons, the new benchmark tonnage for "Retail deliveries to other consumers" in 1954 is 51,798,000 tons. Mines' monthly sample canvass of retail dealers will be continued for use in calculating monthly changes in bituminous coal and lignite consumption in this category.

As the figure for "Retail deliveries to other consumers" is a residual, its accuracy is influenced by the estimates for Census Groups 23 and 27 and for the deduction for anthracite referred to above. Also, the accuracy of this new benchmark is influenced by the accuracy of the total consumption figure of 363,060,000 tons for 1954. As stated in current publications, this total consumption figure is a "Total of classes shown." It is believed that this approximates very closely total "actual" consumption.

Year and month	Electric power utilities 1/	Bunker, foreign and lake vessel 2/	Railroads (class I) 3/	Manufacturing and mining industries					Retail deliveries to other consumers 6/	Total of classes shown 7/
				Beehive coke plants	Oven coke plants	Steel and rolling mills 4/	Cement mills	Other manufacturing and mining industries 5/		
1955:										
January -	11,756	4	1,415	102	8,252	712	739	7,136	6,221	36,337
February -	10,907	3	1,271	108	7,625	709	654	6,722	5,934	33,833
March ---	11,216	14	1,278	176	8,749	719	691	7,394	4,851	35,028
April ---	9,871	114	1,203	207	8,519	587	656	7,231	2,795	31,183
May -----	10,504	174	1,240	228	8,922	545	698	6,920	2,247	31,478
June -----	10,807	198	1,159	257	8,515	514	671	6,719	2,532	31,372
July -----	11,460	186	1,154	233	8,613	482	691	6,349	2,256	31,429
August --	12,286	210	1,253	273	8,879	503	693	6,832	3,288	34,217
September	11,721	192	1,228	269	8,849	513	687	7,105	4,216	34,850
October -	12,377	199	1,351	300	9,147	574	715	8,135	4,735	37,533
November-	13,053	163	1,435	320	9,014	635	751	9,054	6,132	40,607
December-	14,522	42	1,486	391	9,424	810	883	10,014	7,913	45,485
Total -	140,550	1,499	15,473	2,869	104,508	7,353	8,529	89,611	53,020	423,412
1956:										
January -	14,941	5	1,362	424	9,450	796	832	0,019	7,909	45,493
February-	13,147	6	1,197	414	8,821	732	733	9,358	7,021	41,205
March ---	13,081	15	1,206	457	9,424	750	772	9,629	6,022	41,121
April ---	11,674	137	1,093	415	9,066	654	717	8,377	4,124	36,053
May -----	11,786	206	1,028	433	9,168	562	748	7,866	2,882	34,487
June -----	12,065	193	865	352	8,485	528	729	6,906	1,910	31,572
July -----	11,747	142	709	102	3,130	200	743	6,004	1,978	24,606
August --	12,909	165	868	185	7,783	469	744	6,652	2,747	32,358
September	12,169	185	916	246	8,915	504	697	6,645	3,109	33,222
October -	13,233	193	1,008	301	9,266	615	731	7,695	3,422	36,279
November-	13,787	182	1,112	332	8,972	643	763	8,072	3,580	37,119
December-	14,457	51	1,177	367	8,189	736	812	8,427	3,963	39,044
Total -	154,783	1,470	13,308	4,043	101,071	7,139	8,426	108,302	48,667	432,858

For footnotes, see end of table.

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TABLE 15.--Consumption of bituminous coal and lignite, by consumer class, with retail deliveries in the United States, 1933-57, in thousand net tons - Continued

Year and month	Electric power utilities <sup>1/</sup>	Bunker, foreign and lake vessel <sup>2/</sup>	Railroads (class I) <sup>3/</sup>	Manufacturing and mining industries					Retail deliveries to other consumers <sup>6/</sup>	Total of classes shown <sup>7/</sup>
				Beehive coke plants	Oven coke plants	Steel and rolling mills <sup>4/</sup>	Cement mills	Other manufacturing and mining industries <sup>5/</sup>		
1957: <sup>8/</sup>										
January -	15,669	6	978	418	9,372	835	787	8,967	5,778	42,810
February-	12,937	7	802	405	8,476	677	699	7,756	4,233	35,992
March ---	13,565	17	865	429	9,397	669	752	7,989	3,598	37,281
April ----	12,237	120	729	352	8,812	585	715	7,246	2,573	33,369
May -----	12,322	135	685	308	9,130	544	701	6,753	1,580	32,208
June -----	12,210	191	614	257	8,782	437	629	6,233	1,417	30,770
July -----	12,443	133	621	229	9,033	433	442	5,996	1,430	30,810
August --	13,034	135	671	249	9,043	436	782	6,446	2,042	32,888
September	12,469	170	619	224	8,751	452	734	6,414	2,469	32,302
October -	13,521	165	626	195	8,727	569	789	7,594	3,510	35,696
November-	13,345	113	607	142	7,870	621	786	7,685	3,159	34,328
December-	13,646	22	584	128	7,242	620	817	8,123	3,923	35,165
Total -	157,398	1,354	8,401	3,336	104,635	6,938	8,633	87,202	35,712	413,619

<sup>1/</sup> Federal Power Commission.

<sup>2/</sup> Bureau of the Census, U. S. Department of Commerce. Ore and Coal Exchange.

<sup>3/</sup> Association of American Railroads. Represents consumption of bituminous coal and lignite for all uses, including locomotive, powerhouse, shop, and station fuel.

<sup>4/</sup> Estimates based upon reports collected from a selected list of representative steel and rolling mills.

<sup>5/</sup> Estimates based upon reports collected from a selected list of representative manufacturing plants.

<sup>6/</sup> Estimates based upon reports collected from a selected list of representative retailers. Includes some coal shipped by truck from mine to final destination.

<sup>7/</sup> The total of classes shown approximates total consumption. The calculation of consumption from production, imports, exports, and changes in stocks is not so accurate as the "Total of classes shown" because certain significant items of stocks are not included in our data. These items are: Stocks on lake and inland water docks, stocks at other intermediate storage piles between mine and consumer, and coal in transit.

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G-1

APPENDIX G

DERIVATION OF AN EXPRESSION FOR THE VARIANCE OF THE ESTIMATE  
GENERATED BY THE LINK-RELATIVE PROCEDURE AFTER N PERIODS

## MODEL FOR ERROR PROPAGATION IN THE "IDENTICALS" PROCEDURE USED BY MFCR

by D. Freedman (Revised July 19, 1979)

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The object is to present a simple probability model for error propagation in MFCR, which in effect gives a lower bound to the likely size of the random component of error in the estimates. Systematic error cannot be dealt with by this method.

We index periods by  $n$  and firms by  $j$ . In period  $n$ , firm  $j$  is characterized by a number  $x_{n,j}$ , e.g., the amount of coal consumed by the firm in that period. In each period, the firm either responds or fails to respond to the MFCR questionnaire. Let

$$\begin{aligned}\xi_{n,j} &= 1 \text{ if firm } j \text{ responds in period } n \\ &= 0 \text{ otherwise.}\end{aligned}$$

We assume that these  $\xi_{n,j}$  are all independent, and

$$\text{Prob}\{\xi_{n,j} = 1\} = p_j$$

does not depend on  $n$ : i.e., a firm's response probability is constant over time.

MFCR uses the "link-relative" method for estimation, which it terms the method of "identicals." The estimate is rolled forward month by month, multiplying by the percentage change for the firms replying in that month and the previous month--the identicals. Algebraically, we start with a given benchmark number  $B$ , and the estimate for period  $n$  is

$$R_n \cdot R_{n-1} \cdot \dots \cdot R_1 \cdot B$$

where the "rolling-forward" factor is  $R_n = U_n/V_n$ . Here

$$U_n = \sum_j \epsilon_{n,j} \epsilon_{n-1,j} x_{n,j}$$

is the total consumption in period  $n$  for all firms which reported both in period  $n$  and period  $n-1$ . Likewise,

$$V_n = \sum_j \epsilon_{n,j} \epsilon_{n-1,j} x_{n-1,j}$$

is the total consumption for the same firms--the "identicals"--in period  $n-1$ . Note that  $\epsilon_{n,j} \epsilon_{n-1,j} = 1$  only for firms reporting both in period  $n$  and period  $n-1$ , i.e., for the "identicals."

Our object is to study the stochastic behavior of the factor  $R_n \cdots R_1$ .

It is convenient to abbreviate

$$\begin{aligned} \zeta_{n,j} &= \epsilon_{n,j} \epsilon_{n-1,j} \\ f_{n,j} &= x_{n,j} / \sum_j x_{n,j} \\ d_{n,j} &= f_{n,j} - f_{n-1,j} \end{aligned}$$

Thus,  $f_{n,j}$  is the fraction of the total in period  $n$  consumed by firm  $j$ , and  $d_{n,j}$  is the change in this fraction from the previous period.

Clearly,

$$\log(R_n \cdots R_1) = \log R_n + \cdots + \log R_1$$

is a sum of random variables. However, due to the use of "identicals," a correlation is introduced between successive terms.

We approximate by one-term Taylor series:

$$\begin{aligned} \frac{U_n}{V_n} &= \frac{E(U_n)}{E(V_n)} \frac{1 + \frac{U_n - E(U_n)}{E(U_n)}}{1 + \frac{V_n - E(V_n)}{E(V_n)}} \\ &\doteq \frac{E(U_n)}{E(V_n)} \left[ 1 + \frac{U_n - E(U_n)}{E(U_n)} - \frac{V_n - E(V_n)}{E(V_n)} \right] \end{aligned}$$

so

$$\log \frac{U_n}{V_n} \doteq \log \frac{E(U_n)}{E(V_n)} + \frac{U_n - E(U_n)}{E(U_n)} - \frac{V_n - E(V_n)}{E(V_n)}$$

In this display, the first term represents the "deterministic" part of the process, the second and third terms represent stochastic disturbances, which must now be analyzed in more detail.

We now assume that the response probabilities  $p_j$  are nearly orthogonal to the consumption numbers  $x_{n,j}$  so

$$\begin{aligned} E(U_n) &= \sum_j p_j^2 x_{n,j} \doteq \lambda \sum_j x_{n,j} \\ E(V_n) &= \sum_j p_j^2 x_{n-1,j} \doteq \lambda \sum_j x_{n-1,j} \end{aligned}$$

with  $\lambda = \frac{1}{J} \sum_{j=1}^J p_j^2$ , where  $J$  is the number of firms, and

$$\begin{aligned} U_n - E(U_n) &= \sum_j (\zeta_{n,j} - p_j^2) x_{n,j} \\ V_n - E(V_n) &= \sum_j (\zeta_{n,j} - p_j^2) x_{n-1,j} \end{aligned}$$

Thus

$$\log \frac{U_n}{V_n} \doteq \log \frac{\sum_j x_{n,j}}{\sum_j x_{n-1,j}} + \frac{1}{\lambda} \sum_j (\zeta_{n,j} - p_j^2) d_{n,j}$$

Suppose the benchmark  $B$  to be accurate. Consumption in period  $n$  is clearly

$$\frac{\sum_j x_{n,j}}{\sum_j x_{n-1,j}} \cdot \frac{\sum_j x_{n-1,j}}{\sum_j x_{n-2,j}} \cdot \dots \cdot \frac{\sum_j x_{1,j}}{\sum_j x_{0,j}} \cdot B,$$

for  $B = \sum_j x_{0,j}$  and the product telescopes. Our estimate is off the mark by the factor

$$e^{W_n}$$

where

$$W_n \doteq \frac{1}{\lambda} \sum_j \sum_{m=1}^n (\zeta_{m,j} - p_j^2) d_{m,j}$$

Recall that, by assumption, firms are independent. We will now analyze the contribution to  $W_n$  from one firm, viz.,

$$X_{n,j} = \frac{1}{\lambda} \sum_{m=1}^n (\zeta_{m,j} - p_j^2) d_{m,j}.$$

Clearly,  $E(X_{n,j}) = 0$  and  $\lambda^2 \text{Var } X_{n,j}$  is

$$\sum_{m=1}^n d_{m,j}^2 \text{Var } \zeta_{m,j} + 2 \sum_{m=2}^n d_{m,j} d_{m-1,j} \text{Cov}(\zeta_{m,j}, \zeta_{m-1,j})$$

because  $\text{Cov}(\zeta_{m,j}, \zeta_{m-i,j}) = 0$  for  $i \geq 2$ . But  $\text{Var } \zeta_{m,j} = p_j^2(1-p_j^2)$  and  $\text{Cov}(\zeta_{m,j}, \zeta_{m-1,j}) = p_j^3(1-p_j)$ . Thus  $\text{Var } X_{n,j}$  is

$$V_{n,j} = \frac{1}{\lambda^2} p_j^2(1-p_j^2) \sum_{m=1}^n d_{m,j}^2 + \frac{2}{\lambda^2} p_j^3(1-p_j) \sum_{m=2}^n d_{m,j} d_{m-1,j}.$$

Now  $W_n$  is approximately normal, with mean 0, and variance  $\sum_j V_{n,j}$ .

To use the model, identify a pool of respondents. Estimate  $p_j$  for each firm in the pool, as the fraction of periods for which it responds; now  $\lambda$  is the average of these  $p_j^2$ 's. We know  $d_{m,j}$  whenever the firm responds both in period  $m$  and period  $m-1$ , i.e.,  $\zeta_{m,j} = 1$ ; we can estimate  $\sum_{m=1}^n d_{m,j}^2$  by

$$n \cdot \left( \sum_{m=1}^n \zeta_{m,j} d_{m,j}^2 \right) / \left( \sum_{m=1}^n \zeta_{m,j} \right).$$

Likewise, we can estimate  $\sum_{m=2}^n d_{m,j} d_{m-1,j}$  as

$$(n-1) \cdot \left( \sum_{m=2}^n \zeta_{m,j} \zeta_{m-1,j} d_{m,j} d_{m-1,j} \right) / \left( \sum_{m=2}^n \zeta_{m,j} \zeta_{m-1,j} \right) .$$

Thus  $V_{n,j}$  is estimable.

The assumptions of the model are not especially realistic, but should lead to an understatement of the likely size of the error in the estimate. In other words, the random error in the MFCR estimates is judged to be even larger than the random error in the model.

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APPENDIX H

SUMMARY OF USER INTERVIEWS

## APPENDIX H

## SUMMARY OF USER INTERVIEWS

No regulatory uses of EIA-3 data were found during this preliminary study, and further research is needed to identify specific analyses and models that use information collected by EIA-3. A preliminary attempt was made to identify users of this information and determine their needs. This appendix summarizes the results.

## LACK OF A CONSTITUENCY

The estimates generated by the MFCR system are made available to users in a series of periodic DOE publications discussed earlier. Because these publications also contain much information not gathered by form EIA-3, identification of organizations or individuals that specifically use estimates based on EIA-3 data is difficult. Although there is a large, identifiable constituency for coal information in general, there does not appear to be an identifiable set of users who are primarily concerned with the fraction of coal stocks and consumption reported by the MFCR system. The absence of a specific constituency is explained in part by the nature of MFCR as a catch-all of coal consumption left over when the other major consumption sectors are accounted for. Utilities, the largest coal consumers, are regulated by federal and state agencies that require coal consumption data in order to perform their function. Export coal is monitored by the Department of Commerce. There is no corresponding user inside or outside government requiring specific coal data on the total consumption and stocks of consumers of 10% of the coal that is burned.

It should be noted, however, that there exists a large constituency for coal information in general; it is found in government, industry, and the financial and academic communities. These groups need coal information for the same reasons that they need other economic data: to monitor past performance, to ascertain current trends, and to attempt to predict the future. These capabilities, in turn, provide input for public policy and private investment, planning of operations and emergency procedures, and determining malfunctions and maldistributions in energy systems.

#### RESULTS OF USER INTERVIEWS

An attempt was made to identify users of EIA-3 information and determine their needs. Possible users were selected from a list of recipients of the Weekly Coal Report, a publication that includes information obtained from EIA-3. As can be seen from Figure H-1 recipients of this report represent many categories in both the public and private sectors. An attempt was made to interview several users from each category in order to identify organizations that specifically use MFCR data and to learn how this information is used. It should be noted that the group of users identified using this method is not necessarily comprehensive. No effort was made to identify future users or potential users who do not receive the Weekly Coal Report.

From the interviews, several major criticisms of the MFCR system were identified. These criticisms concern the timeliness, accuracy, and scope of the published data. Each of these criticisms is discussed below.

Public Sector

- International organizations
- Foreign government agencies
- Domestic government agencies--all levels
- Universities
- Public libraries
- Public utilities
- National research laboratories
- Public interest groups
- Military

Private Sector

- Coal producers (mining and distributing firms)
- Coal users (utilities and manufacturing, processing and metallurgical firms)
- Other utilities
- Mining equipment manufacturers
- Railroads
- Banks
- Brokerage firms
- Trade unions
- Trade associations
- Trade publications
- Newspapers, magazines
- Private libraries
- Consultants
- Private individuals

Figure H-1. Weekly Coal Report Distribution: Categories of Recipients

Most of the firms using MFCR information require current information. There is a three-month lag between the consuming period and publication of the preliminary data. Final estimates are not published until one year after publication of preliminary data. Although revisions of preliminary data are small (usually less than 10%), such revisions are important to those who need information on trends, because changes are typically on the order of only a few percent. Thus, the time lag between the consuming period and publication of the estimates reduces the value of these estimates for many users.

Users also question the accuracy of the extrapolation procedure used by the EIA to obtain an estimate of national consumption from their data. The extrapolation procedure is based on a 1954 data base that some users consider outmoded. Other users feel that a larger sample should be used. A third comment concerning the extrapolation procedures is that no explanation of the procedure is available to those who want to interpret the data. Because of these weaknesses in the present system, some users feel that EIA should develop a new procedure for obtaining a national estimate of coal consumption and stocks in the MFCR system.

Many organizations use the MFCR data to check the accuracy of similar data from other sources that they consider to be more accurate or timely. General agreement between the two sources increases their confidence in the other sources. Some users also review the Weekly Coal Report in order to obtain an idea of what the government thinks is happening in the coal industry.

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Some users suggest that the scope of the report be expanded by publishing information on transportation and distribution of coal within the system. For example, EIA could publish information on where firms in each state obtain their coal and how it is transported. This would supplement information obtained on a quarterly basis from form EIA-6 (Distribution of Bituminous Coal and Lignite Shipments). Some users would prefer that the transportation and distribution data, as well as data on consumption, stocks, price, and coal type, be disaggregated by either state or region.

Finally, some users would prefer an analysis or summary of the data to accompany the report to point out and explain trends that are not obvious from the data in its published form.

#### COAL INFORMATION SOURCES FOR POTENTIAL USERS

Having obtained somewhat limited response in attempts to contact users through mailing lists for DOE publications, an attempt was made to map out key sources of coal information used by the financial community. Below is a brief characterization of three "networks" of coal information that were discovered through a series of exploratory interviews in New York City. The three networks are as follows.

1. Financial Analysts

Information gained directly from coal company executives affects the analysts' buy/sell recommendations to banks, individual investors, etc. Unfavorable reports from these analysts can lead to investors dropping stocks. A lot of money is involved. The public believes that the

analysts have the best and most up-to-date information about what is happening with coal. Our interviews indicate that these financial analysts have quite accurate information on which to base coal production consumption predictions.

2. Bankers

There are actually two groups of bankers: those who handle trust accounts and those who handle corporate investments. The former invest the money of bank customers; they work with Wall Street brokers who wish to buy or sell stocks for trust accounts. On the corporate side, a network of bankers, financial analysts, etc., trade coal information for corporate investment purposes.

3. Publishers of Information

A third, looser, network involves producers of publicly available information, such as McGraw-Hill and the National Coal Association. These two public information generators use the same sources for their data and produce very similar reports.

Data from these three sources varies considerably in terms of timeliness and accuracy. That from the first group, the financial analysts, can be assumed to be quite accurate and the most up-to-date and detailed. The bankers' data is equal or better than that of the analysts in terms of accuracy, but is not as timely. The data from the public disseminators is the least accurate and timely of the three sources.

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APPENDIX I

SUMMARY OF RESPONDENT INTERVIEWS

## APPENDIX I

## SUMMARY OF RESPONDENT INTERVIEWS

Members of the Data Validation group conducted interviews with a sample of respondents to form EIA-3. Interviews were conducted in the Western region and Chicago and in the Pennsylvania - West Virginia region. This appendix presents a summary of the assessments of the form by the respondents.

The following general evaluations of the form summarize comments of the respondents:

- The report is simple and easy to complete. It is prepared routinely with relatively few problems.
- Most reported data are also prepared for management, in some cases from internal reports. The form is typically filled in by lower management personnel, and passed upward upon completion.
- The correct use of zero and null responses is not well understood. Blank cells may be understood to mean "information not relevant" or "unknown."
- The purpose and use of reported data are not known by the respondents.
- Variation in information handling and quality among respondents makes it very difficult to draw general conclusions concerning the numerical accuracy of the source data.
- Information reporting systems vary with the organizational structure of the respondent. Information systems in multi-plant facilities often differ from those in single-plant facilities.
- Although the MFCR system is a fuel reporting system, it is treated by the EIA as a coal reporting system. For example, a respondent who had been reporting other fuels was informed by EIA that he need not report if the plant consumed no coal.
- There are definitional problems stemming from the emphasis on coal. In one plant, the form is filled by employees responsible for the boilers. Hence, under other fuels, they report only boiler gas and exclude gas used elsewhere in the plant.

- Balancing of entries seems to be given priority over accuracy of entries. When stockpile corrections are made, the deviation is often treated as an adjustment to consumption in order to maintain numerical balance. Since these corrections are made infrequently, monthly consumption can be considerably misstated.
- Respondents were very concerned about the burden placed upon them by the Weekly Coal Report during the 1977-78 coal strike. These reports were very inconvenient because they did not allow sufficient lead time.

In the course of respondent interviews, the following sources of error in the completed forms were identified by respondents:

- The boundary between bituminous and sub-bituminous coal does not appear to be understood fully by some firms nor observed carefully in the reporting; likewise, the boundary between coal used for energy purposes and coal as a raw material is not known with precision.
- Coal stockpiles are irregularly shaped and difficult to measure. They are surveyed periodically by outside surveyors; between surveys, stocks are simply determined by arithmetic, using the surveyed stock pile and monthly receipts and consumption.
- Many Pennsylvania coal users receive coal from nearby sources by truck, not rail. Trucks are weighed - first loaded then empty, and the net weight is obtained. Receipts are determined from the truck weighing slips that show gross, tare, and net; slips must be tallied monthly. Elsewhere, there is no weighing at the plant at all; mine and railroad weight slips are simply accepted by the consumer.
- Consumption may be determined by a conveyor weighing device that is read daily, then totaled monthly, or, as in the case of smaller consumers, determined by the difference between stockpile size, measured at intervals plus coal receipts.
- Sulfur content and Btu content are determined either by the consumer or by outside lab analyses, conducted in order to control the quality of coal and adherence to contract specifications. Most respondents state that their plants receive coal from more than one source or receive more than one type of coal from a single source. Consequently, exact determination of monthly averages of sulfur content and Btu content would require substantial calculation effort. The approximations and averagings which occur likely produce figures which are not very accurate. One respondent reported that ash is not

weighed at all; item 2C is calculated as a percentage of the previous year's consumption, divided by 12, and this figure is simply copied from month to month through the year.

- Purchase price is determined from the contract. Again, careful averaging would be necessary for a precise figure and that is not apparently done. As the sum of coal and freight costs, the unit price may change within a month, and often does, or may vary depending on date of shipment or source of coal.
- There does not appear to be provision for a permanent claim of confidentiality. Those who claim proprietary nature of their information must claim confidentiality each month. One respondent reported that the sensitive data is simply omitted from the form.

This report was done with support from the Department of Energy. Any conclusions or opinions expressed in this report represent solely those of the author(s) and not necessarily those of The Regents of the University of California, the Lawrence Berkeley Laboratory or the Department of Energy.

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