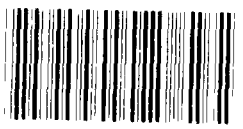
BY THE PROFESSIONAL AUDIT REVIEW TEAM

Report To The President And The Congress

Performance Evaluation Of The Energy Information Administration

Department of Energy



PART-84-1
JUNE 15, 1984

PROFESSIONAL AUDIT REVIEW TEAM'S REPORT TO THE PRESIDENT AND THE CONGRESS

PERFORMANCE EVALUATION OF THE ENERGY INFORMATION ADMINISTRATION DEPARTMENT OF ENERGY

OVERVIEW

The Energy Information Administration (EIA) is the focal point for developing and maintaining comprehensive energy information programs. The Congress intended that EIA be capable of providing credible energy data and analyses necessary for sound decisions on national energy policy.

The Congress mandated the Professional Audit Review Team to review and evaluate EIA's work and to determine whether data collection and analysis activities are being performed in an objective and professional manner consistent with the intent of the Congress.

This report should be useful to the President of the United States and the Congress in obtaining a current perspective on EIA's operational environment and its overall performance.

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PROFESSIONAL AUDIT REVIEW TEAM

441 G Street, N.W.
Washington, D.C. 20548

To the President of the United States,
the President of the Senate, and the
Speaker of the House of Representatives

This report discusses the results of the Professional Audit Review Team's (PART's) evaluation of the performance of the Energy Information Administration (EIA), as required by the Department of Energy Organization Act (Public Law 95-91, August 4, 1977).

Copies of this report are being sent to the Secretary of Energy, the Director of the Office of Management and Budget, the chairmen of the energy-related congressional committees, and to the heads of the PART member agencies.

F. Kevin Boland, Chairman
General Accounting Office

Ronald E. Kutscher
Bureau of Labor Statistics

Barbara Bailar
Bureau of the Census

Joseph P. Mulholland
Federal Trade Commission

Charles W. Bryson
Securities and Exchange
Commission

responsibility rests with the Administrator. (See p. 2-10.)

Lower budget levels since 1981 have caused EIA to drastically reduce the scope and depth of quality assurance activities. EIA maintains that because EIA's information had previously reached a high quality level, it would continue to be useful and important for energy decisionmaking and policymaking despite the potential for short-term quality erosion.

PART's review shows, however, that EIA does not have an adequate basis for making an overall judgment on the quality level of all of its data. Specifically, EIA has continued to deemphasize the use of validation studies to evaluate the accuracy of the data it collects and publishes.

By the end of 1982, EIA had completed validation studies involving 14 (or about 16 percent) of the 88 current EIA data collection forms. EIA believes that, because of their wide-scoped evaluations of all aspects of EIA's data collection forms, large-scale validation studies are too expensive. EIA now favors more narrowly scoped "quality audits."

EIA considers these quality audits to be more timely and less expensive than validation studies. (See pp. 2-7 through 2-9.) EIA completed four quality audits covering 11 data collection forms as of September 30, 1983, and plans to perform about 6 more during fiscal year 1984.

PART notes that the concept of quality audits is in its early stage of development and that EIA should give further consideration to the scope and frequency of these audits. (See p. 2-7.)

Also, EIA has not developed adequate documentation of its models to enable others to evaluate the quality of its analytical publications as the Congress intended. The models provide the basis for EIA's analysis and forecast reports.

EIA has 16 "basic" models which the Administrator has designated as being sufficiently important to require sustained support and public scrutiny. EIA contracted for evaluations of the documentation for 10 of the 16 basic models. These evaluations found that none of the 10 models was considered to be fully documented according to EIA's criteria. (See pp. 2-2 through 2-5.)

The Administrator subsequently issued a memorandum to EIA senior staff reiterating EIA's requirement to make adequate documentation available to the public at the time EIA's reports are published. Also, EIA has improved its requirements and procedures for documenting EIA's basic forecast and analysis models. (See p. 2-5.)

PART also found that:

--EIA has not ensured that its program offices and the Office of Statistical Standards have a clear understanding of the division of responsibilities for specific quality-related activities.

PROFESSIONAL AUDIT REVIEW TEAM'S REPORT TO THE PRESIDENT AND THE CONGRESS

PERFORMANCE EVALUATION OF THE ENERGY INFORMATION ADMINISTRATION DEPARTMENT OF ENERGY

EXECUTIVE SUMMARY

The Energy Information Administration (EIA) was made the focal point for developing and maintaining comprehensive federal energy information programs when it was established in 1977 by the Department of Energy (DOE) Organization Act.

EIA was organized as an independent entity within DOE to ensure that energy data collection, forecasts, and analytical functions are not biased by political considerations or energy policy formulation and development activities. (See p. 1-1.)

The Professional Audit Review Team (PART) also was established by the DOE Organization Act to determine whether EIA's activities are performed in an objective and professional manner. (See p. 1-6.)

In this review PART found that EIA:

--Is strengthening internal controls to better ensure it's objectivity and independence from policy formulation and advocacy functions. (See chapter 3.)

--Is in the process of assessing its staffing needs. (See pp. 4-1 through 4-3.)

--Has enhanced its annual planning activities. (See p. 4-3.)

--Has made significant progress in determining the relevancy of its energy data and publications. (See chapter 5.)

However, a continuing, serious problem is the need for EIA to expand and improve its quality control and assessment activities to ensure the accuracy and credibility of energy information. (See chapter 2.)

The EIA Administrator, in commenting on a draft of PART's report, said that PART had identified several key concerns which he shares. He described the actions that EIA would take, or was taking, to implement each of PART's recommendations. (See appendix E.)

QUALITY ASSURANCE

EIA historically has emphasized the importance of its quality control and assessment activities. (See p. 2-1.)

EIA has three program offices which are responsible for collecting, producing, and analyzing information on major fuel areas. The program offices are responsible for quality control over their work.

A fourth office, the Office of Statistical Standards, is responsible for monitoring or assessing the quality control activities carried out by the program offices.

The overall quality assurance

collection and applied analysis functions from DOE's responsibility for formulating and advocating national energy policy.

The Administrator is required to use independent judgment in carrying out EIA's missions and is held directly accountable for the quality of EIA's data and analyses. (See p. 3-1.)

PART analyzed EIA's internal documentation concerning its relationship with DOE and OMB on several data reporting matters. PART found that EIA had resisted attempts to review the need for EIA reports.

Also, EIA has taken steps to avoid the appearance that EIA products present the views of DOE. In addition, EIA has continued to enhance its objectivity by conducting workshops on its products and by obtaining the expert review and comment of its advisory committee. (See pp. 3-3 through 3-5.)

EIA's products generally fall into two broad categories--periodic statistical reports and analytical reports. Before its July 1981 internal reorganization, EIA had procedures to record the assumptions used in its analyses and to clearly describe those analytical products that had been prepared at a specific client's request.

In May 1982, PART recommended that EIA restore these internal controls because it believed that they were essential to maintaining EIA's image as a credible and independent source of energy information. EIA agreed that its internal controls needed improvement and said that an analysis tracking system was being developed by the Office of Planning and Resources and would be implemented in March 1982. (See pp. 3-1 through 3-3.)

In conducting its current review, however, PART found that, because of higher priority work requirements, EIA had deferred implementation of the tracking system.

At the time of PART's audit, EIA was developing these internal controls but, because the system was not operational during PART's review, PART had no basis for assessing its adequacy as an effective internal control over policy influences on EIA's work. (See p. 3-3.)

PART recommends that the Administrator have the Director, Office of Planning and Resources, ensure

--that a central process and uniform procedures are used to record the assumptions that requesters want to have incorporated into EIA's forecasts and analyses and

--that the resulting products clearly describe the requester's specifications. (See p. 3-8.)

In his comments on the draft PART report, the Administrator stated that EIA would issue orders which will formalize existing operational processes and procedures for analytical products and for services provided to external customers. (See p. 3-8.)

STAFFING AND PLANNING

For EIA to meet its specialized

--EIA's program offices vary widely in carrying out their quality control functions and have not developed office-wide procedures.

--EIA has not assessed quality control activities to determine whether the program offices are giving sufficient resources to these activities to ensure high quality products.

(See pp. 2-2 and 2-10 through 2-12.)

In addition, PART noted that, in a May 1983 report to EIA, a contractor concluded that, although many improvements had been made in its frames--the universes from which EIA collects its data--additional improvements are needed to keep the frames current and reliable. EIA has not completed its evaluation of this report nor taken action on the recommendations. (See pp. 2-9 and 2-10.)

PART recommends that the Administrator take actions to control and document the quality of EIA's data. In summary, PART recommends that the Administrator

--address the scope and frequency of the quality audits;

--improve the documentation for models;

--improve the quality of frames;

--assign clear responsibilities for specific quality control and assessment activities;

--evaluate the comparative effectiveness and efficiency of the program offices' quality control strategies; and

--have program offices develop broad, office-wide quality control procedures.

(See pp. 2-13 and 2-14 for PART's specific recommendations in each of the above areas.)

The Administrator, in commenting on a draft of the PART report, stated that the budget and staffing reductions since fiscal year 1981 have forced EIA to choose between eliminating part of EIA's core program or postponing quality investments.

EIA chose the latter option believing that it would cause more damage to quality by suspending and restarting a statistical series than by temporarily delaying quality program activities.

To implement PART's recommendations on quality assurance, EIA will develop a Quality Program Plan which addresses goals, activities, and resources for both quality assurance and quality control.

(See pp. 2-14 and 2-15 and appendix E.)

INDEPENDENCE AND OBJECTIVITY

The independence and objectivity of EIA's activities are essential to providing credible energy information and analyses.

The DOE Organization Act created EIA as a separate organization within DOE and insulated EIA's energy data

Comprehensive reviews for alternative energy and federal nuclear data requirements were completed subsequent to PART's audit, and such a review is under way in the natural gas area. (See p. 5-1.)

Reviews of requirements relating to coal, energy markets, and end use also have been performed. However, they were not comprehensive. (See p. 5-1.)

PART recommends that the Administrator have the director of each program office develop a plan for conducting a comprehensive data requirements study in each energy topic area and for periodically updating these studies. (See p. 5-7.)

In his comments on the draft report, the Administrator stated that EIA will promulgate a formal requirement for planning data requirements studies. (See p. 5-7.)

requirements, it must have the proper composition of professionals in a number of technical areas. In its May 1982 report, PART noted that EIA did not have adequate information on its personnel needs and recommended that EIA assess those needs.

EIA is now in the process of making a staffing needs assessment. This should help EIA to ensure that its services are being effectively and efficiently delivered by each of its offices. (See pp. 4-1 through 4-3.)

EIA has also made progress in developing a comprehensive planning process by enhancing its annual operation planning activities. For example, descriptions of specific projects now provide information on the staff time required and associated contract costs.

Also, the relationship between the annual operating plan and the annual procurement plan is being made more specific. However, EIA has not prepared the multi-year plan needed for a comprehensive planning system.

EIA plans to have a multi-year plan by the summer of 1984. (See pp. 4-1 and 4-3 through 4-4.)

PART recommends that the Administrator have the Director, Office of Planning and Resources,

--assess the number and types of skills EIA needs to meet its overall requirements and to determine whether staffing allocations to each office are appropriate and

--develop a comprehensive multi-year plan. (See p. 4-4.)

In his comments on the draft PART report, the Administrator stated that EIA will complete its staffing study in progress and will develop improved ways for planning human resources requirements in conjunction with EIA's multi-year and annual operating plans.

He also stated that EIA will implement improvements in its multi-year planning process to refine what has been accomplished in the past 5 years. (See p. 4-4.)

USEFULNESS OF DATA PUBLICATIONS

For EIA to meet its responsibilities in a cost-effective manner, it should know the specific needs of the current and potential users of its data.

PART, in its May 1982 report, said that most of EIA's studies on the use of its data have had serious shortcomings from a user-needs standpoint, and little had been accomplished toward developing a systematic approach to identifying the needs of current and potential data users.

PART found that program offices have recently made significant progress in reviewing user requirements for several major topic areas of energy information. In 1982, EIA completed comprehensive reviews of the data requirements for the oil and electric energy topic areas.

Contents

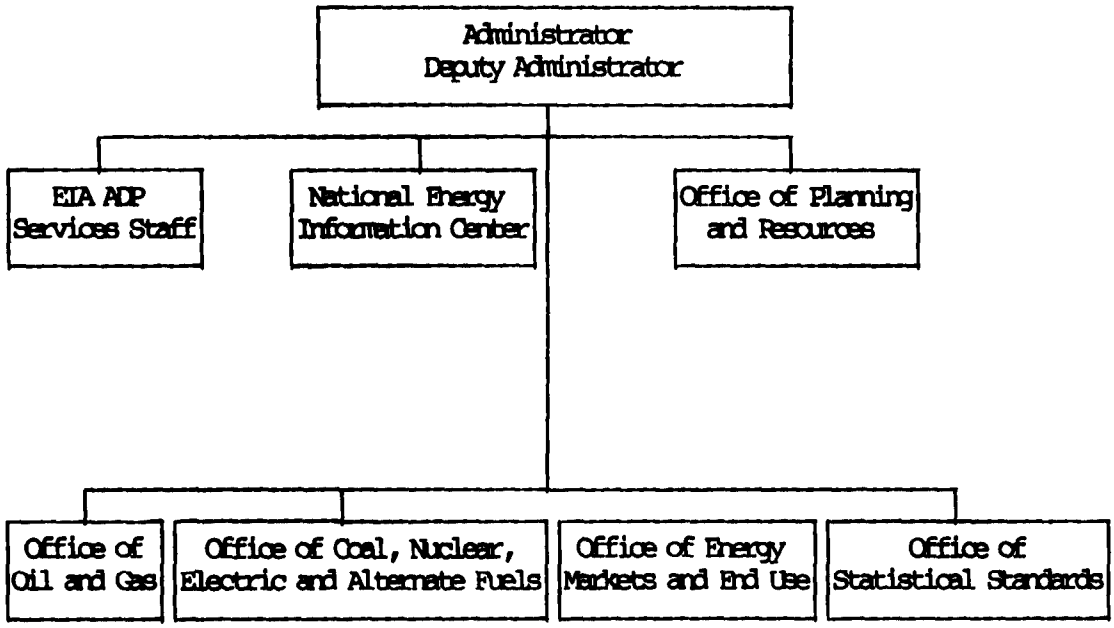
ABBREVIATIONS

DOE	Department of Energy
EIA	Energy Information Administration
GAO	General Accounting Office
OMB	Office of Management and Budget
PART	Professional Audit Review Team

Congress attempted to create an organization capable of providing credible energy data and analyses necessary for sound decisions on national energy policy.

EIA's ORGANIZATIONAL STRUCTURE

The principal components of EIA, as of September 30, 1983, are shown in the organization chart below. A more detailed organization chart is shown in appendix A.



Three of the offices shown above are responsible for collecting, producing, and analyzing information on major fuel areas. These are EIA's program offices and include:

--The Office of Oil and Gas;

--The Office of Coal, Nuclear, Electric and Alternate Fuels; and

--The Office of Energy Markets and End Use.

The data provided by the offices are published in statistical periodicals, special studies, and analysis reports.

The Office of Oil and Gas collects, processes, and interprets data about crude oil, petroleum products, natural gas, and natural gas liquids. The office also analyzes and projects the level and distribution of petroleum and natural gas reserves and production.

The Office of Coal, Nuclear, Electric and Alternate Fuels gathers and integrates data on coal, nuclear energy, electric power, and alternate fuels. It also develops projections of supply and demand for the fuels.

CHAPTER 1

INTRODUCTION

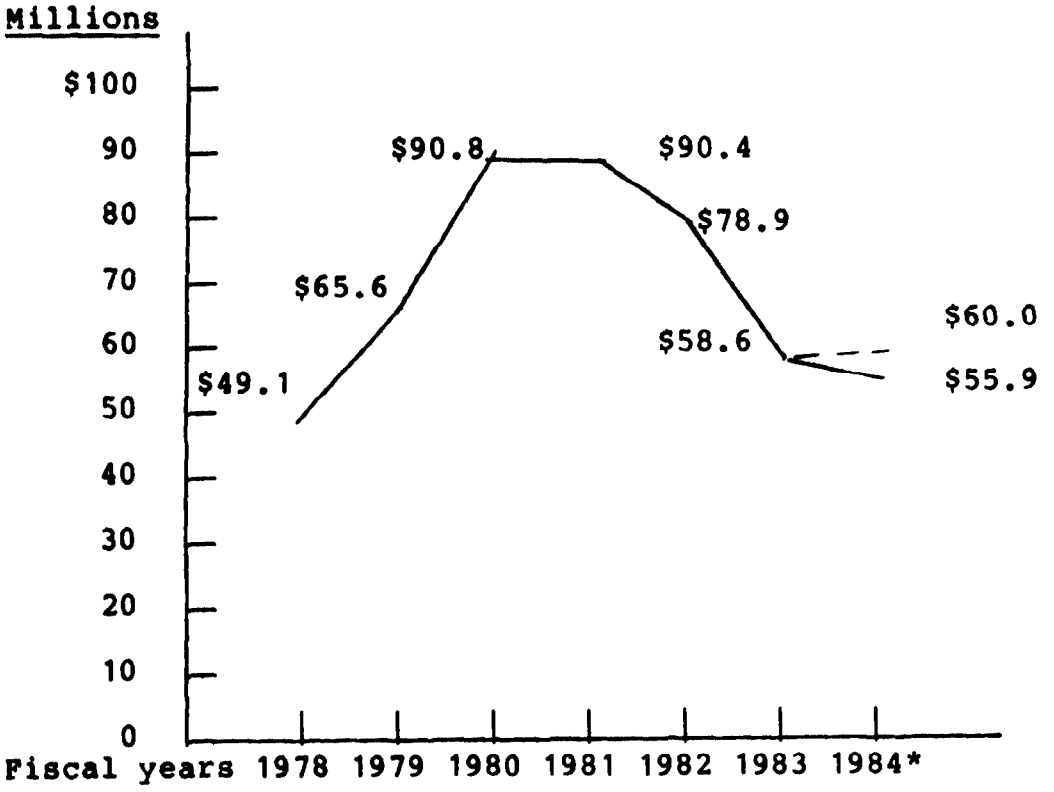
Energy shortages during the past decade increased the nation's awareness of its energy problems and the need for adequate information to formulate and develop energy policies and programs. In 1976, 23 executive departments and independent agencies operated 238 major energy data gathering programs. However, during most of the 1970's, these fragmented programs were unable to provide comprehensive information needed for policy decisions during energy emergency situations. Also, federal energy information programs were criticized for increasing the energy industry's reporting burden, without adequately contributing to an understanding of energy problems.

Established in 1977 by the Department of Energy (DOE) Organization Act, the Energy Information Administration (EIA) was made the focal point for developing and maintaining comprehensive energy information programs. In accordance with the act, EIA was given responsibility for information systems previously situated in the Federal Power Commission, the Bureau of Mines, and the Federal Energy Administration. The act also transferred to EIA the responsibilities of its predecessor, the Federal Energy Administration's Office of Energy Information and Analysis. These responsibilities included carrying out a unified program to collect, process, and publish data and information relevant to energy resource reserves, production, demand, and technology.

The DOE Organization Act also recognized the need to ensure that energy data collection and analyses functions are not biased by political considerations or energy policy formulation and development activities. The act specified that EIA be organized as a separate entity within DOE, separated from DOE's role in formulating and advocating national energy policy. EIA was to be headed by a professionally qualified administrator appointed by the President with the advice and consent of the Senate. In specifying the character of EIA and in describing some of the statistical and forecasting capabilities and reports it desired, the

Figure 1

Changes in EIA's Budgets for
Fiscal Years 1978 Through 1984



*Financing for EIA support of the Federal Energy Regulatory Commission was included in EIA's appropriations through fiscal year 1983. The amount in EIA's fiscal year 1983 appropriation was $6 million. The Commission's justification for its fiscal year 1984 budget request included $4.1 million to reimburse EIA for its support. For comparative purposes, the dotted line adds this additional $4.1 million to EIA's fiscal year 1984 budget.

The Office of Energy Markets and End Use develops and operates EIA's statistical and forecasting information systems on energy consumption and supply. The office collects and processes data on energy consumption, supply and demand balances, prices, and economic and financial matters. It also prepares and publishes regular reviews of foreign energy developments that could affect the U.S. economy.

As a support office, the Office of Statistical Standards provides EIA with strategies for survey and statistical design and monitors quality control for information collection, analysis, and forecasting. The office manages the clearance process of energy data forms for public use and is the DOE liaison with the Office of Management and Budget (OMB) and other federal agencies on matters relating to projects mandated by the Paperwork Reduction Act of 1980 (Public Law 96-511, December 1980). The office also monitors and assesses the quality and meaningfulness of energy information and the processes used to collect, analyze, and forecast information. It provides periodic reports on quality control activities throughout EIA.

A description of some of the major services provided by EIA's other support offices follows:

--The Office of Planning and Resources manages EIA's program planning, evaluation, project control, budgeting, procurement, personnel, and legislative support services.

--The ADP Services Staff provides computer-processing support for DOE's energy information programs, including those of EIA, the Federal Energy Regulatory Commission, and other DOE organizations.

--The National Energy Information Center edits manuscripts and prepares graphics for EIA publications and distributes all EIA products. The center also responds to public inquiries.

CONTINUING TRANSITION IN ENERGY INFORMATION PROGRAMS

In our May 1982 report,[1] we noted that, during the year ended December 31, 1981, EIA had moved from a growing information organization to one undergoing major funding and staffing reductions and striving to maintain its basic data systems and services. Since that report was issued, EIA has continued to adjust to further reductions in its available funding and staffing levels, as shown in figures 1 and 2.

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[1]PART, Performance Evaluation of the Energy Information Administration, PART-82-1, May 19, 1982.

--eliminate a requirement that EIA establish a Financial Reporting System to provide detailed information on the structure of the energy industry;

--eliminate a requirement that EIA develop and maintain a system for tracking and reporting every transaction, sale, exchange, or shipment involving exports of coal and oil,

--relieve EIA from having to provide an annual report on coal reserves disclosure;

--repeal the requirement that EIA develop a state-level middle distillate petroleum products monitoring system; and

--modify the requirements for EIA to prepare forecasts of energy consumption and supply trends.

EIA estimates that the enactment of the bill would reduce costs by $133 million over 5 fiscal years, or by $26.6 million a year. On July 1, 1983, the legislative requirement for a state-level middle distillate monitoring system expired, accounting for $8.6 million per year of the above projected savings.

ROLE OF PROFESSIONAL AUDIT REVIEW TEAM

The Congress, in the DOE Organization Act, mandated that the Professional Audit Review Team (PART) make an annual review and evaluation of EIA's work and determine whether data collection and analytical activities are being performed in an objective and professional manner consistent with the intent of the Congress. In accordance with the authorizing legislation, PART consists of a Chairman, designated by the Comptroller General of the United States, and members drawn from the following federal agencies:

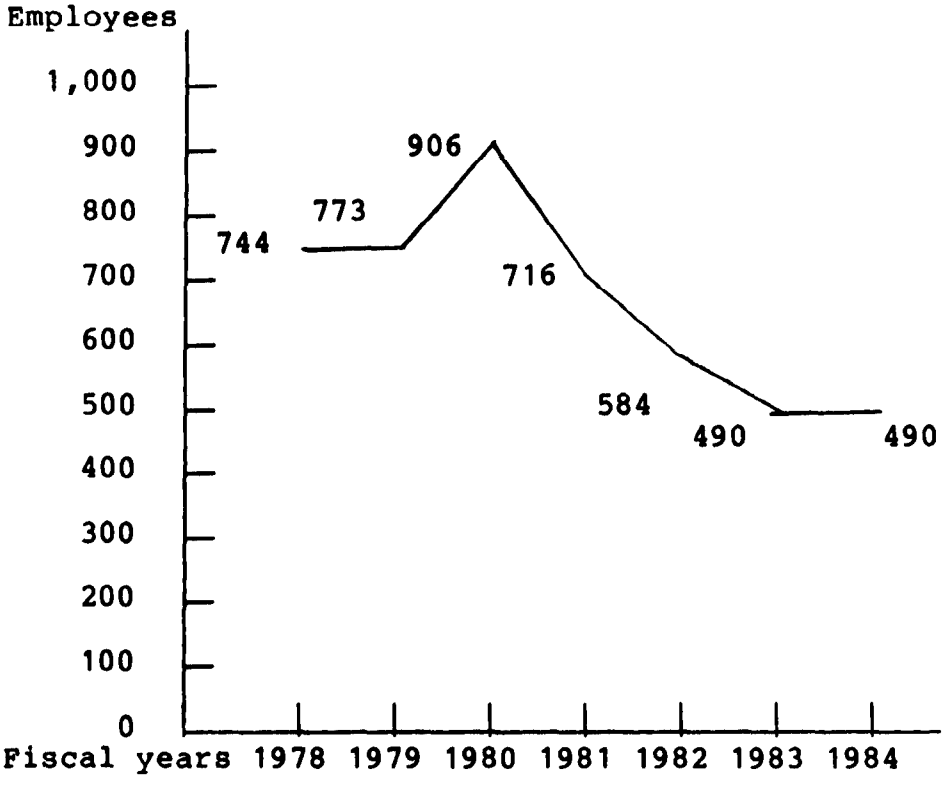
--Bureau of the Census.
--Bureau of Labor Statistics.
--Council of Economic Advisers.
--Federal Trade Commission.
--Securities and Exchange Commission.

The member from the Council of Economic Advisers left the Council during the course of this review and a new member had not yet been appointed as of the date of this report. The PART staff members during the period covered by this report and their agency affiliations were

Mr. Edward A. Kratzer, General Accounting Office
Mr. Carl D. McClure, General Accounting Office
Mr. L. Lewis Adams, General Accounting Office
Ms. Jeanne Fox, General Accounting Office

Figure 2

Changes in EIA's Authorized Staffing for Fiscal Years 1978 Through 1984



The EIA Administrator, in commenting on a draft of this report (see app. E), stated, "I would amplify further the extent of those constraints by pointing out that in constant dollars, EIA's budget for FY 1984 is 48 percent lower than its peak year (FY 1980), and 18 percent lower than the budget for EIA's first year (FY 1978)."

To reduce the costs of federal energy information, in 1981 and 1983, DOE's Office of General Counsel submitted to the Congress proposed legislation that would repeal energy information requirements under several laws. The latest proposal, The Energy Information Administration Reports Reduction Act, was sent to the Congress on April 13, 1983. The bill would

--eliminate the requirement that EIA gather information quarterly and produce quarterly reports to the Congress on domestic reserves and production, imports, and inventories of crude oil, residual fuel oil, refined petroleum products, natural gas, and coal;

These definitions are elaborated on in chapter 2. Also, the quality program activities we are reporting on are described in sufficient detail so that readers familiar with other EIA terms and definitions should not be unduly inconvenienced. After the period covered by our report, EIA adopted a single set of terms and definitions for use throughout the organization. Usages in this report do not conform with the new terms and definitions adopted by EIA.

OBJECTIVES, SCOPE, AND METHODOLOGY

This report describes the results of our evaluation of EIA's activities from January 1982 through September 1983. However, to maintain a current perspective on these activities, subsequent actions are also recognized. Our review focused on the following aspects of EIA's operations:

--Quality control and assessment activities to ensure the accuracy and credibility of energy information (ch. 2).

--Independence from policy formulation and advocacy functions (ch. 3).

--EIA's staffing and planning processes (ch. 4).

--Efforts to determine the relevancy of energy data and publications (ch. 5).

In each of the above areas, we gave particular attention to the actions that EIA has taken in response to the recommendations in our previous reports.

In performing our evaluation, we examined EIA policies, procedures, contracts, records, and other documents relating to its operations. We also interviewed EIA officials responsible for program planning, energy models, quality assurance, and relevancy of data and publications. In addition, to obtain the widest possible range of information upon which to base our evaluation of EIA, we attended conferences, symposia, and committee meetings where energy data collection, validation, forecasts, and energy modeling matters were discussed by energy officials from business, research firms, and educational institutions. Our review was performed in accordance with generally accepted government auditing standards.

During our review we found that the various EIA organizational elements were using differing terms and definitions to describe activities in EIA's quality program. We adopted a single set of terms and definitions to record the information we collected and to prepare this report. They are as follows:

Quality assurance--encompasses quality controls and quality assessment; this is the overall responsibility for quality that rests with the EIA Administrator.

Quality controls--the activities carried out by the program offices to build in quality as the data are being gathered, processed, analyzed, and published.

Quality assessment--the independent evaluation of the effectiveness of the quality controls; this is the function of the Office of Statistical Standards.

We further found that:

--EIA has not ensured that its program offices and its Office of Statistical Standards have a clear understanding of the division of responsibilities for specific quality-related activities they are to conduct.

--EIA's program offices vary widely in their approach to carrying out quality control functions and have not developed office-wide procedures for performing quality control work.

--EIA has not assessed quality control activities to determine whether the program offices are giving sufficient resources to these activities to ensure high quality products.

In addition, we noted that an EIA contractor stated in a May 1983 report that, although many improvements have been made in its frames--the universes from which EIA collects its data--improvements were needed in a number of areas. Such areas include updating and documenting the frames.

The Administrator, in his comments on this report (see app. E), stated that, under the resource constraints with which EIA has been faced since 1981, the major resource decision that he had to make was to choose between eliminating part of EIA's core program and postponing quality investments. He stated that, for the past 2 years, he chose the latter option because far greater damage is likely to be done to quality by suspending and attempting to restart a statistical series than by temporarily delaying quality evaluations, frames maintenance, and other quality program activities.

It should be noted that the choice has not always been to forego quality maintenance rather than eliminate data collection programs. As noted in EIA's 1983 Annual Report to Congress, beginning in 1982 and continuing in 1983, EIA has eliminated and consolidated its periodical publications. As publications were eliminated, the supporting data collection forms were also eliminated. The frequency of some data collections and publications was reduced. Further, mid-term and long-term integrative modeling projects were terminated.

IMPROVED DOCUMENTATION OF MODELS IS NEEDED

Under the DOE Organization Act, EIA is required to ensure that adequate documentation for its statistical and forecast reports is made available to the public at the time the reports are published. Such documentation includes a description of the purpose, methodology, assumptions, capabilities, and limitations of the model which provided the basis for the report. Full model

CHAPTER 2

QUALITY ASSURANCE FOR EIA's PRODUCTS SHOULD BE STRENGTHENED

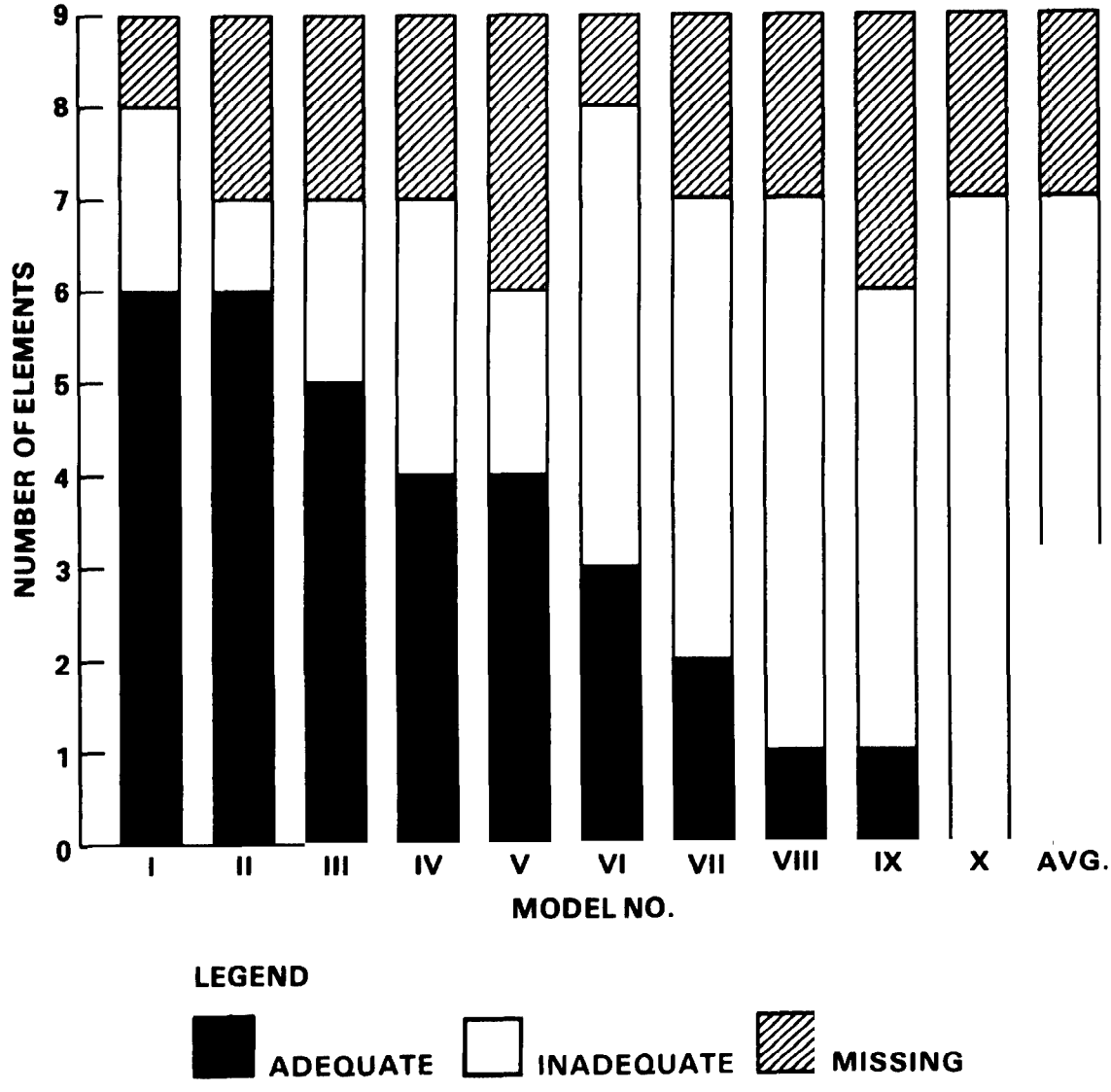
A primary concern leading to the creation of EIA was the need for proper control and documentation of energy information products to ensure that they are of high quality. Although EIA historically has emphasized the importance of its quality control and assessment functions, our previous reviews have shown that EIA was not making adequate progress in determining the accuracy and reliability of its energy information. Further, in the last 2 fiscal years, EIA has drastically reduced the scope and depth of activities directed toward assuring the quality of its work.

In addition, the EIA Administrator, in congressional testimony on EIA's budget request for fiscal year 1984, said that, with the budget level being requested, EIA would once again forego certain quality maintenance activities. He stated that, although EIA will maintain a minimal level of quality by conducting some quality control and assessment activities, capital investments in quality maintenance would not take place. While the Administrator said that he would not guarantee that EIA's information products would be of the same quality as those in the past, he stated that EIA's information had reached a high level of quality over the past few years and would continue to be useful and important in the energy decisionmaking and policymaking process.

We found, however, that EIA does not have an adequate basis for making an overall judgment on the quality level of its data. EIA's evaluations of the accuracy of its data--validation studies and quality audits--have not been performed for much of its data collections. The validation studies cover only 14 of EIA's 88 current data collection forms and the quality audits cover only 11 of the forms. Also, EIA has not developed adequate documentation of its models which would enable others to evaluate the quality of its analytical publications as the Congress intended when it established EIA.

FIGURE 3

EVALUATION OF DOCUMENTATION FOR 10 BASIC MODELS



documentation facilitates revising or updating the model and training new users of the model. It also promotes the credibility of the model by providing a basis for users to acquire an understanding of its capabilities and limitations.

In our previous reviews, we found that EIA had made little progress in adequately documenting its models. For example, our May 1982 report stated that, as of December 1981, only 1 of EIA's 60 models had been fully documented.

In performing our current review, we found that the 1982 EIA Annual Report To Congress, issued in April 1983, listed 44 models that are currently used by EIA. The Director of the Quality Assurance Division told us that 16 of the models are basic models--models designated by the Administrator as being sufficiently important to require sustained support and public scrutiny.

During April and May 1983, EIA received reports from contractors that it hired to perform evaluations on the documentation for 10 of the 16 basic models. The contractors evaluated the documentation using the criteria in the EIA Order, Guidelines and Procedures for Model and Analysis Documentation. The Director of the Division of Quality Assurance told us that EIA has also awarded contracts to evaluate the remaining six basic models, but the contractors' work had not been completed at the conclusion of our review.

The 10 evaluations that have been completed cover nine elements of the documentation for each of the models. These elements include descriptions of the purpose and use of the model, what is being forecast, and the solution method being followed. (See app. B for a full description of the nine elements.) None of the 10 models were considered by the contractors to be fully documented. In addition, according to the contractors, as shown in figure 3, page 2-4, most of the models had adequate documentation on four or less of the nine elements on which they were evaluated.

The importance of fully documenting EIA's models was highlighted when EIA issued a May 1983 publication entitled The Natural Gas Market Through 1990: An Analysis of the Natural Gas Policy Act (NGPA) and Several Alternatives, Part IV. This publication contained analyses of various natural gas price decontrol alternatives and was based on EIA's Gas Analysis Modeling System, which had not been fully documented. The publication stated that, under a natural gas decontrol bill proposed by the administration, the wellhead price of natural gas would be higher than the amount projected by the administration.

The Assistant Secretary for Fossil Energy, DOE, in a memorandum to the Secretary of Energy dated May 19, 1983, was critical of the assumptions that were made in the model and of the

THE ACCURACY OF THE MAJORITY OF DATA HAS NOT BEEN EVALUATED

One of the primary ways that EIA assures data quality is through validation studies to evaluate the accuracy of the data it collects and publishes. When EIA was established in October 1977, responsibilities for validation studies were centered in its Office of Energy Information Validation. This office was responsible for measuring and documenting the accuracy and quality of data collected, used, and disseminated by EIA and for making EIA generally aware of the need to improve information quality. As an independent, major component of EIA, the Office of Energy Information Validation reported its recommendations for improvement directly to the Administrator.

In our November 1980 report, we stated that EIA had developed a comprehensive program plan that included activities for validating all of EIA's information systems by 1986. The validation studies planned were intended to be wide-scoped evaluations of all aspects of EIA's data collection forms, including the statutory basis for the collection, the determination of data needs, the performance of cost-benefit studies, the ability of respondents to provide the data, and the determination of various error rates.

Nonetheless, we reported that the three information system validation studies that had been completed did not meet all of the studies' objectives and, because of the limited number of validation studies performed, the accuracy of most information was undetermined. Subsequently, in our May 1982 report, we further noted that, although four additional validation studies had been issued, the majority of EIA's information systems still had not been validated.

We also noted that EIA's emphasis on the validation function has been scaled back drastically. For example, the amount of validation work performed in each study was to be determined on a case-by-case basis, whereas EIA had previously planned to perform a complete initial validation of all systems and to update these validations every 5 years.

In our current review, we found that EIA has continued to deemphasize its validation studies. The Director of the Quality Assurance Division, Office of Statistical Standards, told us that, because of its austere budgets in recent years, EIA has decided that the large-scale validation studies are too expensive to perform and other methods will have to be used to assess data quality. Fourteen data validation studies had been completed between early 1979 and the latter part of 1982. These 14 studies covered 19 forms. Only 14 of the forms, or their successor forms, were listed at March 1983 as being among EIA's 88 forms being used for collections of statistical information. Thus, only about 16 percent of the total current forms have been covered by validation studies.

absence of data on recent trends in the natural gas market. He also was critical of the documentation for the model. He stated that the model had not been published and had not been subjected to peer review of its structure and logic, either within or outside of DOE. The Assistant Secretary said that, to provide the most effective check on a model's validity, its description and its results should be circulated for the review of others doing similar work in the field. A similar criticism was made on May 24, 1983, by the Member of Congress who had introduced the administration's natural gas decontrol bill in the House of Representatives.

In discussing the criticism EIA received over its controversial natural gas decontrol analysis, on June 1 and 6, 1983, the Administrator stated that EIA is confident about the quality of its work and that EIA's reputation, integrity, and independence are intact. He pointed out that the analysis fully disclosed the assumptions that were made and that these assumptions represented EIA's best judgment at the time the analysis was prepared. The Administrator also said that EIA's analysis did not include any negative bias toward the administration's proposal and noted that EIA remained willing to evaluate any reasonable alternative assumptions relating to the administration's bill.

In commenting on the model, the Administrator stated that written independent evaluations of the model do not exist and documentation of the model had not been completed, although major parts of the model are documented. He noted that, in line with EIA's policy, the entire model will be fully documented, archived, and made available to the public as soon as practicable.

The Administrator subsequently, on August 23, 1983, issued a memorandum to EIA senior staff reiterating EIA's requirement to make adequate documentation available to the public at the time EIA's reports are published. The Administrator stated that

> "I have instructed the Office of Statistical Standards to categorically nonconcur with reports which are received in that office for pre-publication review and clearance without appropriate documentation. I have also asked to be notified immediately of all such occurrences."

We also found that EIA has improved its model documentation efforts by updating an EIA order, Guidelines and Procedures for Model and Analysis Documentation. This order establishes requirements and procedures both for documenting EIA's basic forecasting and analytical models and for describing other EIA models. The order is intended to provide a means for the readers of EIA's forecasts and analyses to understand the methods and the assumptions used in the model, and the means for professionals to understand the basic forecasting models and their solution algorithms. The order also provided a process for documenting models and submitting the documentation for review by the Office of Statistical Standards.

monthly data for 1977 through June 1981. It also includes information previously reported in a similar June 1981 report which assessed the accuracy of EIA's annual estimates for the supply and disposition of crude oil, petroleum products, natural gas, and coal for the years 1977 through 1979. Appendix C shows the specific types of information and periods covered by the two reports, which are informally referred to as the "State-of-the-Data" reports.

As shown in table 1 below, EIA's April 1983 State-of-the-Data report concluded that several of EIA's data collections are sound. EIA also concluded that several other EIA collections require further investigation, either because there are no strictly comparable non-EIA estimates or because such estimates do not agree with EIA's estimates.

Table 1

Assessment of the Quality of Principal Data Series from 1977 Through June 1981

Collections that are sound	Collections that require further investigation
Volumes of distillate and residual fuel oil	Volumes of motor gasoline
Wholesale prices of motor gasoline and distillate	Volumes of kerosene
Retail prices of motor gasoline	Volumes of liquefied gases
Natural gas production	Wholesale prices for residual fuel oil
Imports and exports of natural gas	Retail prices for distillate and residuals
	Natural gas additions to and withdrawals from storage
	Natural gas deliveries to consumers

While EIA's assessment report on its data collection provides a good overview of certain kinds of energy data, it falls short of providing a comprehensive assessment of the quality of EIA's principal data series. In this regard, the report acknowledges that EIA's ability to assess the accuracy of its data is

The Director of the Quality Assurance Division also told us that, in place of validation studies, the Office of Statistical Standards is currently conducting "quality audits," which he believes are more focused, more timely, and less expensive than validation studies. The Director, Office of Statistical Standards, described the quality audits as spot checks of manual and automated data handling procedures in which, where applicable, the survey methods were reviewed for compliance with EIA standards. She stated that the system software, data files, documentation, and actual survey cycle operation are assessed to assure acceptability of methods and consistency in the various components of the survey operation. In addition, reviews are made of the collection portion of the survey cycle, including forms design, mail-out procedures, nonresponse followup, and survey control methods.

As of September 30, 1983, four quality audits covering 11 data collection forms had been completed, and EIA plans to perform a couple of these audits in each of its program offices during the next year, a total of about 6. The dynamic nature of EIA's subject dictates that quality evaluations must be repeated at intervals or the knowledge of the quality of the data grows stale. There are changes in energy firms, as well as in their personnel who supply information to EIA. There also are changes in EIA's personnel, forms, and procedures. These changes give the quality of EIA's publications a dynamic, rather than a constant, nature.

The concept of quality audits is in its early stage of development. So far, the description of the concept of the quality audits does not explicitly state that quantitative measures that result from the statistical process can be used to describe the level of quality. However, the statement of work for the contractors that conducted the four quality audits does indicate a recognition of these quantitative measures.

There were 5 data collection forms that were covered by both validation studies and quality audits. An Office of Statistical Standards employee involved in quality audits stated that the duplicate coverage occurred because of revisions in the data collection forms and in the procedures followed in their use. With the duplicate coverage, therefore, all together the validation studies and quality audits have covered 20, or about 23 percent, of EIA's current 88 data collection forms.

We also found that, in fiscal year 1983, EIA attempted to gain a better perspective on the accuracy of its data by performing a study that resulted in an April 1983 report entitled An Assessment of the Quality of Principal Data Series of the Energy Information Administration. This report, which was prepared by the Office of Statistical Standards, provides information on the accuracy of a portion of EIA's data series on petroleum products and natural gas. The report includes both 1980 annual data and

documentation even describe what the various fields in computer files represent and what values the fields can assume.

--Systems seldom contain a means of identifying new firms, firms that have gone out of business, or changes in firms' parent/subsidiary relationships. The information that exists is often nonsystematic and is based on personal knowledge of system operators. Also, personnel turnover causes much valuable information to be lost, information which could be easily retained by maintaining computer files structured to contain the information.

--Major updates generally are not documented. Many systems have no plans for systematic frame updates, and a few large systems have never had their frames updated or have had them updated only once.

--Many systems lack formal frame maintenance procedures.

EIA has not completed its evaluation of this report or taken action on its recommendations. However, the Administrator has been briefed on the report and the report has been circulated for the comments of EIA office directors. See appendix D for a summary of the general findings and the recommendations.

GUIDANCE AND PROCEDURES ARE NEEDED FOR QUALITY CONTROL AND ASSESSMENT FUNCTIONS

With its July 1981 reorganization, EIA assigned quality control and remedial action functions to program offices and quality assessment functions to the Office of Statistical Standards. The Administrator has retained the overall responsibility for quality assurance and exercises this responsibility, in part, through the quality assessment activities of the Office of Statistical Standards.

Under this approach, the program offices are responsible for making sure that data systems, models, analyses, and reports meet all applicable standards and requirements. The quality controls used by the offices include routine edits, spot checks, field audits, and other operational procedures to maintain quality on an ongoing basis. The program offices also suggest ways to improve product quality and are responsible for correcting any quality-related problems that are identified.

The Quality Assurance Division in the Office of Statistical Standards monitors the effectiveness of the quality control activity and assesses the overall quality of data and analyses. It performs its assessments through studies that use explicit standards to measure the quality of systems, models, data, forecasts, and analyses.

limited because EIA's existing data validation studies are not current and, therefore, EIA has very little data accuracy information that applies directly to its new data systems. The report also pointed out that the number of non-EIA estimates of energy quantities which can be used for comparison purposes has decreased over the last few years because other organizations are increasingly depending on EIA's estimates.

We reviewed the information included in the report and concluded that the report's usefulness is limited for the following reasons:

--Reserves of coal, crude oil, and natural gas are not discussed.

--Prices were included only for petroleum products.

--Electricity, nuclear, and alternate fuels are not discussed.

--Supply and disposition of crude oil and coal were covered only for 1977 through 1979.

MAINTENANCE OF FRAMES NEEDS IMPROVEMENT

Frames are the universes from which EIA collects its data. A contractor-prepared report entitled Frames Status Report, dated May 31, 1983, provides an overview of the status of 26 frames associated with EIA's major surveys in all fuel areas. The report states that considerable work has been done in the last 3 years to upgrade the coverage of EIA survey frames. For example:

--Major updates have been conducted for the largest and most complex frames.

--Of EIA's 25 monthly surveys, frames for 72 percent have undergone some kind of update in the last 3 years. Of the updates, 20 percent occurred within the last year (1982).

However, the contractor also pointed out that only 30 percent of the EIA surveys it examined had time periods established for conducting major frames reviews or updates. The report stated that, while key staff are generally aware of time periods required for independent review of frames, this knowledge is not typically "institutionalized" through documented plans. In addition, the report said that EIA could provide the contractor written update procedures for only 2 of the 26 survey frames examined.

Other findings of the report include the following:

--Documentation associated with some EIA systems is often difficult to locate and use. Seldom does available

and Planning Review Board meeting in September 1983 and that the Administrator concurred with most of the proposals. When we concluded our audit work, a memorandum documenting the Administrator's decisions had not been prepared nor had implementing orders been issued.

We also found a need to specify the quality control work that the program offices are required to do. There are wide variances in the approach they take to carry out their quality control functions.

--The Office of Oil and Gas has established quality control units in two of its three divisions, with one of the groups functioning as the central contact point with the Office of Statistical Standards.

--The Office of Coal, Nuclear, Electric, and Alternate Fuels has established a quality control staff on a test basis to serve the entire office.

--Within the Office of Energy Markets and End Use, each division performs quality control activities, but with a less formal structure than the Office of Oil and Gas. No individual units are responsible for data quality oversight. Each division has one person as the contact point with the Office of Statistical Standards on quality control matters.

We found that EIA has not assessed whether all of its program offices (1) are applying sufficient attention and resources to quality control functions and (2) are using the most efficient and effective means to provide uniform quality in EIA's work products. In addition, although quality control responsibilities were assigned to the program offices over 2 years ago, the offices have not yet developed broad, office-wide written procedures for conducting their quality control work. However, written quality control procedures have been developed for some, but not all, publications.

CONCLUSIONS

In congressional appropriations hearings, EIA has acknowledged that deterioration in the quality of its information can be expected as a result of budgetary reductions for quality maintenance activities. Nonetheless, EIA believes that, because its information had reached a high level of quality, the information will continue to be reliable for policy decisions despite reductions in EIA's quality maintenance activities.

Based on each of our previous reviews, we concluded that EIA had not performed adequate assessments to make an overall judgment on the quality level of its data. Because EIA has made little progress in its quality control and assessment activities

We found that EIA's implementation of this approach to quality control and assessment has resulted in several problems. These problems were highlighted in a July 13, 1983, memorandum that the Director of the Office of Statistical Standards wrote to the Administrator. While acknowledging the positive effect of the reorganization on promoting program office initiative in identifying problems, the Director also said that it had led to differences of opinion among offices regarding what each office should be doing to improve EIA's products.

The Director pointed out that program offices were performing quality assessment functions that should be performed by the Office of Statistical Standards while failing to carry out all of their responsibilities for quality control functions. She also informed the Administrator that the reduced size of her office resulting from reductions in the number of EIA employees (see pp. 1-5 and 4-1 et seq.) makes it impossible for it to perform work that is not adequately emphasized by the program offices.

To clarify responsibilities and alleviate problems in carrying out quality control and assessment functions, the Director of the Office of Statistical Standards suggested that a clear division be made between the specific activities of the program offices and the Office of Statistical Standards. Under this proposal, the Director said the program offices would no longer perform model evaluation studies or write broad evaluations of the accuracy of data series. Also, the Office of Statistical Standards would no longer perform functions that are the responsibility of the program offices. These functions include:

--Conducting field validations.

--Providing editorial services.

--Verifying calculations and citations, except on a sampling basis.

--Providing personnel to the program offices.

--Performing archiving and documentation tasks.

The Director also proposed that the areas of quality control and quality assessment appear as separate line items in the budget process, with programs and projects explicitly stated. She stated that this is necessary to enable EIA to present a coherent plan, coordinate various quality improvement efforts, and prepare a cost-benefit evaluation of the need for standards and the cost of meeting them.

The Director, Quality Assurance Division, told us that the above proposals were presented to the Administrator in a Policy

the various quality control strategies employed by the program offices.

--When a report based on an analytical model is issued, have the directors of the program offices have documentation for the model available to the public which meets the EIA standards for model documentation.

--Have the Director of the Office of Statistical Standards develop a plan for expediting its audits of the quality of EIA's data and for providing more current and detailed coverage in assessing the quality of EIA's major data series.

--Have the Director of the Office of Statistical Standards continue the development of the concept of quality audits by

(a) issuing guidelines which describe quality audits, including recognition of the quantitative measures that result from the statistical process and can be used to describe the level of quality, and

(b) request that an independent statistical professional group (such as the American Statistical Association's Committee on Energy Statistics) evaluate the concept of quality audits and the frequency and scope of coverage of accuracy controls.

We also recommend that the EIA Administrator obtain the recommendations of the Director, Office of Statistical Standards, on the findings noted in the Frames Status Report, dated May 31, 1983, and have the program office directors develop a plan for correcting the problems in the quality of the frames.

AGENCY COMMENTS

The Administrator agreed with our recommendations and described the actions that he had directed EIA to take. He said that the Office of Statistical Standards is working with the Office of Planning and Resources to develop a Quality Program Plan, which addresses goals, activities, and resources for both quality assurance and quality control. The Quality Program Plan will be developed in conjunction with EIA's multi-year and annual operating plans.

He said that a major activity area covered by the Quality Program Plan will be model documentation, including a review of existing standards, improvement of existing documentation, development of effective procedures for future documentation efforts, and allocation of adequate resources to implement those procedures. He also said that another major activity area covered by the Quality Program Plan will be frames development, consolidation, and maintenance. The Office of Statistical Standards will

since our last review, we continue to believe that the quality of much of its data remains uncertain. In this regard, since our previous review was completed, EIA has performed only limited evaluations of the quality of its data, has not fully documented its models to ensure their credibility, and has not adequately updated its frames to ensure that they are current.

The Office of Statistical Standards has begun using a new and developing concept--quality audits--to assess the quality of EIA's work. We believe that in the development of this concept, the Office of Statistical Standards should

--explicitly recognize that there are quantitative measures which result from the statistical process and which can be used to measure the level of quality,

--establish an audit cycle that will ensure that the work will be covered at intervals that will keep the quality assessments current, and

--have the concept evaluated by some independent professional group, such as the American Statistical Association's Committee on Energy Statistics.

In addition, the specific quality-related responsibilities of the program offices and the Office of Statistical Standards have not been clearly defined, limiting EIA's ability to plan and coordinate quality improvement efforts. Further, EIA's program offices, which are responsible for quality control activities, have not developed broad, office-wide written procedures to carry out these activities, and EIA has not assessed the program offices' quality-related work to determine whether it is being performed effectively.

RECOMMENDATIONS

We recommend that the Administrator take the following actions to control and document the quality of EIA's data:

--Develop guidance to ensure that specific quality assessment and quality control activities are clearly understood to be the responsibility of the Office of Statistical Standards or of the program offices.

--Have the directors of program offices develop broad, office-wide written procedures for performing their quality control functions to guide the further development of detailed quality control procedures for specific data collection forms, systems, and publications.

--Have the Directors of the Office of Planning and Resources and the Office of Statistical Standards evaluate the comparative effectiveness and efficiency of

complete its review of the May 31, 1983, contractor report on the status of frames and incorporate appropriate recommendations into the Quality Program Plan.

The Administrator said that the Office of Statistical Standards and the Office of Planning and Resources are working together to produce clear and consistent definitions of EIA Quality Program terms and elements. These will be incorporated into guidance that resulted from the Planning and Program Review Board meeting on quality, held in September 1983. The guidance will be issued during the spring of 1984.

The Administrator further stated that the Quality Program Plan will include plans for evaluating quality control strategies and will establish goals for preparing office-level policy statements to reinforce existing energy information system quality control procedures.

we concluded that the office's credibility was in question because it had become an extension of the administration's energy policy and planning function and had failed to make public the assumptions on which its analyses were based.

Major factors contributing to the office's lack of credibility were that (1) it did not maintain records of products provided to executive and legislative branch requesters, (2) it did not systematically make analyses public, and (3) it did not use a comprehensive project accountability system. To correct these problems, the office initiated efforts to develop a management information and analysis system, but these efforts were cancelled because of the imminent creation of DOE and EIA, which assumed the office's functions.

DOE's enacting legislation stressed the importance of EIA's mission to provide objective information to policymakers and others. In carrying out this mission, EIA has provided studies and analytical assistance requested by numerous government organizations, including the Department of State, OMB, and various congressional committees. In our May 1979 and November 1980 reports, we concluded that, in meeting these requests, EIA was independent of energy policy functions and was organized and administered in a manner designed to promote its credibility as a neutral source of energy data and analysis. Specifically, unlike its predecessor, EIA had established procedures to record the assumptions used in its analyses and to clearly describe those products that had been prepared at a specific client's request.

When we reviewed EIA's analysis function in November 1981, we found that effective procedures had not been reinstituted after the July 1981 internal reorganization of EIA's activities. (These procedures applied to the one-time analytical reports EIA had prepared for external requesters and not EIA's periodical statistical reports.) As part of EIA's reorganization, responsibility for the analysis function was divided among EIA's three program offices. A centralized system had not been established for approving, recording, or monitoring the status of analysis request work being performed by these offices. Further, the individual offices did not have procedures which collectively provided assurance that work on analysis requests was properly documented. For example, the Office of Oil and Gas did not have documentation on (1) the number of requests that had been received or (2) how many analyses were being performed.

Because we believed that internal controls over EIA's analytical services were essential to maintaining EIA's image as a credible and independent source of energy information, we recommended that EIA develop and implement a central process and uniform procedures to record the assumptions that requesters want to have incorporated into EIA's forecasts and analyses and to assure that the resultant products clearly describe the

CHAPTER 3

EIA'S INDEPENDENCE AND OBJECTIVITY

For its analytical products to have credibility, EIA must be independent of energy policy development and advocacy. To provide the independence necessary, the DOE Organization Act created EIA as a separate organization within DOE and insulated EIA's energy data collection and applied analysis functions from DOE's responsibility for formulating and advocating national energy policy. In accordance with the act, the EIA Administrator is required to use independent judgment in carrying out EIA's missions and is held directly accountable for the quality of EIA's data and analyses. In addition, the Administrator is not required to obtain approval of government officials in analyzing information or publishing any statistical or forecasting technical report prepared in accordance with law.

In our May 1982 report, we concluded that, based on our analysis of numerous EIA reports and internal review procedures, we found no reason to question EIA's independence or its objectivity. We noted, however, that EIA needed to improve its internal controls to ensure that all assumptions inherent in EIA's analyses are documented and fairly stated in EIA's written reports. The following sections of this chapter discuss the status of EIA's actions to improve these controls and our observations on several related matters involving EIA's independence.

BETTER INTERNAL CONTROLS ARE NEEDED

The energy shortage crisis beginning in the early 1970's helped to focus the government's attention on the need for energy information which is, and is perceived to be, based on objective analyses performed by an independent organization. In the wake of widespread criticism by the legislative and executive branches about the quality of existing energy information, in 1976 the Congress established EIA's predecessor, the Office of Energy Information and Analysis, within the former Federal Energy Administration. Nevertheless, in a December 1977 report,

commended by both state energy office and trade association officials for the quality and timeliness of the presentation.

Also, in August 1982, in cooperation with the National Bureau of Standards, Department of Commerce, EIA conducted a symposium on the development of the Intermediate Future Forecasting System Model. The new model was designed to study government policies affecting energy markets and transitions within energy markets. The new model's components were critiqued by energy experts from academia, energy consulting firms, trade associations, energy producing companies, and federal agencies.

In addition, during the spring of 1982, EIA's Office of Oil and Gas held workshops in five different cities to obtain comments and suggestions concerning the design of EIA's Petroleum Reporting System. These workshops brought together officials from many organizations and groups, all with divergent views as to what information should be collected and maintained by EIA. EIA officials credit these meetings as being instrumental in helping EIA to develop a petroleum reporting system that meets state and federal agency reporting needs without imposing an excessive reporting burden on industry.

EIA's objectivity was also enhanced through the efforts of a permanent advisory committee--the American Statistical Association's Committee on Energy Statistics. The Committee is responsible for

--evaluating energy statistics as they relate to policy analysis and the formation of a comprehensive energy data system;

--promoting the integration of energy statistical programs; and

--reviewing and providing advice on the improvement of forecasting and analytical models, the development of an energy management information system, and the efficiency of various data collection survey methods.

Although the committee is available to advise all government agencies on energy statistics, its primary federal advisory responsibility is to EIA.

From October 1981 through September 1983, the Committee on Energy Statistics held five meetings. Among the topics discussed at the meetings were (1) problems in estimating industrial demand, (2) methodological issues in U.S. and Canadian electricity trade, and (3) approaches to deriving end-use consumption estimates in the residential sector from annual data of EIA's Residential Energy Consumption Surveys. In each of these

requesters' specifications. In responding to our recommendation, the Administrator agreed that EIA's internal controls needed improvement and said that an analysis tracking system was being developed by the Office of Planning and Resources and would be implemented in March 1982.

In our current review, we again reviewed EIA's internal controls over its analytical reports. Since July 1982, EIA has issued 56 of these one-time reports and about half were prepared in response to external requesters. (Our review findings do not address the controls over 53 periodicals being issued by EIA as of August 1983.) Our review of internal controls showed that EIA had not implemented the tracking system we recommended in our previous report. The Director, Office of Planning and Evaluation, told us that EIA had planned to develop a centralized system to monitor actions on each of the requests it receives but that this task had been deferred because of higher priority work requirements. In addition, this official told us that, in his view, the usefulness of such a centralized system is questionable. He said that, under EIA's decentralized operating structure, each of the three major program offices is responsible for maintaining its own system of control over analytical products.

We found, however, that these offices had not developed such a system. None of the offices had written procedures for receiving, recording, processing, or documenting requests for analyses. Likewise, none of the offices maintained a central record of the analysis reports that were prepared for external requesters.

The Manager of Planning, Office of Planning and Resources, told us that EIA was developing an information services request tracking system to control work requested by others. According to this official, the purpose of the system is to monitor costs of work performed for external governmental customers and to ensure that EIA is properly reimbursed for the information services provided to the Federal Energy Regulatory Commission. Because our audit work was completed before the tracking system was implemented, we could not assess the system's adequacy for recording, monitoring, and reviewing analysis requests.

INDEPENDENT REVIEWS ENHANCE EIA's OBJECTIVITY

EIA has consistently obtained external review of its work to help it remain objective in carrying out its responsibility for providing credible energy information. In October 1982 and January 1983, EIA conducted symposia on its Short-Term Energy Outlook Reports. The October meeting included several panel discussions, including one on EIA's projections of the adequacy of heating oil supplies for the winter of 1983. EIA was

OMB Bulletin and in Section 205 of the DOE Act relating to EIA's independence, the preponderance of EIA publications must continue to be published without additional review or control outside EIA. Furthermore, EIA would continue to send for review and clearance by DOE's Office of Public Affairs those publications EIA produces for general audiences, such as directories and fact sheets.

In a January 19, 1982, memorandum, DOE's Assistant Secretary for Congressional, Intergovernmental and Public Affairs told the Administrator that he agreed that the Congress intended EIA to be uninhibited by DOE editorial interference in reporting statistical information. However, the Assistant Secretary also said that:

--To ensure that EIA was fulfilling its charter in the most economical manner, DOE should be able to assess publications to determine whether they are needed, whether their format is appropriate, and whether the information in the publications is redundant.

--OMB's review was intended to determine the need for and costs of all publications, including those mandated by the Congress, and would not involve the content or substance of the publications.

--If DOE excluded publications from the survey, it would run the risk of OMB's disallowing future issues of the publications.

EIA, however, continued to refuse to provide its publications for DOE's review. In June 1982, DOE submitted its justification for the Department's publications to OMB. DOE informed OMB that justifications for EIA's publications were not being submitted because EIA had taken the position that its independence in reporting statistical data exempted it from such reviews. DOE also noted that EIA's position was being reviewed by the DOE General Counsel.

The DOE attorney responsible for EIA affairs told us that DOE did not issue a written decision on this particular case because the DOE General Counsel had issued a 1978 memorandum which dealt with the same issue. In essence, the memorandum stated that the review process required by OMB would necessarily involve a review and approval of the substance of a periodical. Therefore, the review would infringe on EIA's independence in publishing statistical reports and forecasts. In line with EIA's statutory independence, on August 5, 1982, the Administrator agreed to provide DOE and OMB as much data as possible about EIA's statistical publications, without either justifying the publications or subjecting them to OMB review and approval prior to their issuance.

and other areas, the Committee provided EIA with suggestions and recommendations.

EIA's RELATIONSHIP WITH OMB AND DOE IN PUBLISHING ITS REPORTS

Although the DOE Organization Act provided for the separation of energy information and energy policy functions, EIA's programs are subject to various executive branch administrative requirements. In conducting our review, we analyzed EIA's internal documentation relating to its relationship with DOE and OMB on certain data reporting matters.

DOE and OMB review of EIA's products

On April 20, 1981, the President imposed a moratorium on the production and procurement of new audiovisual products and the printing and distribution of new periodicals and pamphlets. The President required the departments and agencies to conduct a comprehensive review of their current and planned activities and to develop specific plans for controlling costs in the future. The President also instructed OMB to issue procedures and guidelines to implement the memorandum.

OMB's implementing guidelines were contained in OMB Bulletin No. 81-16, issued on April 21, 1981. The Bulletin, in defining periodicals, pamphlets, and audiovisuals, provided a quotation from the Government Printing and Binding Regulations indicating that the term "periodical" did not include strictly statistical materials.

In October 1981, OMB issued Supplement No. 1 to the OMB Bulletin, pointing out that agencies had misinterpreted the instructions. Many agencies, including DOE, had thought that the approval process applied only to new or planned publications and not to those which were already in existence. OMB stated that previous approvals for printing all publications defined in Circular No. A-3 were cancelled effective March 31, 1982. Furthermore, by January 15, 1982, each executive branch agency was to review its existing periodicals and recurring pamphlets.

DOE and EIA had agreed in June 1981 that EIA needed to submit only certain limited publications, such as fact sheets and directories, for review. However, as a result of the October 1981 OMB action, the Administrator anticipated that DOE might request that EIA provide more information and justification for its publications. In a November 3, 1981, memorandum to DOE's Assistant Secretary for Congressional, Intergovernmental and Public Affairs, the EIA Administrator offered to prepare additional material on the limited publications agreed on in June 1981. The Administrator noted, however, that based on his reading of the exemption accorded statistical publications in the

We found that EIA has continued to enhance its objectivity by conducting workshops on its products and by obtaining the expert review and comment of its advisory committee. Also, EIA has resisted OMB and DOE attempts to review EIA reports and has taken steps to avoid the appearance that EIA products present the views of DOE.

With respect to independence and objectivity, we found that EIA did not reinstitute internal control procedures for its analysis products after it was reorganized in July 1981. At the conclusion of our review, EIA was developing a management information system to provide internal controls over requests for analyses. Since the system was not operational during our review, we had no basis for assessing its adequacy as an effective internal control over policy influences on EIA's work. During our next review, we intend to evaluate whether the system, in operation, meets the recommendations made in this and our May 1982 reports.

RECOMMENDATION

We recommend that the Administrator have the Director, Office of Planning and Resources, ensure that a central process and uniform procedures are used to record the assumptions that requesters want to have incorporated into EIA's forecasts and analyses and that the resulting products clearly describe the requesters' specifications.

AGENCY COMMENTS

The Administrator, in his comments on this report, agreed with our recommendation and stated that the Office of Planning and Resources will write and issue the Information Services Order and an Analysis Products Order which will formalize existing operational processes and procedures for analytical products and for services provided to external customers.

In a September 7, 1982, memorandum to the Assistant Secretary for Congressional, Intergovernmental and Public Affairs, the Administrator stated that he was quite willing to comply with the requirements of the OMB Bulletin with respect to limited publications such as fact sheets and directories. He also said that he would provide data about other periodicals to help meet DOE and OMB's information needs without justifying these periodicals or subjecting them to OMB's review and approval. EIA's Director of Publication Services told us that EIA has been providing the information as stated in the Administrator's September 7, 1982, memorandum and that DOE and OMB had not pursued the matter further.

Concern that EIA's publications might be perceived as representing DOE's views

EIA's independence in publishing its reports has received the attention of the last two Secretaries of Energy. The former Secretary had expressed concern that EIA was providing information directly to the White House without first apprising DOE of the information being provided. He also noted that it would be desirable for EIA reports to indicate that EIA does not purport to speak for or represent the views of the Department.

In response to the comments of the former Secretary of Energy, the Administrator said that EIA provides the Secretary a copy of its significant reports 2 days in advance of their publication or transmittal to the Congress, the White House, or federal agencies. He also said that EIA continually seeks the technical comments of DOE's program offices and, while carrying out its statutory mandate of objectivity and independence, maintains an awareness of current DOE policy positions. In addition, the Administrator stated that EIA does not purport to speak for the Department.

The current Secretary of Energy also became concerned about the possible perception that EIA was presenting the Department's views. As a result, in January 1983, EIA established a policy of not referring to DOE on the covers of its reports. EIA also added the following disclaimer in its publications:

> "This report was prepared by the Energy Information Administration, the independent statistical and analytical agency within the Department of Energy. The information contained herein should not be construed as advocating or necessarily reflecting any policy position of the Department of Energy or any other organization."

CONCLUSIONS

The independence and objectivity of EIA's activities are essential to providing credible energy information and analysis.

geologists, and industry specialists. We recommended that, to ensure that each EIA office had the capability to carry out its specialized functions as effectively and efficiently as possible, the Administrator require the Director, Office of Planning and Resources, to assess the number and types of skills EIA needs to meet its overall requirements and to determine whether staffing allocations to each EIA office are appropriate.

In responding to our recommendation, EIA said that staffing needs were addressed very carefully while planning for EIA's reorganization and that these efforts had continued in EIA's adjustment to its reduction-in-force and attrition. EIA also said that

--it planned to establish an ombudsman to encourage at the staff level the free flow of information about current staff shortages and future staffing needs and

--offices responsible for EIA's work would be responsible for giving attention to internal reassignments.

In evaluating EIA's comments, we reiterated the need for an assessment of staffing requirements and pointed out that the assessment was especially important in view of further planned reductions in EIA's funding and staffing levels during fiscal year 1983. These reductions have occurred.

EIA disagreed with our recommendation that a staffing needs assessment be performed. Such an assessment was subsequently initiated in the fall of 1983 and EIA expects to complete it in early 1984. According to the Director of Resource Management, EIA decided to conduct the assessment because it is now hiring additional employees and has, through its annual planning process, identified the key skills needed for various programs.

Although EIA is once again hiring staff, it has not been successful in hiring enough employees to meet the minimum staffing level established by the Congress. As of September 30, 1983, EIA had 466 employees, even though the Congress had stipulated that EIA's staffing be maintained at a minimal level of 490 employees (Public Law 97-257, September 1982).

On September 15, 1983, in response to concerns about EIA's staffing level raised by a subcommittee of the House Appropriations Committee, the Secretary of Energy stated that DOE intended to comply with the staffing mandate from the Congress. However, he said that difficulties were being encountered in meeting the requirements. The Secretary noted that hiring staff for EIA's functions is particularly difficult because the mathematicians and other types of skilled professionals needed are not readily available.

The Director of Resource Management, who is responsible for monitoring the hiring of new employees, told us that EIA's staff

CHAPTER 4

STAFFING AND PLANNING ACTIVITIES NEED TO BE IMPROVED

For EIA to meet its specialized requirements, it must have the proper composition of professionals in a number of technical areas. In our May 1982 report, we noted that EIA did not have adequate information on its personnel needs and recommended that EIA assess its staffing needs. EIA is now in the process of performing a staffing needs assessment.

Since our previous review, EIA also has enhanced its annual operating planning activities. However, we found that it still has not completed a multi-year plan encompassing its long-term needs.

STAFFING STUDY IS NEEDED

Since its inception, EIA has had dramatic fluctuations in staffing. From fiscal year 1978 to fiscal year 1980, EIA's authorized staffing level increased by 22 percent from 744 positions to 906 positions. This increase was followed by a sharp decrease from fiscal year 1980 through fiscal year 1983. During that period, EIA's authorized staffing decreased by more than 45 percent to a level of 490 full-time, permanent employees.

To carry out its missions with a reduced staff, in July 1981 EIA reorganized its functions to perform its work more effectively. However, as we stated in our May 1982 report, EIA was unable to provide us with documentation supporting the determination of the number of specialist positions of each type needed in its individual offices.

We also noted that, because of the technical nature of EIA's missions, it is essential that EIA be staffed with the proper number and composition of professionals in a variety of specialized areas. The principal types of employees needed include statisticians, economists, operations research analysts,

--legislative proposals, and

--capital investments.

He said that EIA plans to have a comprehensive multi-year plan by the summer of 1984 and that an additional staff person will be hired by EIA to manage all aspects of this plan.

CONCLUSIONS

We believe that EIA's current attempts to assess the number and types of employees it needs to carry out its specialized functions should help to ensure that EIA's services are being effectively and efficiently delivered by each of its offices. We also believe that, while EIA has made progress in developing a comprehensive planning process, it has not given adequate attention to long-range planning.

RECOMMENDATIONS

To ensure that each EIA office has the capability to carry out its specialized functions as effectively and efficiently as possible, we recommend that the Administrator have the Director, Office of Planning and Resources, assess the number and types of skills EIA needs to meet its overall requirements and to determine whether staffing allocations to each office are appropriate.

To ensure that adequate progress is made in comprehensive planning, we recommend that the Administrator have the Director, Office of Planning and Resources, develop a comprehensive multi-year plan.

AGENCY COMMENTS

In commenting on this report, the Administrator agreed with our recommendations and said that the Office of Planning and Resources will complete its staffing study in progress and, in addition, will develop improved ways for planning human resources requirements in conjunction with EIA's multi-year and annual operating plans. EIA's human resources planning will address program requirements and staff development and training. He also stated that the Office of Planning and Resources will implement improvements in its multi-year planning process to refine what has been accomplished in the past 5 years. We believe that EIA's actions, when completed, should meet the recommendations we made in our May 1982 report and the followup recommendations in this report.

needs assessment will be useful in determining the types of people and skills needed to best meet EIA's authorized staffing level. She said that EIA's previous hiring actions were based on the needs expressed by individual program managers, rather than on an agency-wide staffing plan approved by the Administrator.

COMPREHENSIVE PLANNING PROCESS IS NEEDED

In our May 1982 report, we stated that, during the past 4 years, EIA had made several attempts to implement a comprehensive planning process for setting realistic program priorities, making short- and long-term decisions, and helping to ensure that resources are managed effectively and economically. However, EIA had experienced difficulties in meeting several planning requirements, including identifying and formalizing short- and long-term needs.

We also noted that, despite these shortcomings, EIA was attempting to improve its planning and decisionmaking by developing a comprehensive planning, programming, and budgeting process. Through this process, EIA planned to identify both its short- and long-term needs and to reflect these needs in a multi-year plan. We recommended that the development of such a comprehensive process be completed.

In responding to our recommendation, EIA said that comprehensive planning has been and remains a high priority and that it had initiated or planned actions to improve its planning process. Among the actions EIA cited were the implementation of an annual operating plan, which is used for monitoring performance, and the establishment of a Planning and Policy Review Board to formalize the coordination of planning.

Since our previous review, EIA has continued to enhance its annual operating plan. For example, project descriptions now provide information on the staff time required and associated contract costs, and the relationship between the annual operating plan and the annual procurement plan is being made more specific. However, EIA has not prepared the multi-year plan needed for a comprehensive planning system. Such a multi-year plan is needed to identify priorities and resources needed for EIA's systems and programs, which must compete for limited funding over a number of years while they are being developed.

EIA's Manager of Planning said that EIA has long-term plans for several specific subjects and has prepared 5-year plans and issue papers in response to DOE requirements for each of the past 5 fiscal years. The long-term plans on specific subjects include

--organizational design,

IDENTIFICATION OF USER NEEDS IS IMPORTANT

The most important step in developing or modifying an information system is determining data requirements. It is not likely that a system will produce complete and otherwise acceptable information if the full participation of the system's current and potential users is not obtained in the development of the system. Some of the key questions that the user-needs studies must answer follow:

--Who uses the data?

--For what purposes are the data used?

--What specific data are needed?

--How detailed should the data be?

--How current should the data be?

--How accurate must the data be?

EIA stressed the importance of data requirements reviews in March 1981 when it issued Guidelines and Procedures for the Conduct of a Review of Data Requirements. This document stated that statements of requirements are important because they provide the principal criteria for many system design decisions. It also pointed out that, if statements of such requirements are to remain current and correct, they should be reviewed at regular intervals because changes in law, society, and technology lead to changes in the requirements for statistical information.

USER INVOLVEMENT IN DEVELOPING DATA SYSTEMS HAD BEEN LIMITED

In our May 1982 report, we noted that EIA had initiated several efforts to improve the usefulness of its data and publications. For example, these efforts included surveys which used questionnaire cards transmitted with EIA publications to determine the accuracy, timeliness, and responsiveness of individual publications. We stated that, despite these efforts, none of the studies or projects provided an incisive assessment of the immediate or future needs of users of EIA data and publications.

We also noted that EIA had initiated several other general efforts which addressed, to varying degrees, the utility of data collection forms and data systems. These efforts collectively were useful approaches to determining general data requirements, modifying or eliminating individual data systems, and standardizing data collection efforts. However, they fell short of identifying specific existing and future data needs, determining and categorizing data users and potential users, and establishing priority data requirements.

CHAPTER 5

PROGRESS HAS BEEN MADE IN DETERMINING THE USEFULNESS OF DATA AND PUBLICATIONS

General requirements for EIA's data are established through federal legislation and regulations, requests of the Congress and executive branch agencies, and inquiries of private industry and the general public. To meet these widespread requirements in a cost-effective manner, EIA needs to know the specific needs of the current and potential users of its data. In our May 1982 report, we said that most of EIA's studies of the use of its data have had serious shortcomings from a user-needs standpoint, and little had been accomplished toward developing a systematic approach to identifying the needs of current and potential data users.

Since our May 1982 report, EIA has made significant progress in reviewing the requirements for several major topic areas of energy information. In 1982, EIA completed comprehensive reviews of the data requirements for the oil and electric energy topic areas. Comprehensive reviews were underway in the natural gas, alternative energy, and federal nuclear data requirements areas. Two of these reviews were completed after the close of our review and the other is scheduled for completion in 1985. However, comprehensive reviews of requirements for data relating to coal, energy markets, and end use have not been performed. Earlier reviews of requirements for these areas were not comprehensive and varied considerably in the degree of their coverage, both in the scope and usefulness of the user-needs analysis performed.

We have not evaluated the results of the completed comprehensive reviews. However, their objectives and steps, if properly performed during the reviews, would seem to provide an adequate evaluation of the users' data needs.

industry sectors, each of which provided information on physical facilities, petroleum flow or facility utilization, and economics and business conditions (including costs and prices).

--Domestic petroleum resources.

--Foreign petroleum resources and imports.

--Domestic movement, storage, and disposition of crude oil and natural gas liquids.

--Petroleum refining and blending.

--Product transportation, storage, and marketing.

The objective of this study was to provide EIA with a basis for determining which data should be collected to satisfy requirements for petroleum information. Over 500 items were identified on a checklist of information items, and users could add other items. A total of 66 key users were contacted; they represented 49 organizations encompassing 15 federal agencies, 11 states, and 18 private firms.

The study included a determination of the information items required and an estimation of the relative benefits of obtaining each, a determination of the availability of required information items and the respondents capable of providing them, and an estimation of the relative costs of collecting required information items. The study also established priorities for the information items.

Electric

There has been a single data requirements review of the electric area. The August 16, 1982, report by a contractor, A Review of Electric Power Data Requirements, had the scope and objectives to provide a comprehensive treatment of the subject. The review was commissioned by EIA to determine and describe the following:

--The federal government's needs for electric power data and a comparison with the data now being collected.

--The suitability of current EIA data collection systems to gather the needed data.

--Alternative ways of revising current federal forms to collect the needed data.

The review investigated the utility industry structure, electric power data users, federal laws and regulations related to data collection, and current data collection systems. As a basis for developing a comprehensive inventory of the types of

We recommended that the Administrator direct that EIA's current and future data collection and publication efforts take into account the views and suggestions of a representative group of EIA's current and potential users. We also recommended that the Administrator stipulate that user-needs studies build upon past studies and be expanded to identify current and potential users, categorize the priorities of the users, develop methodologies for soliciting comments from them, and integrate the results of the various studies. EIA agreed with our recommendations.

COMPREHENSIVE DATA REQUIREMENTS REVIEWS ARE BEING PERFORMED FOR MOST DATA

In our May 1982 report, we discussed 13 of EIA's large-scale requirements reviews that we had examined to determine if user-needs analyses had been performed in connection with the reviews. While these reviews documented many basic data requirements, for the most part, they were not conducted in a manner that would allow EIA to make a realistic assessment of user needs and to determine the capabilities and limitations of its data systems in meeting these needs. In some requirements reviews a user-needs analysis was not performed, and in most of the reviews no attempt was made to select a representative sample of users.

However, in its March 1981 Guidelines and Procedures for the Conduct of a Review of Data Requirements, EIA said it intended to review the comprehensive requirements for all major topic areas of energy information by 1984, and EIA has been making progress in meeting that goal. In 1982, EIA completed two comprehensive requirements reviews and two others were completed after the close of our review. We have not evaluated the results of the completed comprehensive reviews. However, the objectives and steps, if properly performed during the reviews, would seem to provide an adequate evaluation of the users' data needs.

One of the studies completed after the close of our review was comprehensive in that the entire industry was covered, but was limited in that only federal data requirements were addressed because of funding limitations. The coverage for each area is discussed below.

Oil

EIA has performed more work on data requirements for oil and petroleum products than on any other topic area. A comprehensive report entitled Review of Petroleum Information Requirements, dated September 17, 1982, covered the following five

The review was to interview people who use data either directly or indirectly and investigate their uses of data. The users contacted represent DOE and numerous other federal agencies. Since only federal requirements were being addressed by the review, information on the needs of industry and public interest sectors was not solicited. The EIA Project Manager for the study said that only federal users were contacted because of limitations on the funds available for the study and the extensive data needs of the federal government.

Alternative energy

EIA's only study of data needs on alternative energies was completed at the close of our review and was intended to provide comprehensive information needed to shape alternative energy data collection activities. The alternative energy resources covered are solar, wind, geothermal, small-scale hydro, and biomass. In the user survey, 54 individuals were contacted, representing 13 DOE organizations, 21 other federal agencies, 5 states, and 7 nongovernmental organizations, including industry associations.

Energy markets and end use

The coverage of energy markets and end use has been sparse. No studies have been done on energy markets, and a 1980 study on the residential end-use sector found that data users were generally unable to list their specific data needs. A commercial end-use sector study was conducted in 1980 and consisted of interviews with only 17 people, mostly DOE employees.

The industrial end-use sector was covered in 1981 by a study, Review of Data Requirements for Fuel Substitution Policy Implementation and Analysis. This study, however, was limited to DOE personnel. The Director of the Office of Energy Markets and End Use stated that there is a need for data on the industrial sector and that the office is now planning and designing the collection and is in the process of communicating with data users.

Coal

EIA has conducted only one limited review of coal data requirements. This review was conducted in 1981 and obtained information on requirements for coal production data from 50 data users in the federal and private sectors.

EIA, in its technical comments on this report, stated that assessments of users' needs for coal data had been performed as part of four validation studies. (The wide scope of validation studies is discussed in paragraph 2, page 2-6, of this report.) EIA stated that three of the studies concern electric powerplants, which consume 80 percent of domestic coal production.

data needs, 58 users or potential users of electric power data were interviewed. The users included the federal government, electric utilities, environmental and consumer groups, trade associations, fuel suppliers, financial institutions, and other organizations. The report stated that, although a limited number of individuals within each user organization were personally interviewed, these individuals were knowledgeable in the subject area and spoke for the needs of the organization as a whole.

The report assigned priorities to the data requirements and made several recommendations. The recommendations called for consolidating various federal forms, both to eliminate redundancy and reduce the amount of noncritical data where feasible; collecting additional data on nuclear powerplant construction plans; and performing additional studies of state and federal reporting requirements.

Natural gas

Prior to fiscal year 1983, EIA's data requirements reviews for natural gas had been limited. However, EIA recently awarded a contract to the National Academy of Sciences/National Research Council to perform a comprehensive study of the need for natural gas data. The study report is due in February 1985.

Pursuant to the contract, the National Research Council's Committee on National Statistics established a Panel on Statistics on Natural Gas to perform the study. The panel is composed of members from academia, industry, industry associations, public interest groups, consulting firms, and a state public utility commission.

The panel will not make recommendations regarding information collected for regulatory purposes since that determination is made by statute or by the regulatory agency. However, the panel's study is designed to provide a comprehensive review of nonregulatory natural gas data requirements.

Nuclear

There have been no data requirements studies in the nuclear area. However, the Office of Coal, Nuclear, Electric and Alternate Fuels was conducting a data requirements study which is intended to shape the office's nuclear data collection activities. The study was completed after the close of our review and was to cover all industry stages from uranium exploration through electric generation and spent-fuel disposal. The report is to serve as the main basis for EIA's decisions on whether and how to revise EIA's current data systems describing the nuclear energy industry.

The fourth study concerned coal production directly. EIA said it believed these studies, in total, provided a comprehensive study of coal data users' needs. We have not evaluated these studies.

CONCLUSIONS

User needs studies must be performed to ensure that EIA's data and publications are useful to those for whom they are intended. Our review shows that, through its data requirements studies, EIA has made significant progress in determining energy data users' needs, thus largely implementing the recommendations in our May 1982 report. We believe, however, that EIA needs to develop a plan for performing comprehensive user needs studies of all major energy topics and updating the studies to ensure that EIA's data and publications meet new requirements for them.

RECOMMENDATION

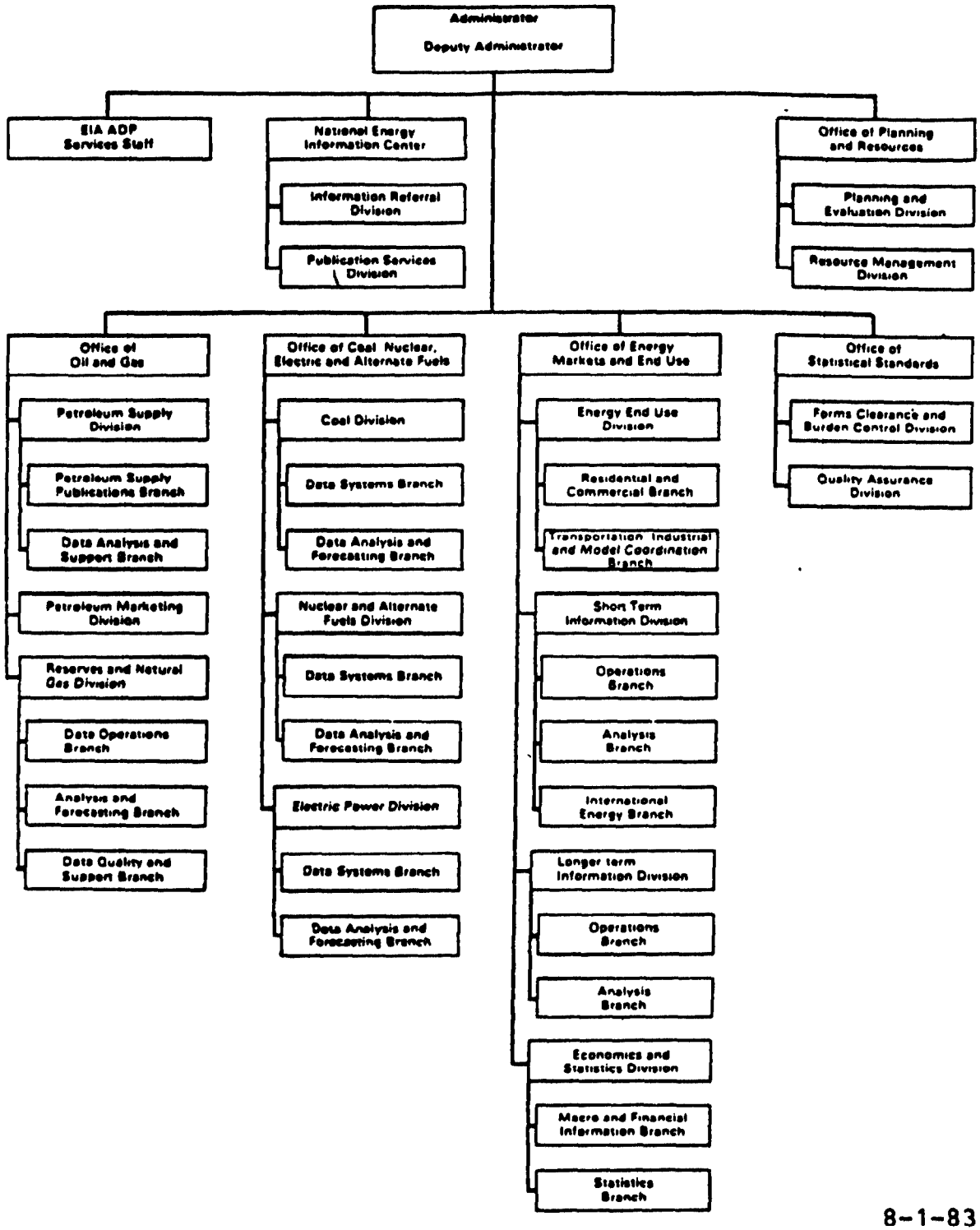
We recommend that the Administrator have each director of the three program offices develop a plan for conducting a comprehensive data requirements study in his energy topic areas and for periodically updating these studies.

AGENCY COMMENTS

In commenting on this report, the Administrator agreed with this recommendation and stated that the Office of Planning and Resources will promulgate a formal requirement for planning data requirements studies.

APPENDIX A

ORGANIZATION CHART FOR THE ENERGY INFORMATION ADMINISTRATION



8-1-83

ELEMENTS OF DOCUMENTATION FOR MODELS THAT WERE EVALUATED

1. Archive tape identification.

2. Model abstract, which is a brief presentation of the purpose and use of a model.

3. Well commented computer code, which describes the model by providing extensive comments in the archive tape.

4. Model overview, which describes what is being forecast by geographical area and time period, model structure and basic assumptions, estimation techniques, solution algorithms, and the forecasting procedures.

5. Process flow diagram, which shows the data flow of inputs, processes, and outputs at some high level of aggregation, to help the reader comprehend the large-scale process by which data and parameters are combined to form the forecast.

6. Variables, data and parameter listing, together with their definitions, sources and their units of measurement.

7. Report of mathematical specification, in a manner to emphasize the model structure, with enough information to permit an expert to reproduce the linear programming problem contained on the archive tape.

8. Documentation of model estimates, identifying and describing all estimates and the results, including estimates of precision.

9. Description of solution method.

APPENDIX C

INFORMATION AND PERIODS COVERED BY THE 1981 AND 1983 STATE-OF-THE-DATA REPORTS

	Reserves	Supply	Disposition	Prices
Petroleum Products	Not applicable	1977 to 6/81	1977 to 6/81	1977 to 6/81
Natural Gas	Not covered	1977 to 6/81	1977 to 6/81	Not covered
Coal	Not covered	1977 to 1979	1977 to 1979	Not covered
Crude Oil	Not covered	1977 to 1979	1977 to 1979	Not covered
Electricity	Not applicable	Not covered	Not covered	Not covered
Nuclear	Not applicable	Not covered	Not covered	Not covered
Alternate Fuels	Not applicable	Not covered	Not covered	Not covered

APPENDIX D

should be maintained on line with suitable documentation and archived quantitative source files.

2. Personnel working on each major EIA system should develop a plan for updating the system's frame.

3. EIA should maintain a frames group that can provide advice on how to create and maintain frames.

4. EIA should maintain yearly company-specific information on status, such as births, deaths, and change of ownership or address. Such information would allow survey managers to assess those areas of the frame for which updates would be most beneficial and to recommend when and how the updates would be accomplished. Management could then efficiently allocate resources.

5. Frames in the electric utility area should be reviewed.

APPENDIX D

FINDINGS AND RECOMMENDATIONS OF THE MAY 31, 1983, FRAMES STATUS REPORT

The general findings of the report, discussed on page 2-9, were as follows:

1. Documentation associated with some EIA systems is often difficult to locate and use. Seldom does available documentation even describe what various fields in computer files represent and what values the fields can assume.

2. Systems seldom contain means of identifying births (new firms) and deaths (firms that have left the business) or changes in parent/subsidiary relationships. Such information that exists is often nonsystematic and based on personal knowledge of system operators. Personnel turnover causes much valuable information to be lost which could be easily retained if computer files structured to contain the information were maintained.

3. Some EIA systems and non-EIA sources of names and addresses refer to different entities. Comparison of such files is difficult.

4. Company-specific data supplied on related systems are often difficult to compare because no table of pairs of control numbers from respective systems exists. In some cases, when systems are redesigned, much valuable information from related previous systems is difficult to locate or use.

5. Major updates generally are not documented. In fact, many systems have no plans for systematic frame updates. A few large systems have never had their frames updated or had their frames updated only once since EIA began.

6. EIA has no formal or informal procedures for merging address files. With few exceptions, match/merge procedures and software must be developed from scratch when files are merged.

7. Many systems lack formal frame maintenance procedures.

8. Suitable source lists for updating frames are often difficult to locate or use.

The report contained five recommendations. They are:

1. The documentation of each EIA system should be maintained in computer files using naming conventions that are consistent across systems. The sampling program, where applicable, and the programs that provide estimates for EIA's publications

APPENDIX E

EIA's full-time permanent employment at the end of FY 1982. Planning for EIA's human resources means acquiring and replacing skills in our workforce in a manner that complies with the law. EIA has a good understanding of its personnel requirements, but must often hire staff with a different set of qualifications. I authorized a programmatically oriented staff study to begin addressing such questions, because we have always had plans for positions which clearly identified skill and knowledge requirements, but cannot find the people to fill some of the most critical positions. We are faced with the problem, therefore, of staff development, not of task analysis.

PART identified several key concerns which I share in the areas of quality assurance, analysis services for external customers, staffing and planning, and data requirements assessment. In response to each of PART's specific recommendations, I have directed that EIA take the following actions:

- "...address the scope and frequency of the quality audits,"

  The Office of Statistical Standards (OSS) is working with the Office of Planning and Resources (OPR) to develop a Quality Program Plan, which addresses goals, activities, and resources for both quality assurance and quality control. The Quality Program Plan will be developed in conjunction with EIA's multi-year and annual operating plans.

- "...improve the documentation for models,"

  A major activity area covered by the Quality Program Plan will be model documentation, including a review of existing standards, improvement of existing documentation, development of effective procedures for future documentation efforts, and allocation of adequate resources to implement those procedures.

- "...improve the quality of frames,"

  Another major activity area covered by the Quality Program Plan will be frames development, consolidation, and maintenance for which the Congress provided additional funds in FY 1984 and for which EIA is requesting additional funds for FY 1985. OSS will complete its review of the contractor report, and incorporate appropriate recommendations into the Quality Program Plan.

APPENDIX E

Department of Energy
Washington, D.C. 20585

MAR 6 1984

Mr. F. Kevin Boland
Chairman
Professional Audit Review Team
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Boland:

I appreciate the opportunity to respond to the Draft of a Proposed Report: Performance Evaluation of The Energy Information Administration, Department of Energy, prepared by the Professional Audit Review Team (PART). I was pleased to find the draft report recognizes the accomplishments of the Energy Information Administration (EIA) since the last report, issued in May 1982, and that the report acknowledges the resource constraints with which EIA is faced.

I would amplify further the extent of those constraints by pointing out that in constant dollars, EIA's budget for FY 1984 is 48 percent lower than its peak year (FY 1980), and 18 percent lower than the budget for EIA's first year (FY 1978). Under these conditions, the major resource decision I have had to make was to choose between eliminating part of EIA's core program and postponing quality investments. For the past two years, I chose the latter option because far greater damage is likely to be done to quality by suspending and attempting to restart a statistical series than by temporarily delaying quality evaluations, frames maintenance, and other quality program activities.

In partial recognition of the need for a quality emphasis, Congress added $1 million additional funds to EIA's FY 1984 appropriation for quality investments. The President's budget request to Congress for FY 1985 includes $3 million for quality investments by EIA, or three times the level Congress provided in our current appropriation. To accomplish the goals in the President's request, I am proposing the suspension or deferral of certain programs.

A further indication of EIA's programmatic constraints is the reduction in EIA's position authorization from 906 to 490, a 46 percent decline. As I noted in my reply to the last PART Report, EIA very carefully assessed its staffing needs in preparation for the July 1981 reorganization. However, EIA was also required to conduct a Reduction-In-Force (RIF) at that time. As I am sure PART well knows, staffing plans must be matched to real people who will perform the tasks. Congress established a floor under

APPENDIX E

- "PART recommends that the Administrator require the Director, Office of Planning and Resources, to...develop a multi-year plan for carrying out EIA's activities."

  OPR will implement improvements in its multi-year planning process to refine what has been accomplished in the past five years.

- "PART recommends that the Administrator require the director of each program office to develop a plan for conducting a comprehensive data requirements study in each energy topic area and for periodically updating these studies."

  OPR will promulgate a formal requirement for planning data requirements studies.

I have further directed that each of the specific actions indicated above be incorporated into a Product Accountability System (PAS) item, with schedules, for me to monitor progress and results.

Technical comments and corrections to the draft report are being forwarded directly to your staff under separate cover. Please call me if you have any questions.

Sincerely,

J. Erich Evered
Administrator
Energy Information Administration

APPENDIX E

- "...clearly assign responsibilities for specific quality control and assessment activities,"

  OSS and OPR have been working together to produce clear and consistent definitions of EIA Quality Program terms and elements. These will be incorporated into guidance that resulted from the Planning and Program Review Board (PPRB) meeting on quality, held in September 1983. The guidance will be issued during the Spring of 1984.

- "...evaluate the comparative effectiveness and efficiency of the program offices' quality control strategies,"

  OSS will include plans for an evaluation of quality control strategies among the activities incorporated into the Quality Program Plan.

- "...have program offices develop broad office-wide quality control procedures."

  The Quality Program Plan will establish goals for preparing office-level policy statements to reinforce existing energy information system quality control procedures.

- "PART recommends that the Administrator require the Director of Planning and Resources to ensure that a central process and uniform procedures are used to record the assumptions that requesters want to have incorporated into EIA's forecasts and analyses and that the resultant products clearly describe the requesters' specifications."

  OPR will write and issue the Information Services Order and an Analysis Products Order which will formalize existing operational processes and procedures for analysis products and for services provided to external customers.

- "PART recommends that the Administrator require the Director, Office of Planning and Resources, to...assess the number and types of skills EIA needs to meet its overall requirements and to determine whether staffing allocations to each office are appropriate..."

  OPR will complete its staffing study in progress and, in addition, will develop improved ways for planning human resources requirements in conjunction with EIA's multi-year and annual operating plans. EIA's human resources planning will address program requirements and staff development and training.

APPENDIX F

IDENTIFICATION OF MODELS SHOWN IN FIGURE 3, PAGE 2-4, "EVALUATION OF DOCUMENTATION FOR 10 BASIC MODELS"

I	Short-Term Coal Analysis System (SCOAL)
II	Non-OECD Demand Model (Non OECD)
III	OECD Demand Model (OECD)
IV	Short-Term Integrated Forecasting System (STIFS)
V	The 9 Sector Dynamic General Equilibrium Model (9DGEM)
VI	Resource Allocation and Mine Costing Model (RAMC)
VII	Petroleum Allocation Model (PAL)
III	International EUREKA (internat EUREKA)
IX	Outer Continental Shelf Oil and Gas Model (OCS)
X	National Coal Model (NCM)

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