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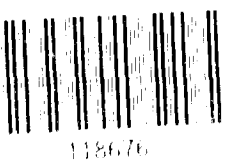
BY THE PROFESSIONAL AUDIT REVIEW TEAM

Report To The President And The Congress

Performance Evaluation Of The Energy Information Administration

Department of Energy



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OVERVIEW

As an independent organization within the Department of Energy, the Energy Information Administration (EIA) provides objective and credible information and analyses needed for energy deliberations and decisionmaking. In the past year, the administration has reduced and reoriented many of EIA's energy information activities, and has proposed legislation that would remove major energy information requirements.

The Professional Audit Review Team has reviewed EIA's budgetary and staffing reductions and has evaluated EIA's performance of its major responsibilities. Accordingly, this report focuses on issues that affect EIA's capability to carry out its missions. These matters include EIA's organization and planning, independence from energy policy functions, efforts to ensure the usefulness of data and publications, and quality control procedures and statistical standards. 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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May 19, 1982

Requests for copies of this report should be sent to:

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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) annual evaluation of the performance of the Energy Information Administration (EIA), as required by the Department of Energy Organization Act (Public Law 95-91, dated August 4, 1977). The report addresses major funding and staffing reductions in EIA's activities and evaluates EIA's performance of functions that are central to its capability to effectively perform its role. Accordingly, the report should be useful in deliberating energy information issues in the context of their current operational environment.

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

F. Kevin Boland, Chairman
General Accounting Office

Gene L. Finn
Securities and Exchange Commission

Keith Anderson
Federal Trade Commission

Ronald E. Kutscher
Bureau of Labor Statistics

Barbara Bailar
Bureau of the Census

David Munro
Council of Economic Advisers

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Assessing the number of and types of employees it needs to carry out its specialized functions should allow EIA to better ensure that its services are being effectively and efficiently delivered by each of its offices. It also should enable EIA to assess the impact of any future modifications to its activities and how it can best respond to them—both organizationally and operationally.

Throughout its 4-year history, EIA has not placed adequate emphasis on developing the short- and long-range plans needed for decisionmaking, monitoring and controlling projects, and measuring program results. Although it had been without a comprehensive plan during the past year, EIA recognizes the importance of sound planning and is working toward the implementation of a planning, programing, and budgeting process to provide adequate direction, control, and oversight for its projects and programs. Given the chronic difficulties that EIA has experienced in the planning area, PART believes that the implementation of this process should receive high priority and the attention of top EIA management.

Independence from policy functions

The independence and objectivity of EIA's activities are essential to providing credible energy information and analysis. Based on its review of analytical products furnished to a variety of requesters and of EIA's 1979 and 1980 Annual Reports to Congress, PART finds no reason to believe these activities are being affected by energy policy influences. Moreover, EIA's objectivity is enhanced through the expert review and comment it regularly receives through external energy information meetings.

Nevertheless, PART believes that EIA's independence and objectivity are jeopardized by the absence of a centralized process for recording and monitoring requests for analytical services. Such a process should include uniform procedures for assuring that all assumptions inherent in EIA's analyses are documented and fairly stated in the resultant written products.

EIA's efforts to determine the usefulness of data and publications

The ultimate success or failure of EIA's work is determined by the usefulness of its products. For EIA to provide useful information in a cost-effective manner, the needs of data users must be determined. Although EIA has repeatedly studied the use of its data and publications, most of the studies have had serious shortcomings, and a systematic approach to identifying user needs has not been developed. Data users have had only limited involvement in the development of new data systems, and studies of users' needs have not provided an incisive assessment of immediate or future requirements.

Quality control procedures and statistical standards

As the Federal focal point for energy information, proper control and documentation of the quality of EIA's statistical and analytical information is critical to EIA's mission. To ensure the quality of its work, EIA must have uniform standards and procedures for determining the accuracy of its data systems and for controlling and evaluating its products. Although EIA has efforts underway, key standards and quality control

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

PERFORMANCE EVALUATION OF THE ENERGY INFORMATION ADMINISTRATION Department of Energy

EXECUTIVE SUMMARY

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. EIA was organized as a separate entity within DOE to ensure that energy data collection and analysis functions are not biased by political considerations or energy policy formulation and development activities. In addition, the act provides for the Professional Audit Review Team (PART) to make an annual audit to ensure that EIA's activities are performed in an objective and professional manner.

The administration believes that energy information activities can be reduced along with diminished activity in other Federal programs and has moved to reorient and reduce energy data and analytical services. These actions are seen in the substantially reduced funding levels approved for fiscal year 1982 and proposed for fiscal year 1983. The administration also has proposed legislation that would repeal energy information requirements under several laws.

The reorientation of EIA's activities already has been pervasive. For example, EIA's efforts to develop new information systems have been delayed or eliminated, existing data collection efforts have been curtailed, analytical studies have been restricted to the most essential energy policy considerations, and major information validation functions have been scaled back to a quality assurance level.

This report focuses on issues that are at the center of EIA's capability to effectively carry out its role. These issues include EIA's organization and planning, independence from energy policy functions, efforts to ensure the usefulness of data and publications, and quality control procedures and statistical standards.

FINDINGS AND CONCLUSIONS

Organization and Planning

The redirection of the Federal energy role during the past year has resulted in a fundamental transformation in EIA--both in its structure and its operations.

In line with major budgetary and staffing reductions, in July 1981, EIA reorganized its activities to focus on basic statistics and analyses by fuel type. EIA believes that its new structure will increase its effectiveness by streamlining functions and providing better coordination among offices. Because EIA has had limited experience working under the current organizational structure, PART did not attempt to evaluate the effectiveness or efficiency of the new organizational arrangements. PART found, however, that in assigning its staff to the new offices, EIA gave inadequate attention to determining the number and types of skills each office needed.

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--is continuing to give serious attention to its staffing requirements,

--has initiated or planned actions to improve its planning system,

--would implement an analysis request tracking system,

--would expand its assessment of user needs as resources permit, and

--will continue to develop statistical standards and will provide quality assessment in carrying out its overall responsibilities.

Except for EIA's position on the need to perform an assessment of its staffing requirements, PART believes that EIA's comments are responsive to each recommendation contained in this report. Regarding the need for a study of its staffing requirements, EIA stated that its staff's planning needs were addressed very carefully in preparing for EIA's reorganization and that these activities are continuing. EIA also said that, since it is not contemplating hiring additional personnel, offices responsible for EIA's work would give their attention to internal staff reassignments.

PART is aware of the serious attention that EIA gave to its staff reassignments and endorses the actions EIA is now taking. PART believes, however, that an adequate understanding of the number of personnel EIA needs in a variety of specialized areas can best be obtained through a study of EIA's requirements and the skills needed to meet them. Since such an assessment should be as consistent as possible in the procedures and approaches used to determine staffing needs, PART believes it could best be performed by a central organization--preferably the Office of Planning and Resources, which has overall responsibility for staffing functions.

See pages 13, 22, 32, and 44 for EIA's specific comments concerning each recommendation.

procedures have not yet been established.

To a large extent, the quality of EIA's products is dependent on its compliance with statistical reporting standards. PART's review of this area shows mixed results. For example, the basic data presented in EIA's publications are well presented in tabular form, and the sources of the data are generally clearly indicated. However, PART's review of several publications shows that statistical standards are not being consistently followed. As a result, users of EIA's products have insufficient information in several key areas, including the design of the survey, quality of the data, and limitations on how the data should be used.

RECOMMENDATIONS

PART recommends that the Administrator, EIA:

--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.

--Assign a high priority and adequate resources to implementing a comprehensive planning process and be provided regular reports on the status of the process.

--Develop and implement a control 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 resulting products clearly describe the requesters' specifications.

--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.

--Stipulate that EIA's 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 input from them, and integrate the results of the various studies.

--Develop and implement standards needed to ensure that EIA's validations of its information systems and assessments of its models are properly performed.

--Expedite the implementation of a comprehensive quality assurance program to ensure the continued credibility of EIA's data. This should include establishing more timely completion dates for developing quality assurance standards and procedures, assigning program offices specific responsibilities for quality control functions, and as necessary, allocating resources to ensure these responsibilities are met.

--Emphasize the importance of adhering to statistical reporting standards in preparing EIA publications and establish an enforcement process to ensure that the standards are followed.

AGENCY ACTIONS AND COMMENTS ON RECOMMENDATIONS

In general, EIA expressed agreement with the facts contained in this report and with PART's recommendations. For example, EIA stated that it

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ABBREVIATIONS

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

Contents

For example, the administration has moved to deemphasize the Federal role in energy policy and regulation functions--key uses of EIA's information. And, in line with budget reductions, DOE has submitted a legislative proposal to relieve EIA from several major reporting requirements.

Reorienting energy information functions

As EIA continued to improve and expand its information programs, its budget grew steadily. In fiscal year 1981, EIA was appropriated about $104 million--approximately $55 million more than it received when it was created 4 years earlier. Of this amount, $13.7 million was rescinded, leaving $90.4 million for obligation. Its authorized personnel level also increased substantially. Although most of EIA's funding continued to be spent for work performed under contract, its fiscal year 1981 authorized personnel level of 928 employees represented a 25 percent increase since fiscal year 1978. This personnel level was reduced to 716 in the fiscal year 1981 budget rescission.

As part of its effort to reduce Federal costs and the burden that Federal information gathering activities place on private industry, the administration has moved to reorient and reduce energy data and analytical services. The administration's primary objectives are to

- --reverse the trend toward more detailed and refined energy statistics and assessments;
- --focus efforts on fundamental oil, gas, coal, and electric utility data systems;
- --emphasize national-level data and reduce State-level data that is costly to collect;
- --reduce or eliminate information systems that produce information that is readily available from other sources; and
- --reorient analytical efforts to provide faster, more relevant analyses, reduce longer term forecasts, and eliminate mid- and long-term analyses.

In addition, the administration believes that energy information activities can be reduced along with diminished activity in other Federal energy programs. For example, reflecting its philosophy that a more market-oriented approach is needed to bring about changes in patterns of energy production and use, the administration has reduced DOE's responsibilities in a wide variety of energy areas, including policy formulation, regulation, research and development, and conservation.

EIA's fiscal year 1982 budget appropriation of $78.9 million is approximately $48 million less than the amount it originally

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 1970s, the inadequacy of these fragmented programs was underscored by their inability 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 and contributing to a general lack of understanding of the energy problem.

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. This included responsibility for carrying out a unified program to collect, process, and publish data and information relevant to energy resource reserves, energy 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, and headed by a professionally qualified administrator who is 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 Congress attempted to create an organization capable of providing credible energy data and analyses necessary for sound decisions on national energy policy.

TRANSITION IN ENERGY INFORMATION PROGRAMS

During the past year, EIA has moved from a growing information organization to one striving to maintain its basic data systems and services. Dwindling resources available to EIA already have resulted in sudden, drastic changes in its capabilities. This and future actions proposed by the administration could result in changes in EIA's basic responsibilities for maintaining comprehensive national energy information systems.

to protect statistical energy information from disclosures for nonstatistical purposes, and (3) changing or eliminating several major reporting requirements.

The proposed legislation would relieve EIA of responsibilities for the establishment of the Financial Reporting System to provide detailed information on the structure of the energy industry and repeal the requirement that EIA develop a State-level middle distillate monitoring system. EIA estimated that in fiscal year 1982 alone it could save $2.4 million by eliminating the Financial Reporting System and $8.6 million by eliminating the State-level middle distillate monitoring system. EIA also believes that eliminating these systems would remove a high reporting burden on private industry. In addition, the proposed bill would

--make it possible for EIA and other Federal agencies to share energy information to eliminate duplication and burdensome reporting requirements. EIA estimated that this would result in savings of $1.7 million in fiscal year 1982.

--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, residential fuel oil, refined petroleum products, natural gas and coal. EIA estimated that cost avoidance resulting from eliminating the requirement would be $2.6 million in fiscal year 1982.

--eliminate the requirement that EIA develop and maintain a system for tracking and reporting every transaction, sale, exchange, or shipment involving imports of coal and oil. EIA believes that information collected under this system is duplicative of information collected by the Department of the Treasury, and estimated that elimination of the system would save $5 million in fiscal year 1982.

--relieve EIA from having to provide an annual report on coal reserves disclosure. EIA estimated that the annual cost of this report is $50,000 and that full implementation as required by law would raise the cost to $5 million.

The EIA Amendments of 1981 were introduced in the Senate by the Chairman of the Senate Committee on Energy and Natural Resources in May 1981 and in the House by Congressman James Collins, minority member of the House Committee on Energy and Commerce in March 1982. The proposed legislation could be considered by the Congress when deliberating the administration's budget proposal for fiscal year 1983.

requested for that year. The effects of the reductions are far-reaching, having an impact on EIA's overall responsiveness to energy information requirements and even its ability to provide fundamental data publications. Although the budget does not change the Federal role in gathering, analyzing, and disseminating energy information, it substantially reduces Federal efforts in a number of key areas and has major implications for future program goals and objectives.

For example, the budget reduces EIA's efforts to develop and maintain a capability for forecasting and analyzing energy consumption, production, and price trends. This capability enables EIA to project the effects that energy-related events have on the economy, environment, and particular consumer groups. The budget also reduces

--activities in support of the Emergency Energy Conservation Act that requires EIA to develop a State-level reporting system for certain types of fuel;

--the Oil and Gas Information System, which is to provide information on oil and gas reserves, resources, exploration patterns, and production of the United States and other nations;

--the consumption data program, which is to collect and publish data on residential, commercial and industrial energy consumption together with related information on characteristics of energy-using equipment, firms, and households; and

--the development of the Energy Emergency Management Information System, which is to provide a system to assemble and communicate information needed by Government decisionmakers for dealing with energy emergencies.

Removing legal reporting requirements

Although EIA's budget reductions have been substantial, its fiscal year 1982 budget is $8.5 million more than the administration's final request. Also, EIA has been considering ways to accommodate even greater reductions in the fiscal year 1983 budget for energy information activities. Because many of these activities are mandated by law, the requirements would have to be set aside by specific congressional action.

In May 1981, DOE's Office of General Counsel submitted to the Congress major proposed legislation that would repeal energy information requirements under several laws to enable EIA to reduce costs. The proposed legislation--the EIA Amendments of 1981--is intended to enable EIA to reduce costs and public reporting requirements by (1) allowing EIA to obtain, on a confidential basis, energy information from other Federal agencies, (2) allowing EIA

--Mr. Edward A. Kratzer, General Accounting Office
--Mr. Frank J. Gross, General Accounting Office
--Mr. Frank Bowers, General Accounting Office
--Ms. Jeanne Fox, General Accounting Office

OBJECTIVES, SCOPE, AND METHODOLOGY

This report describes the results of our evaluation from July 1980 through December 1981. Our review focused on the following aspects of EIA's operations:

--The organizational structure and planning process (Ch. 2.)

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

--Efforts to determine the relevancy of energy data and publications (Ch. 4.)

--Quality assurance procedures for ensuring the accuracy and credibility of energy information (Ch. 5.)

--The conformance of data publications to statistical standards (Ch. 5.)

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, while attending conferences, symposiums, and committee meetings, we discussed energy data collection, validation, forecasting, and energy modeling matters with energy officials from business, research firms, and educational institutions to obtain the widest possible range of information upon which to base our evaluation of EIA.

During the period covered by our evaluation, EIA's operations and activities continuously have been evolving in response to major budgetary and staffing changes. These changes are continuing as EIA is reacting to further major reductions in its budgetary and staffing levels during fiscal year 1982 and anticipated reductions during fiscal year 1983. Additional modifications to the nature of Federal energy information activities also could be forthcoming as a result of legislation that DOE has proposed to reduce EIA's costs and the respondent burden of its data collection activities, and the administration's plans to dismantle DOE and transfer its functions. While each of these factors has constrained our ability to fully assess the direction of energy information efforts, our report does provide a current perspective on EIA's operational environment and its overall performance.

Changing the Federal energy role

A transition in the structure, objectives, goals, and priorities of Federal energy information activities also could be brought about by the administration's effort to diminish the Federal energy role and place reliance on a more market-oriented approach for strengthening the Nation's energy posture. The administration's fiscal year 1983 budget request explained that, in general, the Government's energy role should emphasize the establishment of public policies that provide individuals and firms the incentive to produce and use energy efficiently.

The reorganization option proposed by the administration in the budget proposal would transfer to the Department of Commerce EIA's basic responsibilities for carrying out a central, comprehensive, and unified energy data and information program. In our view, it would be essential for the proposed new agency to be independent from the energy policy function. Since its inception, EIA has remained independent and has provided a capability for providing objective information needed to address the Nation's complex energy problems. The DOE Organization Act provides for the administrator to report directly to the Secretary of Energy and stipulates that the administrator is not required to obtain approval for analyzing or publishing information. To maintain this independence a similar provision would be required in new legislation enacted by the Congress.

ROLE OF PROFESSIONAL AUDIT REVIEW TEAM

The Professional Audit Review Team (PART) was formed 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. 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 offices or agencies:

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

The DOE Organization Act provides that PART make an annual professional audit of EIA. PART has issued three reports prior to this report. The PART staff members during the period covered by this report were

approach, there will be a more limited need for data and analyses. In each of the functional areas, the reorientation and retrenchment of EIA's activities already has been pervasive. For example, EIA's efforts to develop new information systems have been delayed or eliminated, existing data collection efforts have been curtailed, analytical studies have been restricted to the most essential energy policy considerations, and major information validation functions have been scaled back to a quality assurance level. The following table shows the extent of these reductions in each of EIA's key functional areas:

Table I
1982 Budget

Function	Initial	Approved	Changes
	millions		
Collection, production, and dissemination	$60.1	$38.9	($21.2)
Applied analysis	15.7	7.7	(8.0)
Information validation	14.1	2.9	(11.2)
Data information services	37.3	29.4	(7.9)
Total	$127.2	$78.9	($48.3)

Personnel levels in EIA have followed a similar pattern. From fiscal year 1978 to fiscal year 1980, EIA's authorized staffing level increased by 22 percent from 744 to 906 positions, and EIA proposed additional increases in fiscal year 1982. However, its staffing has been reduced to an authorized level of 556 full-time, permanent employees, a decrease of more than 38 percent from fiscal year 1980. EIA's proposed fiscal year 1983 budget would further reduce its staffing to 392 full-time, permanent personnel.

In view of its extensive personnel reduction, EIA concluded that it could best meet its responsibilities by dismantling its functional offices and assigning their responsibilities throughout EIA. (EIA's current organization chart is shown in app. I.) EIA believes that this approach will help to increase its effectiveness by streamlining functions and providing better coordination among offices. EIA's major offices currently are

--Office of Statistical Standards
--Office of Oil and Gas
--Office of Coal, Nuclear, Electric and Alternate Fuels
--Office of Energy Markets and End Use

CHAPTER 2

REORGANIZATION OF EIA AND CHANGES IN ITS PLANNING PROCESS

As EIA continued to expand through fiscal year 1980, it organized its activities and assigned its personnel to reflect its key functional program responsibilities for data collection, applied analysis, and information validation. In line with major budgetary and staffing reductions in each of these areas, in July 1981 EIA reorganized its activities to decentralize some responsibilities and centralize others. EIA believes that its new structure--organized to focus on basic statistics and analyses by fuel type--will help to increase its effectiveness by streamlining functions and providing better coordination among offices. We found, however, that EIA has not assessed the number or types of personnel or skills it needs to carry out its technical responsibilities.

Reductions in its budget also disrupted EIA's planning process. Since its inception, EIA had experienced planning difficulties; however, it was making progress in developing a long-range planning process and annual operating plans. These, however, were not consistent with the administration's views on the role and functions of Federal energy information programs and therefore were not practicable in the decisionmaking process during most of the past year. EIA currently is placing emphasis on formulating a planning process that adequately recognizes its new goals and objectives and provides a coordinated strategy for achieving them.

There was also a change in EIA's top management during the year. In June 1981, the Senate confirmed the nomination of a new EIA Administrator. The Deputy Administrator had served as the Acting Administrator since July 1980.

NEW BUDGET AND STAFFING LEVELS LED TO REORGANIZATION

Organized as a separate entity within DOE, EIA continued to expand its operations from its inception in fiscal year 1978 through fiscal year 1980. During that period, EIA was authorized to spend over $205 million for the development and maintenance of energy information programs and systems. Its budget increased by 85 percent from $49.1 million to $90.7 million, and its initial fiscal year 1982 budget request called for an additional $37 million.

As EIA continued to expand its activities through fiscal year 1980, its functions were performed by major offices which were organized by program areas, including data collection, applied analysis, and validation. The administration believes that as the Nation moves from a regulated energy marketplace to a free-market

EIA's first year of existence was marked by many problems associated with consolidating and organizing the agency into an effective and credible source of energy data and analyses. Many of the problems--including lack of progress and direction in activities--could have been prevented or resolved in a shorter timeframe if EIA had provided greater emphasis and priority to the preparation of program plans for each of its organizational units.

While the administration's budget reductions clearly have made it difficult to establish firm goals and objectives, the limited resources available to EIA have intensified the need for strategic planning. Such planning would enable management to concentrate on what is most important and to avoid dissipating resources over too broad a range of activities. Proper planning would also help to ensure that EIA's complex and costly data systems and functions meet their expectations.

During the past 4 years, EIA has 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 has experienced difficulties in meeting the following planning requirements:

--Active involvement of all levels that would be affected when plans are carried out.

--Establishment of goals, objectives, and priorities, based on legislative requirements, and a coordinated strategy for achieving them.

--Identification and formalization of short- and long-term needs.

--Quantified goals to allow managers to measure progress being made.

--Feedback to top management in a way that links plans and accomplishments.

EIA prepared its first program plan for one of its major offices in August 1978. Although other planning efforts continued, it was not until February 1980--over 2 years after EIA's enacting legislation--that EIA instituted a comprehensive planning process which resulted in a March 1980 plan prepared in accordance with DOE's Planning, Programing, and Budgeting System. The plan established EIA's long-range program priorities for a 5-year period encompassing fiscal years 1982 through 1986.

Although EIA also recognized the importance of developing short-term plans to identify and assign priorities to its specific

The Office of Statistical Standards, which has been centralized since the reorganization, provides services to data collectors in the areas of survey and statistical design, develops standards and coordinates standard definitions that govern collection and documentation of energy information, and manages a respondent burden control program. The other offices collectively carry out the data collection, analysis, and quality control activities which were performed previously as discrete EIA functions centered in major offices. EIA also currently has three support offices for providing automatic data processing services, public dissemination activities for EIA's information products, and coordination of program planning and evaluation, project control, budgeting, and procurement.

Because EIA has had limited experience working under the current organizational structure, we did not attempt to evaluate the effectiveness or efficiency of the new organizational arrangements. However, we found that, in assigning its staff to the new offices, EIA gave inadequate attention to determining the number or types of skills each office needed.

The technical nature of EIA's mission makes it essential that it is staffed with the proper number and composition of professionals in a variety of specialized areas. The principal types of employees needed are statisticians, economists, operations research analysts, geologists, and data processing specialists. Even though EIA believed it was necessary to reorganize its functions to perform its work more effectively, it was unable to provide information showing how the new structure would be more effective or its rationale for determining the number of specialist positions of each type needed in the individual offices.

The Director of EIA's Planning and Evaluation Division told us that, a few months after the reorganization was effected, EIA's staff was being reallocated among the offices to smooth EIA's workload. EIA's current staffing plan reflects that reallocation; however, EIA still has not performed a study to determine the number and type of disciplines it needs to carry out its specialized responsibilities.

PLANNING DIFFICULTIES HAVE CONTINUED

EIA's planning difficulties have continued in the wake of operational changes resulting from the new administration's views on the need to alter the Federal energy information role. These changes have created an unsettled operational environment that is not unlike EIA's environment when it was instituted 4 years ago. 1/

1/ PART, Activities of the Energy Information Administration, Department of Energy, May 7, 1979.

Despite these shortcomings, EIA is attempting to improve its planning and decisionmaking by developing a comprehensive planning, programing, and budgeting process. Through this process, EIA plans to identify both short- and long-term needs, make more timely and systematic assessments of how it can best use its resources, identify serious gaps in its information systems, and determine the impact of potential future modifications to its operations. The comprehensive process is to encompass the following activities:

--Preparation of a multiyear plan, encompassing the short-term and long-term needs.

--Input from EIA office and division directors on resource needs for the next fiscal year.

--Preparation of a budget related to EIA's goals, objectives, program activities, and resource requirements.

--Development of an annual operating plan which reflects the results of the budgetary process.

--Development of a management monitoring system for projects and resources.

--A quarterly evaluation to assess the performance of EIA projects and programs.

While the development of this process should help to overcome many of the previous and current deficiencies we have noted in EIA's planning activities, at the time of our review EIA had not established a schedule or target date for completing the process.

CONCLUSIONS

The redirection of the Federal energy role during the past year has resulted in a fundamental transformation in EIA, both in its structure and its operations. While we do not question EIA's decision that it could best respond to the new operational environment by reorganizing responsibilities for its functions, we believe that EIA gave insufficient attention to the staff requirements of its offices. Assessing the number and types of employees it needs to carry out its specialized functions should allow EIA to better ensure that its services are being effectively and efficiently delivered by each of its offices. It also should enable EIA to assess the impact of any future modifications to its activities and how it can best respond to them, both organizationally and operationally.

Throughout its 4-year history, EIA has not placed adequate emphasis on developing the short- and long-range plans needed for decisionmaking, monitoring and controlling projects, and measuring program results. Although it has been without a

projects, efforts, and functions, it did not place adequate emphasis on this part of the planning process. For example, it had not developed program plans for its individual offices when it prepared its initial fiscal year 1982 budget request which was submitted to the Congress in January 1981. In the absence of these short-term plans for its offices, EIA's budget request was based on its more general long-range plan. In effect, EIA relied primarily on its budget process to define and establish its shorter term priorities. While the budget process is a vital part of the planning process and can implement an agency's decisions and provide feedback to management and program officials, it is not an adequate substitute for comprehensive planning.

By the time EIA submitted its revised fiscal year 1982 budget request in October 1981, it had finalized a short-term annual operating plan. EIA obtained the wide participation of its program officials in developing the plan--the first annual operating plan that EIA has developed since its inception. Although the EIA Administrator approved the plan in November 1981, it needs to be revised since it is based on a $70.4 million budget request rather than the $78.9 million budget approved by the Congress. EIA currently is updating this plan to reflect the additional funding provided.

Because the plan was prepared near the end of our review, we did not have time to evaluate its overall adequacy and applicability. We noted, however, that the plan contains the type of information needed to set firm objectives and monitor results. For example, it provides information on the details of the projects of each of EIA's major offices and their priorities. It also provides for monitoring of the projects through an EIA information system being developed to maintain better control over tasks. In addition, EIA has provided its program officials instructions for updating the annual operating plan on a quarterly basis and under energy emergency situations.

Although EIA has made progress in developing its short-term plan, it is still without a plan that is adequate for longer term decisionmaking. As required by DOE's Planning, Programing, and Budgeting System, in March 1981 EIA prepared a 5-year program plan for fiscal years 1983-1987. Because DOE gave EIA only a few weeks to prepare this plan, EIA provided only summary information on its offices and their functions and overall budget and staffing information. The plan does not, for example, specify budgetary or staffing resources that are to be applied to specific programs. In addition, in developing the plan, EIA assumed passage of proposed legislation (the EIA Amendments of 1981). Although enactment of this legislation would substantially reduce EIA's requirements and budgetary needs, the legislation has yet to be deliberated by the Senate and the House of Representatives.

staffing deliberations and decisions were not based on an assessment of the number and mix of disciplines needed in its program offices. We believe that the need for such an assessment of staffing requirements is especially important in EIA because of the technical nature of its work and the mix of highly specialized professionals needed to perform the work effectively and efficiently.

Also, since the administration's fiscal year 1983 budget calls for additional changes and more limited resources for energy information programs, we believe the need for an assessment of staff requirements under both current and anticipated conditions is particularly important at this time. Because such an assessment should be as consistent as possible in the procedures and approaches used to assess staffing needs for EIA's functions and activities, we believe it could best be performed by a central organization--preferably the Office of Planning and Resources, which has overall responsibility for staffing functions.

With respect to our recommendations for improving EIA's program planning activities, EIA said that comprehensive planning has been and remains a high priority. Among planning improvements mentioned by EIA are

--the implementation of an annual operating plan, which is used for monitoring performance,

--a staff retreat, which is being planned for the Spring of 1982 and will focus on planning beyond the current fiscal year,

--the establishment of a Planning and Policy Review Board in December 1981 to formalize the coordination of planning, and

--weekly meetings of EIA Senior Staff to coordinate on operational issues.

These actions are consistent with the intent of our recommendations. However, EIA expressed several concerns about the matters discussed in the report. For example, the EIA Administrator said that:

> "The assertion at one point in the draft PART report that EIA has relied primarily on its budget process to establish its priorities, while at the same time voicing criticism about basing EIA's budget request on its long-range plan, strikes me as odd."

comprehensive plan during the past year, EIA recognizes the importance of sound planning and is working toward the implementation of a planning, programing, and budgeting process to provide adequate direction, control, and oversight for its projects and programs. Given the chronic difficulties that EIA has experienced in the planning area, we believe that the implementation of this process should receive high priority and the attention of top EIA management.

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, EIA, 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.

To ensure adequate progress is made in developing a comprehensive planning process, we recommend that the Administrator assign a high priority and adequate resources to implementing such a process. We also recommend that the Administrator set milestones for implementing the process and be provided regular reports on the status of the process.

AGENCY COMMENTS

In commenting on our recommendations concerning EIA's staffing needs (see app. II), EIA said that its staff planning efforts would continue. EIA said that

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

--although the Office of Planning and Resources maintains a staffing plan, no new hiring is contemplated and, therefore, offices responsible for EIA's work would be responsible for giving attention to internal reassignments.

EIA also pointed out that staffing needs were addressed very carefully while planning for EIA's reorganization and that these efforts have continued in EIA's adjustment to its reduction-in-force and attrition. EIA said that discussions were held with all Assistant Administrators and administrative staff to ensure that an optimal staffing plan was achieved. Also, to make changes necessary for accommodating the impact of personnel reductions, staff discussions and negotiations between offices are continuing.

We are aware that EIA gave serious attention to reassigning its staff and is taking additional actions. Nevertheless, EIA's

scaled back, but those plans were neither inconsistent with the previous long-range plan nor a fundamental change in direction with respect to the basic mission of EIA."

We agree that there has been no change in EIA's basic mission, reflected in its plans, to provide objective information, assist other DOE components by providing information and analyses, and serve the public by making credible information readily available. In our view, however, EIA's current plans are not consistent with those reflected in its previous long-range plan, and EIA's earlier direction toward new and expanded information services has been reversed.

For example, prior to February 1982, the proposed budget for EIA's fiscal year 1982 activities was $127.1 million. The revised budget request submitted in February was for $80 million. Much more than a scaling back of activities was involved in the budget request. Among other changes, it included

--deemphasizing long-term forecasting,

--downgrading the data validation function to a quality assurance function,

--eliminating the Financial Reporting System,

--eliminating all activities in support of the Emergency Energy Conservation Act, and

--sharply reducing Energy Emergency Management Information System activities.

The administration's fiscal year 1983 budget proposal for energy information calls for further reductions in these programs.

The central point that we made in connection with the relationship between EIA's planning and budgeting activities is that, in the absence of completed efforts to identify its shorter term needs, projects, and priorities, EIA relied on its more general longer term plan to develop its budget request. As the report noted, EIA recognized the importance of and was attempting to develop shorter term plans for its activities. Such plans would have provided a sound basis for formulating EIA's budget request.

EIA also stated:

> "* * * The observation that our current Annual Operating Plan needs updating is correct because it was based on $8 million less than our final appropriation. However, the plan is not irrelevant as suggested because the additional money was provided by Congress in late December to do additional work."

This comment is based on our draft report which stated that EIA's plan is no longer relevant because it reflects a different budget than that provided by the Congress. To clarify our meaning, we have revised this statement to indicate that the plan "needs to be revised since it is based on a $70.4 million budget request rather than the $78.9 million budget approved by the Congress.

In addition, EIA said:

> "Extensive planning activities have taken place in EIA which are well documented in a Planning and Evaluation staff paper completed in August 1981.* * *"

We reviewed this staff paper during our audit and again after receiving EIA's comments. As EIA indicates, the staff paper points to numerous efforts to enhance EIA's planning activities, and we recognize that EIA has devoted a considerable amount of time and resources to its planning process. However, as our report notes, throughout its history EIA has encountered many difficulties in developing and implementing plans for its programs and activities. These problems continued during our review. This is evidenced by the fact that EIA had neither an approved short- or long-term plan during most of the period covered by our review. As our report indicates, EIA is attempting to improve its planning, and we agree that this area warrants emphasis.

EIA also stated:

> "* * * Notification of revised budget guidance from the Office of Management and Budget (OMB) in February 1981, did mean that plans had to be

and prices, EIA can adjust assumptions used to evaluate a wide range of policy alternatives. This function is highly susceptible to policy influence because the analysis and forecasts are, by nature, conditional. That is, they predict the outcome based on the assumed occurrence of certain events. It is essential, therefore, that EIA's publications maintain a neutral and objective position by highlighting the underlying assumptions used and by clearly describing the products as having been done specifically at a client's request.

Prior to EIA's July 1981 reorganization, the Office of Applied Analysis was responsible for providing credible and objective analytical products, including responsibility for the quality of its written products, forecasts that are an integral part of the analyses, and models that are used to obtain the forecasts. This office followed specific procedures to record the assumptions that requesters wanted incorporated into their forecasts and analyses and to assure that the resultant products indicated that they were prepared at the request of a specific group, office, or institution. In addition, a public record was maintained of all requests for analytical services.

With EIA's reorganization, responsibility for the analysis function was divided among the Offices of (1) Oil and Gas, (2) Coal, Nuclear, Electric and Alternative Fuels, and (3) Energy Markets and End Use. However, we found that, since the reorganization, EIA has not developed a centralized system or effective procedures for approving, recording, and monitoring the status of requests for analyses. In addition, although EIA's three major offices have been given responsibility for performing the analysis requests, they have not collectively maintained adequate information on the analyses. When we reviewed this function in November 1981, only the Office of Energy Markets and End Use was maintaining a system of controls similar to that used by its predecessor, the Office of Applied Analysis. The Office of Oil and Gas did not have documentation on the number of requests that had been received or how many analyses were being performed at that time. The Office of Coal, Nuclear, Electric, and Alternative Fuels had not received any requests for analyses.

Internal controls over analytical services are essential to maintaining EIA's image as a credible and independent source of energy information. The needed controls include a record of all requests for analytical services, the products furnished, and the assumptions on which the products were based. This is important to help assure that EIA--rather than individual EIA analysts--provide analysis results to requestors, that the analyses are performed in a timely manner and the results of analyses systematically are made public, and that all important assumptions and limitations of the analyses are properly described in published reports. A central accountability system for analytical services also is needed to enable EIA and its managers to determine the amount of resources that have been allocated to specific analysis

CHAPTER 3

EIA HAS REMAINED INDEPENDENT AND OBJECTIVE--BUT INTERNAL CONTROLS NEED STRENGTHENING

For the analytical products of EIA to have credibility, EIA must be objective and independent of policy functions and political biases. Under the DOE Organization Act, the responsibility for formulating and advocating national energy policy was separated from the energy data collection and applied analysis function, as originally mandated by the Energy Conservation and Production Act. 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. The Administrator is not required to obtain approval of DOE officials in analyzing information or publishing any statistical or forecasting technical report prepared in accordance with law.

In performing our review, we analyzed numerous EIA reports and internal review procedures and attended symposiums and meetings dealing, in part, with the objectivity of EIA's work. Based on our work, we find no reason to question EIA's independence or objectivity. While EIA has maintained its independence, it needs to improve its internal procedures for controlling data analysis requests. This is necessary to ensure that EIA's products clearly describe the assumptions used and that a public record of all requests for analytical services is maintained.

BETTER CONTROLS NEEDED FOR FORECASTS AND ANALYSES

The DOE Organization Act emphasizes the importance of EIA's role in analyzing and forecasting information, including, upon request, making special forecasts and analyses for the general public, the Congress, Government officials, and private consumers. The purpose of these products is to assist Government and non-Government users in understanding energy trends. EIA's analyses and forecasts are prepared on complex, long-term energy trends and the economic impacts on regional and industrial sectors. More special-purpose products also are prepared involving such areas as competition within the energy industries, the capital and financial structure of energy companies, and interfuel substitution. Since its inception, EIA has provided studies and analytical assistance to numerous groups, including the DOE Office of Policy and Evaluation, the State Department, the Central Intelligence Agency, the Interstate Commerce Commission, the Office of Management and Budget, and various congressional committees.

In making its analyses and forecasts of the impact of energy policy alternatives on energy supplies, demand, costs,

review of the reports shows that the assumptions used in the analyses were properly stated in each report and each report's requester was identified.

In addition, EIA's procedures for review and clearance of its publications have remained in effect since EIA's reorganization, according to EIA's Office of Planning and Resources. These procedures require that EIA reports be approved by the director of the office which originates the report and reviewed by each of EIA's major offices. Any disagreements that arise concerning material presented in the reports are to be resolved by the Administrator who approves the reports for publication. The Planning and Evaluation Division, Office of Planning and Resources, is responsible for assuring that each EIA report adheres to the internal review procedures. Although these procedures can help to assure the objectivity of EIA's reports, the Office of Planning and Resources was not able to provide documentation showing that EIA's issued reports had been reviewed consistent with the established internal review procedures.

THE 1979 AND 1980 EIA ANNUAL REPORTS TO CONGRESS ARE OBJECTIVE

Since our November 1980 report on EIA's activities, EIA has published its forecast volume of its Annual Report to Congress for both 1979 and 1980. The Annual Report is legislatively required to forecast energy consumption, supply, and prices for the near and distant future. EIA has total responsibility for specifying the assumptions and variables to be adopted for these forecasts.

In its 1979 Annual Report, EIA examined fewer detailed energy scenarios than it did in its 1978 report. Also, it placed more emphasis on possible variations in future world oil prices because EIA believes that the uncertainty surrounding future oil supplies requires that energy projections be made for a wide range of possible oil prices.

The forecast volume of the 1980 report provides comprehensive international and domestic projections for the mid-term and long-term by using various models and forecasting techniques. Also investigated is the sensitivity of projections to key assumptions. Short-term forecasts are not emphasized in the report because, since fiscal year 1980, EIA has been providing national forecasts in its quarterly publication entitled "Short-term Energy Outlook."

In 1980, for the first time, the EIA projections are presented in two companion volumes, a summary volume and the regular Annual Report to Congress. The summary volume, a concise presentation focusing on midterm issues, is directed to those who are not experts in energy issues or forecasting. The regular

projects, assign priorities to existing projects, and effectively plan for future resource requirements.

Our previous reviews of EIA's activities have shown that EIA consistently maintained a public record of all requests for analytical services, the products furnished, and the assumptions on which the products were based. The Director, Office of Planning and Resources, assured us that EIA will continue to maintain a high level of control over this work. However, a project to develop an accountability system for analytical services has not yet been initiated.

REPORTS HAVE BEEN INDEPENDENTLY PREPARED

From July 1980 through June 1981, EIA completed 24 analysis requests. (See app. III for the titles of the reports and their requesters.) The resulting reports were of the following type:

--Nine Analysis Reports. This type of report may describe the results of any one forecast, discuss the details of specific energy issues, or compare alternative forecasts. Analysis Reports may be initiated by EIA staff or they may be requested by individual clients. Three of the reports were prepared in response to DOE requesters; one was mandated by the Powerplant and Industrial Fuels Use Act.

--Six Energy Policy Studies. These studies are prepared for the use of Federal policymakers or planners and involve issues such as Federal pipeline regulation, energy taxation, and Federal support for nuclear power. Each of the studies prepared was in response to a congressional request.

--Nine Service Reports. These reports are similar to analysis reports but are not refined enough to be published. DOE components requested six of the reports; the others were prepared for the Office of Management and Budget, the Nuclear Exchange Corporation, and the Congress.

We analyzed each of the 24 reports for obvious external policy bias and the adequacy of procedures established by EIA to guard against external influence. We found that each report clearly specified the assumptions used and was attributed to its requester. Also, a public record was maintained of all requests, assumptions made in the analyses, and the products furnished.

As previously discussed, since its July 1981 reorganization, EIA has not developed procedures adequate for assuring its analytical reports are free of policy bias or for identifying the reports prepared. At our request, however, EIA provided us with seven reports which were prepared after its reorganization. Our

Although the committee will be available to advise all Government agencies on energy statistics, its primary Federal advisory responsibility is to EIA.

From October 1980 to October 1981, the Committee on Energy Statistics held four meetings. Among the topics discussed at the meetings were (1) procedures for determining when EIA should hire contractors to perform its work, (2) the redesign of the weekly petroleum data system, (3) the development of the comprehensive national gas data system, (4) plans for validating energy information, and (5) a data requirements study for energy imports. In each of these and other areas, the committee provided EIA with suggestions and recommendations.

CONCLUSIONS

The independence and objectivity of EIA's activities are essential to providing credible energy information and analysis. Based on our review of analytical products furnished to a variety of requesters and of EIA's 1979 and 1980 Annual Reports to Congress, we find no reason to believe these activities are being affected by energy policy influences. Moreover, EIA's objectivity is enhanced through the expert review and comment it regularly receives through external energy information meetings.

Nevertheless, we believe that EIA's independence and objectivity is jeopardized by the absence of a centralized process for recording and monitoring requests for analytical services. Such a process should include uniform procedures for assuring that all assumptions inherent in EIA's analyses are documented and fairly stated in the resultant written products.

RECOMMENDATIONS

We recommend that the Administrator, 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 requesters' specifications.

AGENCY COMMENTS

The Administrator of EIA agreed with our recommendation and said that an analysis tracking system was being developed by the Office of Planning and Resources and would be implemented in March 1982. He also said that this system will be operated in conjunction with existing systems for tracking information and data services requests. (See app. II.)

volume is more comprehensive in its presentation and is intended for analysts and others interested in the details of the forecasts and in long-term issues. Both volumes are based on scenarios, or descriptions of the future, emphasizing variations in future oil prices. This is the same approach used in the 1979 Annual Report.

Based on our review, the forecast volumes of the 1979 and 1980 Annual Reports are balanced and objective presentations of the types of information needed for decisionmaking. They offer qualified predictions of what is likely to happen under certain stated assumptions or premises and clearly state that the accuracy of the forecasts will be affected by unexpected events and changing conditions. They also caution that appropriate use of the forecasts must be based on a recognition and understanding of the inherent uncertainties in the data.

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 August 1980 and June 1981, EIA sponsored symposiums conducted to obtain a critique of the forecast volume of its Annual Reports for 1979 and 1980. The symposiums were conducted by the University of Maryland and Native American Consultants, Inc., respectively. Findings of the Annual Reports were commented on by energy experts from academia, energy consulting firms, trade associations, energy-producing companies, and State and Federal agencies. The energy experts reviewed and evaluated assumptions, methodologies, forecasts, and conclusions presented in the reports. Several of the energy experts concluded that the size and detailed nature of the forecast volume made it difficult for laymen to understand and suggested a more compact report limited to major aspects of the forecasts. As a result, EIA developed its summary volume for the 1980 Annual Report.

EIA's objectivity was also enhanced by the establishment 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.

--How current should the data be?
--To what extent must the data be verified?

The studies should also indicate the trade-offs which should be considered between timely data and verification and identify areas where EIA could reduce collection efforts through the curtailment of data requests.

The need for comprehensive determinations of data users' needs are well-recognized within the Federal statistical information community. These determinations were strongly supported by the Office of Federal Statistical Policy and Standards, Department of Commerce, which was responsible for developing and coordinating Federal statistical policy until August 1981, when the Office's functions were transferred to the Office of Management and Budget. In March 1978, the Policy and Standards Office issued its Statistical Policy Handbook, which established uniform statistical standards and guidelines for the collection and compilation of statistical data and for the new release and publication of Federal statistics.

In its directive on statistical surveys, the handbook states that, before any other steps are taken, there must be a clear understanding of the survey's precise purpose in terms of information to be collected, hypotheses to be tested, or problems to be solved. The directive stresses that there must be consultation with users to help define the survey's purpose and ensure its maximum usefulness. It points out that users often can make contributions which are helpful in determining the data to be collected, the timing and frequency of repetitive surveys, and the degree of precision needed. In the case of important statistical series, the directive states that user comments should be obtained on the usefulness of the published data by means of questionnaires, advisory committees, or other appropriate means.

In April 1980, the Office of Policy and Standards established the Interagency Committee on Data Access and Use. Twelve Federal agencies, including EIA, nominated representatives to the committee. In March 1981, the Interagency Committee issued a report on the represented agencies' data access activities. The paper stressed that agencies should solicit feedback from their user communities and that formalized user surveys, although rarely used, should become a regular part of statistical agencies' data access programs.

In addition, the need for user involvement is emphasized in numerous General Accounting Office (GAO) reports dealing with management information systems. In a special publication 1/ on

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1/"Lessons Learned About Acquiring Financial Management and Other Information Systems," August 1976.

CHAPTER 4

GREATER EMPHASIS IS NEEDED IN DETERMINING USEFULNESS OF DATA AND PUBLICATIONS

General requirements for EIA's data are established in numerous ways, including Federal legislation and regulations, requests of the Congress and executive branch agencies, inquiries from private industry and the general public, and numerous energy supply and demand scenarios. For EIA to meet these widespread requirements in a cost-effective manner, it needs to know the specific needs of the current and potential users of its data. Although EIA has conducted several studies involving the use of its data, most of the studies have had serious shortcomings from a user-need standpoint, and little has been accomplished toward developing a systematic approach to identifying the needs of current and potential data users. As a result, EIA may be collecting, analyzing, and disseminating information that is not as useful as it could be and failing to identify and respond to more significant needs.

USER NEEDS SHOULD BE IDENTIFIED

Determining data requirements is the most important step in either developing, expanding, or modifying an information system. If full participation of the system's current and potential users is not obtained, it is likely that the system will not produce complete and otherwise acceptable information for the users. As the respository of the Nation's energy information, EIA's data requirements are massive. In addition to voluminous data systems it inherited from its predecessor agencies, EIA has initiated many new major data collection efforts to advance the work of its predecessors or to respond to new initiatives of the Congress.

For EIA to meet its far-reaching demands effectively at the least possible cost, it needs a systematic approach to identify and establish priorities for energy information needs. To accomplish this, comprehensive user-needs studies should be conducted to determine as precisely as possible the national data needs of the Federal Government, private industry, energy consumers, and the general public.

Determining the usefulness of EIA's diverse data is a time-consuming and difficult task. A representative sample of users is needed to determine the data's understandability, reliability, completeness, and overall usefulness. Some of the key questions that the user-needs studies must answer follow:

--What specific data are needed?
--Who uses the data?
--For what purposes are the data used?
--How detailed should the data be?

--In a May 1981 report 1/, GAO criticized the development of the Respondent Information System, which was intended to collect, process, and provide financial and operating information reported by energy producers, natural gas pipelines, and electric utilities. GAO's criticism was directed toward the Federal Power Commission for not clearly identifying the needs of the system's potential users. However, we found that EIA also failed to obtain comprehensive information on the users' needs.

--In two reports 2/ issued in 1978, GAO criticized EIA's development of the Financial Reporting System. This system was intended to provide, on a recurring basis, financial and operating performance data on companies in energy-related industries. GAO's principal concern was that EIA had neither adequately defined its data needs nor sufficiently planned the use it would make of the data collected.

EFFORTS TO IMPROVE USEFULNESS OF PRODUCTS HAVE NOT BEEN EFFECTIVE

In the past few years, EIA has initiated several efforts to improve the usefulness of its data and publications. These efforts include (1) surveys using questionnaire cards transmitted with EIA publications to determine the accuracy, timeliness, and responsiveness of individual publications, (2) a broad-based study to determine the EIA forms, data, and publications that are most relevant and to eliminate those that are unneeded, and (3) contracted studies to provide a comprehensive analysis of EIA publications, including recommendations for improving or eliminating EIA products. Despite these efforts, none of the studies or projects provide an incisive assessment of the immediate or future needs of users of EIA data and publications.

Questionnaire surveys

In 1978, EIA contracted with the Computer Sciences Corporation to conduct a one-time survey of recipients of EIA's publication, the "Monthly Energy Review," for July 1978. This publication presently contains 64 tables of energy data; however, the users of the data had no involvement in developing the publication

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1/"Millions Wasted Trying to Develop Major Energy Information System," AFMD-81-40, May 15, 1981.

2/"Improvements Needed in Department of Energy's Effort to Develop a Financial Reporting System," EMD-78-95, July 31, 1978; and letter report on "Financial Reporting System," EMD-78-112, November 1, 1978.

problems Federal agencies encounter in developing these systems, GAO stated that determining user needs is the first step in initiating or modifying a management information system. The publication concluded that

--system users are in the best position to recognize unsatisfied information requirements and should be encouraged to recommend improvements on a continuous basis,

--accumulated information on user problems should be continuously analyzed and evaluated to provide a basis for prompt decisions on whether to change the system, and

--a priority statement of user needs should be developed to give management a basis for carrying out the agency's program objectives and long-range plans.

LIMITED USER INVOLVEMENT IN DEVELOPMENT OF DATA SYSTEMS

Since many of EIA's data systems were inherited from the Federal Power Commission, the Bureau of Mines, and the Federal Energy Administration, it is not possible to determine the extent of user surveys involved in the development of these systems. Since EIA was established, however, it has received some criticism for failing to place enough emphasis on defining its data needs in developing information systems.

While the following examples are not intended to reflect the overall adequacy of EIA's system development efforts, they illustrate the need to give attention to user requirements in the planning stage of developing information systems.

--In our 1980 report 1/ on EIA's activities, we criticized EIA's system development efforts in connection with its attempts to establish a national energy information system. We pointed out that, although the system's developers had performed an analysis of its legislative requirements to develop system priorities, they did not solicit the formal views of the system's intended users to determine the information that they would hope to obtain from the system.

1/PART, "Activities of the Energy Information Administration," November 13, 1980.

Furthermore, EIA was not able to demonstrate that the two surveys resulted in any improvements to the publications.

Relevancy study

In January 1981, EIA initiated a study entitled "Relevancy of EIA Dissemination Systems and EIA Publications." In connection with this study, EIA began surveying its users by placing questionnaires in its Annual Report to Congress and its Energy Information Referral Directory. The purpose of this survey was to determine the usefulness, data needs, and audience of EIA's publications. However, the survey addressed only general questions that are similar to those addressed in EIA's previous questionnaire surveys. For example, the questionnaire included in the 1980 EIA Annual Report to Congress requests information on the users' occupations and general uses of the publication; however, no questions are asked about the specific types of data included in the Annual Report.

The limited use of this type of survey was recognized in a March 1981 EIA report on its relevancy study. In discussing user survey cards, the paper states:

> "It is not clear from the experience of other Federal statistical agencies that specific changes to publications can result from these user survey cards. However, they do give, from our early returns, some insight as to the popularity (or lack of it) by various user audiences."

EIA's relevancy study also provided information on the number of publications printed and sold, publication dissemination activities, and conclusions and recommendations for making EIA publications more relevant and cost-effective. Our review of this study, however, shows that it was primarily a marketing study for publications. Although the study provided a great deal of information on the publications, it did not focus on their usefulness. Nevertheless, the study did identify the need to (1) identify the size and composition of EIA's target audiences, (2) establish a forum to seek advice from outside users of EIA publications, and (3) hold meetings with the principal users of certain categories of EIA publications. It also enabled EIA to identify the most and least popular publications and ways it can improve its publication distribution system.

Similar observations were made by the American Statistical Association's Ad Hoc Committee on Energy Statistics at its May 29, 1981, meeting with EIA. The committee pointed out that of the 27 policy recommendations contained in the study, 22 dealt with problems of format and distribution, 3 addressed the content of the publications, and 2 were somewhat ambiguous and could probably be classified in both areas.

or the data systems related to it. Nor did the contractor's questionnaire deal directly with the data presented in the publication. Instead the questionnaire focused on questions related to the primary sources of the users' energy-related statistics and information on the annual cost of obtaining them.

While most of the questionnaires were sent to Government agencies and employees, members of the petroleum industry were the most active in responding to the questionnaires. As could be anticipated, most of these respondents stated that the publication should provide additional petroleum-related information. However, the EIA official responsible for the study told us that EIA received no detailed information that could be used in determining what the users' specific needs were or what EIA data were relevant to the needs. Also, EIA was not able to provide information showing that the publications had been improved as a result of this survey.

Also in 1978, EIA entered a contract to have the Genasys Corporation conduct user surveys of two other EIA publications. In preparing a questionnaire for the work, the contractor interviewed the individuals who prepared the publications to gain an understanding of their contents. However, the publications' users were not involved in the development of the questionnaire.

Moreover, EIA did not require the contractor to identify all users and potential users of the publications or to categorize priority users and those relying less on EIA data. Nor was the contractor required to have discussions with the users to identify all of their data requirements. The developed questionnaire asked for only general information related to

--whether the publication is used by the questionnaire recipient and others in the same organization,

--the number of times the publication is used,

--whether the recipient uses other publications containing the same or similar information,

--the general categories of use, such as general reference, marketing analysis, and general analysis,

--the general user category, such as the Federal Government or financial institutions, and

--the general type of data used, such as production data.

No information was requested in key areas, such as the purpose for which the data are used and the importance, completeness, usefulness, accuracy, timeliness, or understandability of the data.

already done. We also stated that the specifications resulting from such reviews are planned to enable EIA to focus new and revised data collection efforts precisely on the information required by its users. EIA emphasizes this benefit in its July 1981 final report on a national energy information system which states that "One prerequisite in developing and operating any information system is to identify the data requirements or needs of the system's current and potential users."

EIA's requirements reviews emcompass the following areas:

--A definition of the scope of the review.

--An analysis of pertinent legislation and regulations.

--An assessment of the feasibility of collecting the data, including a cost analysis.

--The preparation of a report presenting the review findings with recommendations for action.

The reviews are also to consider the data needs of EIA's users. According to EIA's procedures for conducting these reviews, EIA is to identify users or potential users of data, determine how information is or would be used, develop specific data needs with a core group of users, and, from a wider group of users, confirm the data needs.

As mentioned previously, in reviewing EIA's approach to user needs studies, we found that specific data needs were not determined. Therefore, we examined EIA's 13 large-scale requirements reviews to determine whether user-needs analyses were performed in connection with the reviews.

While these reviews have documented many basic data requirements, we found that, 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 capability 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. For example:

--In reviewing data requirements for petroleum products, EIA held discussions with energy industry representatives to gain an understanding of their operating environment, but no attempt was made to pinpoint the data needs of these or any other current or potential users.

--In reviewing requirements for natural gas and crude oil data, EIA limited its user needs analysis to DOE personnel.

Analysis of publications

EIA has awarded two contracts for a thorough analysis of its electric, coal, and oil publications to improve their usefulness. The first of these contracts, valued at approximately $50,000, was awarded in 1980 to the Maxima Corporation. As a result of its work, the contractor has prepared recommendations for integrating electricity and coal publications to replace several existing publications and for improving coal and electric sections of EIA's "Monthly Energy Review." While these efforts are clearly attempts to better serve the needs of EIA's users, we found that the scope of the contract did not include user surveys to determine their data needs.

A similar contract was awarded in 1981 to Applied Management Sciences, Inc. Under this contract, valued at approximately $72,000, the contractor studied a family of weekly, monthly, quarterly, and annual petroleum publications and prepared a report recommending that 11 existing publications be integrated into 6 new publications. While the contractor considered such things as reader appeal and continuity in the publications, the contract terms did not call for user involvement in the study.

OTHER EIA EFFORTS TO IMPROVE ITS PRODUCTS' USEFULNESS

Aside from its specific efforts aimed at improving the usefulness of data and publications, EIA has initiated several other general efforts which address, to varying degrees, the utility of data collection forms and data systems. These efforts collectively are useful approaches to determining general data requirements, modifying or eliminating individual data systems, improving user access to data, and standardizing data collection efforts. The efforts, however, fall short of identifying specific existing and future data needs, determining and categorizing data users and potential users, and establishing priority data requirements.

EIA has been conducting general reviews of data requirements for the past 3 years. These reviews are to examine (1) the primary information sources for an energy subject area, such as oil and gas reserves and (2) the rationale for determining the degree to which the data requirements should be met by EIA. In its March 1981 "Guidelines and Procedures for the Conduct of a Review of Data Requirements," EIA states that, prior to the creation of EIA, requirements for energy information were not routinely reviewed. EIA states, however, that it is carrying out a program to review the requirements of all major energy information topic areas by 1983.

In our November 1980 report, we pointed out that the information developed in requirements reviews is useful to EIA in planning which systems and forms to validate without duplicating work

EIA's current and potential users. To ensure that users' views and suggestions are adequately represented, we recommend that the Administrator stipulate that EIA's 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 input from them, and integrate the results of the various studies.

AGENCY COMMENTS

EIA agreed with our recommendations and said that it is continuing to improve its assessment of user needs and will expand this activity as resources permit. EIA also said that the closer linkage between data collection and data analysis, facilitated by reorganization, has improved the informal communication of user needs. (See app. II.)

In addition to its requirements reviews, EIA has been taking several other measures which could help to improve the usefulness of its data and publications. These efforts are related to EIA's forms clearance and design functions, the Data Resources Directory, and the establishment of a Data Requirements Review Board.

In performing forms clearance and design functions, EIA analyzes all DOE-proposed information collection projects and consults with the public to identify statistical needs and ensure that data collection surveys do not duplicate other efforts. In connection with this responsibility, EIA attempts to identify improved methods for collecting data and for reducing the reporting burden of respondents.

In improving its energy information systems, EIA has awarded a contract, valued at $1.4 million, for the design, development, demonstration, and maintenance of a Data Resources Directory which is to provide a unified and integrated data base and a computerized software system for retrieving data. The contracted work is scheduled to be completed in March 1982. EIA believes that by organizing and integrating data, the directory will provide information about the data in one central location and facilitate access to it.

Finally, in June 1980, the EIA Administrator established a Data Requirements Review Board to provide early policy and technical review of proposed new energy data systems, modifications to or eliminations of existing systems, and other major data-collection-related issues. The Board advises the EIA Administrator on whether to proceed with a proposal and possible alternatives which should be considered.

CONCLUSIONS

Although EIA recognizes the importance of performing comprehensive assessments of the needs of its current and potential data users, its efforts to conduct user needs studies have not succeeded in identifying the users and their specific data needs. Also, even though EIA's reviews of data requirements provide a good framework for assessing the general needs of data users, they have not been conducted in a way that assures that EIA contacts a representative group of possible data users to obtain their views on the acceptability of data being provided and their recommendations for making improvements. Until EIA comprehensively determines the use and shortcomings of its data and publications, it will not be able to implement its information programs on more than a limited basis.

RECOMMENDATIONS

To improve the usefulness of EIA data and publications, we recommend that the EIA 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

As we noted in our November 1980 report, EIA had developed a comprehensive program plan for assuring the quality of its products. This plan included validating, by 1986, all of EIA's existing information systems. We reported, however, that the three information system validation efforts completed at the time of our fieldwork did not meet all of their objectives and, because of the limited number of validation studies performed, the accuracy of most information was undetermined.

In our current review, we noted that four additional studies have been issued. However, in the three studies dealing with the joint petroleum reporting system, prime suppliers, and monthly power plants, no quantification of the level of error is provided. In the fourth study, which deals with crude oil entitlements only, a limited quantification of the error level is provided. Therefore, the results of these validation efforts do not enable users of EIA's data to determine whether a specific statistic is unbiased or contains a certain amount of error.

As of December 1981, 33 of EIA's existing 40 information systems had not been validated. Even though EIA is in the process of finalizing four validation studies, its emphasis on this function--which was EIA's first priority in February 1981--has been scaled back drastically. For example, future validation studies will be performed by and at the discretion of individual EIA program offices rather than on a comprehensive basis by EIA personnel specialized in this function. Likewise, the amount of validation work performed in each study will be determined on a case-by-case basis, whereas the Office of Energy Information Validation had planned to perform a complete validation of all existing systems and to update the validations on a 5-year basis. We also noted that EIA had no plans for developing standards or quality control procedures for performing future system validations.

In addition to validating its information systems, EIA has the responsibility for assuring data quality by assessing its models that are used to project energy data. In our November 1980 report, we pointed out that EIA intended to complete these efforts by 1986 but, based on the little progress that had been made, we stated that it was doubtful that the target date could be met. Our current work substantiates that view. As of December 1981, EIA had fully documented only one of its 60 models and had not assessed any of them. Further, EIA has yet to develop standards for assessing the models.

At the time of our last report, responsibilities for developing model assessment standards were assigned to both the Office of Energy Information Validation and the Office of Applied Analysis. To eliminate the potentially duplicative and ineffective situation of having two groups assuming responsibility for these standards, we recommended that the function be assigned to a single office. In line with this recommendation, in July

CHAPTER 5

QUALITY CONTROL PROCEDURES AND STATISTICAL STANDARDS FOR EIA'S PRODUCTS SHOULD BE STRENGTHENED

Maintaining adequate quality control procedures has been a primary concern of EIA's management since 1977, when EIA was created to provide accurate and credible energy information. Until its July 1981 reorganization, EIA had placed responsibility for quality assurance standards for its energy information in one central office--the Office of Energy Information Validation. Currently, EIA's individual program offices are assigned primary responsibility for quality control. In addition, EIA's new Office of Statistical Standards has general responsibility for developing quality control standards, monitoring compliance with the standards, and evaluating the quality of EIA's products. As of December 1981, this office was making progress in meeting its responsibilities; however, EIA does not have uniform standards for validating its systems or for assessing its models. Further, key procedures and standards are not scheduled to be completed until late 1982.

To a large extent, the quality of EIA's products is dependent on its compliance with statistical reporting standards. Complying with these standards is necessary to ensure that EIA's publications provide sufficient information to allow readers to make informed judgments on how the data should be used and the limitations of the data. Although EIA had developed a set of reporting standards for its publications, our review of several publications shows that the standards are not being consistently followed. As a result, users of EIA's publications have not received adequate information in several key areas, including the design of the survey, quality of the data, and possible errors in the data.

PREVIOUS EFFORTS HAVE NOT ASSURED QUALITY

When EIA was established in October 1977, it immediately recognized the importance of performing high-quality work by centering responsibilities for quality assurance in its Office of Energy Information Validation. This major office was given responsibilities 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, the Office of Energy Information Validation maintained general oversight of quality, coordinated with other EIA offices, and reported its recommendations for improvement directly to the EIA Administrator. Nevertheless, our previous evaluations show that EIA was making little progress in determining the accuracy and reliability of energy information.

data and models. In addition, it is to maintain professional contacts with other Government statistical organizations to enhance EIA's technical knowledge and expertise.

Although EIA has clearly defined these organizational responsibilities for quality control functions, our review shows that little has been done to develop and implement needed controls. Further, under EIA's plans as of December 31, 1981, actions to carry out the quality control functions will not be taken for some time. For example, as shown in the following table, several key quality standards and procedures are not scheduled to be developed until late 1982:

TABLE 1

EIA Plan For Developing And Implementing Quality Standards And Procedures

Task	Resources needed		Target completion date
	Staff years	Funding	
Model assessment standards	3.5	$190,000	September 1982
Model documentation standards	1.0	50,000	September 1982
Data standards	1.0	50,000	March 1982
Quality control procedures	2.5	200,000	September 1982

Also, in reviewing the quality control function in major program offices, we were not able to identify any specific quality control procedures in place as of December 31, 1981. While the Office of Oil and Gas had assigned primary responsibility for quality functions to its Data Review and Analysis Branch, we were not able to identify any assignment of responsibility for these functions in the other major program offices. In addition, none of the offices could identify funds that had been designated for use in carrying out quality control activities.

COMPLIANCE WITH STATISTICAL REPORTING STANDARDS SHOULD BE IMPROVED

Although EIA has established standards for its publications, the standards it follows in preparing several key publications vary greatly. While the publications clearly label data, cite

1981 EIA assigned the responsibility to its new Division of Quality Assurance, Office of Statistical Standards.

NEED TO DEVELOP QUALITY CONTROL STANDARDS AND PROCEDURES

Although the validation of its energy information had been EIA's top priority, the administration's revised budget proposal for fiscal year 1982--and congressional action on this proposal--were particularly severe in the validation area. For example, EIA's $2.9 million fiscal year 1982 appropriation for validation activities is only about 20 percent of the amount it had requested in the initial budget proposal prepared under the prior administration. In contrast, other EIA programs received about $76 million, or approximately 67 percent of the amount originally requested.

In place of validation efforts, EIA is emphasizing the primary role of its program offices in developing systems of internal control to maintain quality products. In addition, the Office of Statistical Standards was created in July 1981 to develop standards for energy data collection procedures, statistical publications, and documentation of analyses, forecasts, and projections. This office has three divisions, each of which is responsible for one or more forms of quality control. The Division of Statistical Support is responsible for assisting program offices in correcting known problems and improving existing procedures, and the Division of Forms Clearance and Burden Control assures that forms clearance standards are followed. Primary responsibility for quality assurance, however, is placed in the Quality Assurance Division, which is to ensure that EIA's data and analysis standards are met and to assess independently the quality of energy data, analyses, and forecasts.

The Quality Assurance Division's fiscal year 1982 budget for contracts and staff support is $1.5 million. The division has a staff of 14 professional employees. Its functions include:

- --developing procedures for and recommending data quality improvements for selected energy data collection systems,
- --completing several of the validation studies that were being conducted by the Office of Energy Information Validation, and
- --assessing models to ensure their accuracy and credibility and archiving the models to make it possible to transfer them to the public upon request.

The Quality Assurance Division also is to develop and monitor compliance with quality assurance standards, check EIA information by comparing it with information from other sources, maintain a capability to audit the reports of EIA respondents, and evaluate

purposely selected to cover a range of types of reports reflecting, to the extent possible, different periods of reporting and different user groups. We selected the following reports:

1. Solar Collector Manufacturing Activity, DOE/EIA-0174.

2. Residential Energy Consumption Survey: 1979-1980 Consumption and Expenditures, DOE/EIA-0207.

3. Weekly Petroleum Status Report, November 7 and 14, 1980, DOE/EIA-0208.

4. Energy Data Report, Gasoline Prices (Preliminary), April 1980, DOE/EIA-0043(80/04).

5. Monthly Energy Review, November 1980, DOE/EIA-0035 (80/11).

In evaluating these reports, we did not review their timeliness. Nor did we have access to the completed checklist EIA prepared in reviewing the publications. We did, however, ensure that our review covered the items included on the checklist.

Our review of the five publications shows that, while EIA is complying with statistical reporting standards in certain key areas, it is failing to meet other important standards--notably those related to describing the design of the survey, providing information on quality control procedures used, and presenting information on possible errors in the data.

The basic data presented in the publications reviewed are well-presented in tabular form. The tables are clear and well-labeled, and the sources of the data are generally clearly indicated. Further, when the data are obtained from a sample survey, the publications present estimates of the sampling errors in reasonable ways. Also, the presence of nonsampling errors is generally mentioned.

Even though many of EIA's reports are based on surveys of complete universes, the reports should include a reliability statement which is intended to provide much more information than the sampling error. For example:

--Response rates for units and items presented should be given.

--Imputation and editing procedures should be spelled out.

--Processing errors should be discussed.

--Sources of response bias and any measurements of it should be included.

sources of the data, and provide definitions of terms used, they fail to meet several other important EIA standards for publishing energy statistics. For example, descriptions of the survey design provided readers with only a vague understanding of the target population or universe, information on quality control procedures used was either missing or extremely limited, and very little information was presented on possible errors in the data. Improved compliance with statistical standards in these and other areas is needed to ensure that data users are given enough information to evaluate the appropriateness of the data for their intended use.

Standards for the Publication of Energy Statistics

While there is not general agreement among statisticians on standards to be used in reporting statistical data, the Department of Commerce has issued a Statistical Policy Handbook which provides general guidance to Federal agencies. The Handbook states that each statistical agency should develop more detailed standards within the general framework provided by the guidance. EIA has met this responsibility by issuing two sets of standards in the past 3 years and is currently working on the development of new standards. The major areas covered by EIA's statistical standards in effect at the time of our review include

--labeling of data,
--definition of terms,
--description of survey design,
--reliability statement,
--revision of data, and
--review before publication.

The standards also contained a section on table format guidelines and included a checklist to be completed during the review of statistical reports.

In conducting its current work to develop new standards, EIA's Office of Statistical Standards has reviewed the standards developed or being considered by other Federal agencies. Its revised standards, after being approved by the EIA Administrator, are to be enforced by the Director of the Office of Statistical Standards. This office also has responsibility for reviewing all of EIA's publications to ensure that they adhere to the standards.

All Standards Are Not Being Consistently Followed

To determine whether EIA is complying with its statistical reporting standards, we selected for review five EIA publications from the EIA Publications Directories. These publications were

revised without adequate discussion of the revisions. For example, considerable unexplained revisions were made to data on the number of manufacturers by State and the number of solar thermal and photovoltaic module shipments made.

In addition, we identified the following weaknesses in the report appendix on the survey's history and methodology:

--Possible deficiencies in the universe were not discussed.

--Information on followup and editing practices was not provided.

--The method of imputing for nonrespondents was not mentioned.

--Possible limitations of the data were not discussed.

Despite these limitations, the report provides a very helpful glossary that defines several of the terms used in the tables and text. It also provides a copy of the survey form, which enables the user to understand the kind of data requested of companies surveyed.

The overall quality of the report is difficult to assess. While the report is easy to understand, if users make decisions on the basis of data which is subsequently revised, their decisions may be wrong. To reduce the risk to the users, EIA should advise them that substantial revisions of the most current data in the publication frequently take place.

Residential Energy Consumption Survey: 1979-1980 Consumption and Expenditures

The purpose of this report is to present data for household energy consumption and expenditures. The survey on which the report is based was carried out by a contractor--as is clearly stated in an appendix to the report. This appendix is very helpful to users in describing the survey and possible limitations in the data. Especially helpful is the section dealing with minimizing nonresponse to the survey. Not only is the description helpful, but also the efforts made to minimize nonresponse are impressive. In addition, the imputation method for fuel consumption data is clearly described.

The report appendix that deals with the limitation of the data is also very clear and helpful. The method for estimating sampling errors is described, and tables of relative standard errors are provided.

In addition, the text itself is very good. Levels of energy use are followed by a measure of their variability. This enables

However, the publications we reviewed contain no information about the concepts that EIA used in analyzing errors in the data. When the data are obtained from the universe rather than a sample of the universe, little or no information is presented about the error structure of the data. This could leave data users with the mistaken impression that, since no sampling was involved, the data are error-free. For example, very limited information is provided on nonsampling errors, including coverage estimates, amount of imputation, or the effect of possible data processing errors. In addition, revised data are presented without an explanation of the reasons for the revision.

Following are our specific comments on each of the publications reviewed:

Solar Collector Manufacturing Activity

This report provides information on production, sales, and end-use data on trends in solar thermal and photovoltaic module manufacturing. The publication clearly identifies its users as DOE, the Solar Energy Research Institute, solar energy consultants, and solar energy manufacturers.

However, the report does not adequately define the universe of manufacturers surveyed. In the issue of the report which deals with the period from July through December 1980, it is stated that there were 364 solar thermal manufacturers in 1980, but it also states that survey forms were sent to 391 companies identified as known or probable manufacturers or importers of solar thermal collectors. Because the report does not discuss the difference between the universe of companies and the number of companies included in the survey, the reader might assume that some of the companies in the survey were not really manufacturers or went out of business--but the reader has no way of knowing what actually happened. This oversight is repeated when the report states that there were 13 companies in the universe of photovoltaic module manufacturers but indicates that survey forms were sent to 26 probable manufacturers of photovoltaic modules.

The problem is even more confused by the issue of the report dealing with January through June 1981. This report states that there were 249 manufacturers of solar thermal equipment, an increase of one since the second half of 1980. However, EIA's report for the second half of 1980 stated that there were 364 such manufacturers. Regardless of the reason for this difference, the reader of the report cannot determine what the universe is or how well it is covered.

Further, although table 1 of the report shows that the number of manufacturers for 1980 was revised, it does not provide information on why or how the revision was done. Our limited review of other tables in the report shows that they also were

Energy Data Report, Gasoline Prices (Preliminary)

The purpose of this report is to provide monthly statistics on the price of gasoline. The data are clearly described as preliminary data, and a note is provided to indicate that the final prices are to be published in the "Monthly Energy Review." The data are presented at the national level and by DOE region.

Information about estimation techniques and sampling errors at the national level are presented clearly but not completely. Levels of nonresponse are not given, although the number of gasoline stations is shown. In comparing the number of stations reported for two different months, we found that there is some variability in response rate by month--the number of stations reporting in one month was higher in every category than the number reporting in another month. Therefore, it would be helpful for EIA to explain differences in the monthly response rates.

Neither the design of the sample nor its coverage is described. The sample is approximately 8,000 service stations. However, the question of whether they have equal probability of selection is not addressed.

A very brief description of the estimation method, including imputation, is given. The estimated totals on revenue and sales volume are calculated by multiplying the sample totals by a "raising factor," which is the ratio of the number of gasoline stations in the State divided by the number of responding stations in the State. However, the publication does not identify the source of these numbers or specify if the information was updated for new stations and closed stations. Also, the use of this kind of ratio adjustment is valid only if the probability of selection for all stations in the State is identical--an issue not discussed in the publication.

In addition, EIA does not explain why data for certain territories are included with data for States. For example, in a regional estimate of the price of gasoline, the report does not explain why Puerto Rico and the Virgin Islands were included with New York and New Jersey.

The major problem with the publication is that it glosses over some of the technical qualifications of the study. However, the publication clearly presents available information, and its overall quality is good.

Monthly Energy Review

This report is a compendium of energy statistics derived from many different sources. Most of these sources are other EIA publications which are generally cited in the report.

users to make quick determinations about the usefulness of the numbers presented.

The report also contains many helpful bar charts illustrating the text statements, and the user can easily find the effect of sampling error on the estimates. As with other EIA publications, a glossary is provided along with copies of the questionnaires.

The overall quality of the report is excellent. It provides information that could be very useful to both sophisticated users and the general public.

Weekly Petroleum Status Report

The purpose of this report is to present weekly data on petroleum products. The data indicate broad trends, such as increases or decreases in demand or production. The publication is a series of tables, preceded by some highlights. It compares data for the current week with the previous week.

In our evaluation of the report, we identified the following weaknesses:

--Almost all data from the previous week have been revised, but nothing is said about the need for and the method of making the revisions.

--The report's description of the data collection and methodology is very brief and leaves many questions unanswered.

--The report states briefly that there are differences between respondents' weekly and monthly reports, but it does not provide an indication of the effect of this on the weekly data.

--In providing information on the estimation procedure used, the report discusses the estimation of projected inventory, but the discussion is abbreviated and of limited use.

In addition, the weekly data are based on a sample of the largest companies, but nothing is said about the universe. Also, using a sample of only the largest companies prevents estimation of sampling error for the universe.

The overall quality of the report depends on the needs of the users. Although a great deal of current useful data is presented, the publication does not discuss the quality of the data, the imputation method used, or the nonresponse to the survey. Very little information is provided on estimation difficulties. Although information on each of these items is not necessary in each weekly publication, an annual companion volume dealing with the items would be of great value to users.

integrity and credibility of its products, we believe that priority should be given to their timely completion.

EIA has developed statistical reporting standards necessary to ensure that users of its publications can make informed judgments on the appropriate use and limitations of the publications. Our review shows, however, that EIA is not consistently following these standards. As a result, users of EIA data have insufficient information about the data, including the survey design used in collecting the data, the quality of the data, and limitations on how the data should be used.

RECOMMENDATIONS

We recommend that the EIA Administrator develop and implement standards needed to ensure that EIA's validation of its information systems and assessment of its models are properly performed.

We also recommend that the Administrator expedite the implementation of a comprehensive quality assurance program to ensure the continued credibility of EIA's data. This should include establishing more timely completion dates for developing quality assurance standards and procedures, assigning program offices specific responsibilities for quality control functions and, as necessary, allocating resources to ensure these responsibilities are met.

We also recommend that the Administrator emphasize the importance of adhering to statistical reporting standards in preparing EIA publications and establish an enforcement process to ensure that the standards are followed.

AGENCY COMMENTS

In commenting on our recommendations, EIA said that the Office of Statistical Standards will continue to develop standards and work with line managers responsible for data systems, models, and publications to ensure effective implmentation and maintenance of high-quality products. EIA also said that it will continue to weed out systems which are unnecessarily complex and will improve operating procedures to reduce problems from those sources. EIA maintained that quality control has been and will remain an important primary responsibility of line managers and that the Office of Statistical Standards will provide quality assessment in carrying out its overall responsibilities.

In our evaluation of the November 1980 issue, we found that neither the sample design nor the collection methodology is given for any of the tables or estimates. Also, there is no indication whether the data are based on a sample or the complete universe. It may not be necessary to include this information in a monthly summary report if the information is available in publications cited by the report; however, our limited review of some of the cited publications shows that they also fail to disclose whether the data are based on a sample or the entire universe.

Also, the publication does not provide information on the reliability of the estimates or on nonsampling errors, even though some of the tables say the data were not seasonally adjusted. Some of the tables provide footnotes to indicate that data had been revised, but no details are given on the need for the revisions or the basis for the revisions. Further, some tables give no indication on whether the data were revised.

In addition, while definitions and explanatory notes are provided at the end of the publication, it is difficult to find the meaning of some of the terms used. Columns headed "Production" and "Stocks" sometimes have footnotes stating "see definitions," but neither word appears in the definitions provided.

On the other hand, the publication contains some useful graphic features. Energy consumption patterns are illustrated with bar charts. Some line charts show trends for petroleum production, imports, and stocks.

In general, the publication should better describe the data and provide more information on the quality of the data. However, on balance, it is of a fairly high quality, and its graphic features are particularly well done.

CONCLUSIONS

EIA had planned to ensure the accuracy of its data by placing a high priority on the validation of its information systems and assessment of its models. Even so, little progress had been made toward completing these verifications and, in response to funding reductions, planned efforts have been scaled back. In addition, EIA has not developed standards necessary to ensure that verifications of its systems and models are properly and uniformly performed.

Although EIA has assigned primary responsibilities for quality control functions to its program offices, these offices have not established a quality control program or assigned funding and staff resources necessary to implement quality controls. Further, several key quality assurance standards and procedures are not planned to be completed until late 1982. Because these standards and procedures are essential to EIA's capability to ensure the

APPENDIX II

Department of Energy
Washington, D.C. 20585

MAR 2 1982

Mr. Kevin Boland
Chairman, Professional Audit Review Team
General Accounting Office
441 G Street, N.W.
Washington, DC 20548

Dear Mr. Boland:

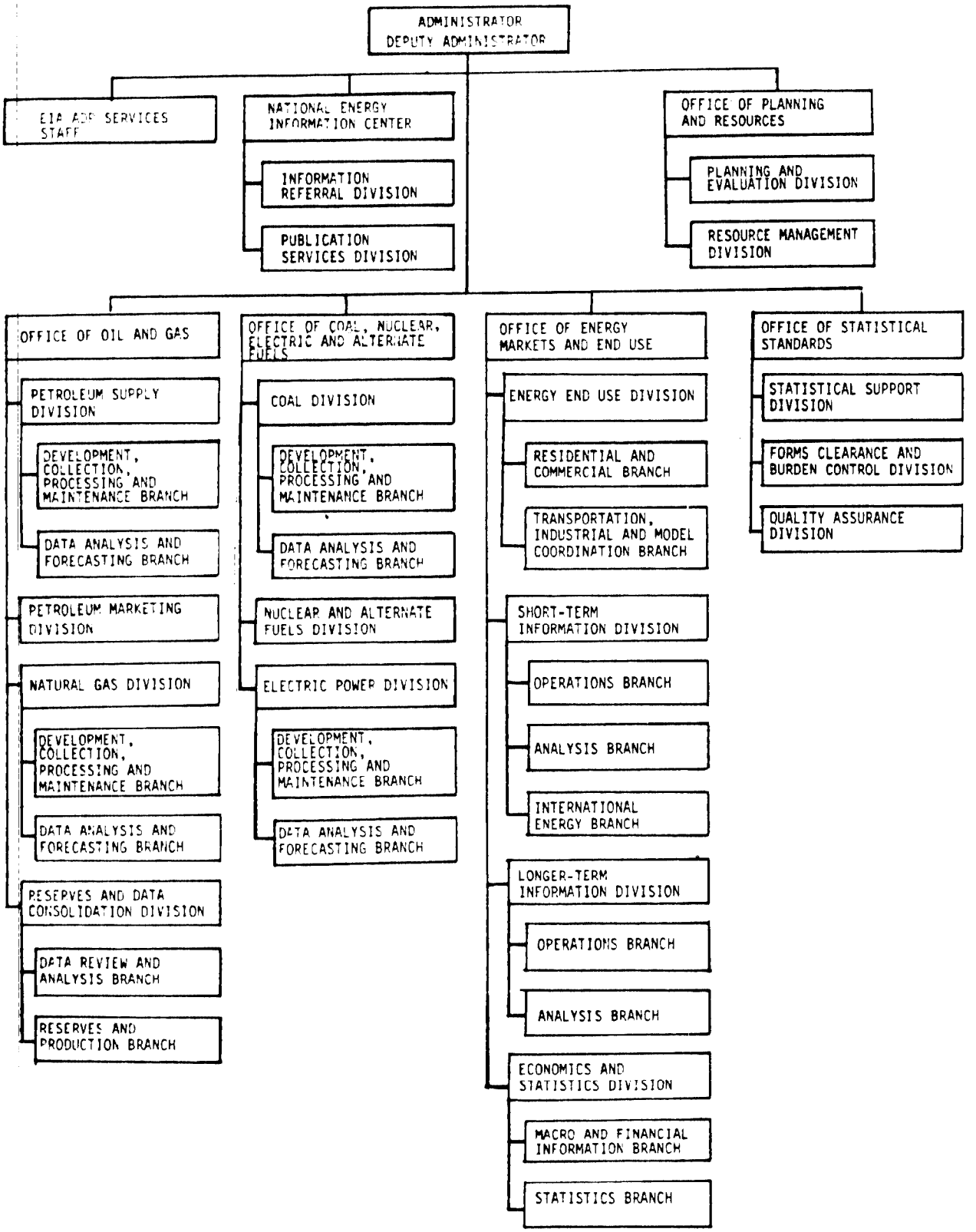
We appreciate the opportunity to respond to the Draft of a Proposed Report: Activities of the Energy Information Administration, Department of Energy, prepared by the Professional Audit Review Team (PART). The draft report focuses on organizational structure and planning, Energy Information Administration's (EIA's) independence, efforts to determine the relevancy of energy information, quality assurance procedures, and conformance to statistical standards. We are pleased that in general you found that EIA is performing well. In areas where you have identified problems we are acting to implement your recommendations, as I shall describe below. We have some comments and suggestions as to technical corrections and presentation, which are enclosed, and we have an important disagreement regarding the report's findings and conclusions in the area of planning.

Chapter 2 of the draft report examines the "Reorganization of EIA and Changes in its Planning Process." PART acknowledges the soundness of "EIA's decision that it could best respond to the new operational environment by reorganizing responsibilities for its functions," and also, that "EIA...is working toward the implementation of a planning, programming, and budgeting process to provide adequate direction, control, and oversight for its projects and programs." However, I disagree with two key conclusions: (1) "that EIA gave insufficient attention to the staff requirements of its offices," and (2) "EIA has not placed adequate emphasis on developing the short- and long-range plans needed for decisionmaking, monitoring, and controlling projects, and measuring program results."

EIA has been confronted with tremendous change over its four years, and particularly in the past year. Planning exists in large part to prepare for contingencies and thus help effect an orderly accommodation of change. I, frankly, have been greatly impressed by EIA's ability to weather the turmoil of major budget cuts and staff reductions without suffering disruption of its production schedules. The simple fact is, EIA was able to go

APPENDIX I

ENERGY INFORMATION ADMINISTRATION



I would recommend a reexamination of PART's presentation of Chapter 2. While agreeing with the recommendations, the findings and conclusions are not in accordance with the facts and I would, therefore, recommend a rewriting.

With respect to PART's specific recommendations:

- Staff planning is continuing throughout EIA. We are also planning to establish an ombudsman to encourage the free flow of information at the staff level regarding current staff shortages and future staffing needs. The Office of Planning and Resources (OPR) maintains a staffing plan, but no new hiring is contemplated. Management attention to internal reassignments is, therefore, the primary concern. Responsibility must, therefore, remain with the Offices responsible for the work.

- Comprehensive planning has been and remains a high priority. All planning functions were centralized under the reorganization in the Division of Planning and Evaluation, OPR. The Annual Operating Plan has been implemented and is used for monitoring performance. Further improvements are planned through quarterly reviews. A Staff Retreat being planned for the Spring will focus on planning beyond the current fiscal year in program, analysis, and budget. A Planning and Policy Review Board (PPRB) was established in December to formalize the coordination of planning, and has been meeting every several weeks. OPR will continue to develop, implement, and coordinate the planning process. EIA Senior Staff continue to meet weekly to coordinate on operational issues and raise concerns for further development in other forums.

- An analysis request tracking system is currently under development by the Office of Planning and Resources for implementation in March 1982. This will be operated in conjunction with existing systems for tracking information and data services requests.

- EIA is continuing to improve its assessment of user needs, and will expand this activity as resources permit. Besides those mentioned in the PART Report, specific activities have included:

    - A series of workshops with State energy officials to ask about needs for timeliness, frequency, content, and presentation of energy information for the States.

through the transition to a new administration, bring in a new Administrator, reorganize the entire agency, conduct an orderly reduction-in-force, and implement a reduced budget all within the same year while continuing to perform its work in a timely fashion and maintain the quality of its products. That is no small feat, and should indicate that planning has neither been neglected nor insufficient.

The assertion at one point in the draft PART Report that EIA has relied primarily on its budget process to establish its priorities, while at the same time voicing criticism about basing EIA's budget request on its long-range plan, strikes me as odd. The purpose of a long-range plan is to create a framework for budgeting. The actual budget then presents a framework for the allocation of resources in an operational plan. Any other approach is likely to be unrealistic if not unimplementable. The observation that our current Annual Operating Plan needs updating is correct because it was based on $8 million less than our final appropriation. However, the plan is not irrelevant as suggested because the additional money was provided by Congress in late December to do additional work. The plan is now in the process of being updated to reflect this additional work. As a working document, the plan is reviewed and revised on a quarterly basis to accommodate such changes in available funding and other changing priorities.

Extensive planning activities have taken place in EIA which are well documented in a Planning and Evaluation staff paper completed in August 1981. That paper describes much of what occurred from May 12, 1980, through August 7, 1981, including the various meetings, memoranda, and reports. A copy of this paper is enclosed. Notification of revised budget guidance from the Office of Management and Budget (OMB) in February 1981, did mean that plans had to be scaled back, but those new plans were neither inconsistent with the previous long-range plan nor a fundamental change in direction with respect to the basic mission of EIA.

Within the context of planning, staffing and organization play a very large part. EIA did address staffing needs very carefully during the planning for reorganization, and has continued to do so in adjusting to RIF and attrition. This was a lengthy, time-consuming process in which all EIA top management participated. Tentative staffing plans were prepared for each new office by interim Office Directors with the participation of each existing Assistant Administrator. Round-table discussions were then held with all Assistant Administrators and administrative staff to ensure that an optimal staffing plan was achieved with maximum review exposure. Our planned FY 1983 staff levels are lower than our current on-board strength, so that we will continue directing our full attention to this matter, particularly at the Office level where the work must be performed. Although a major reorganization will unavoidably cause temporary problems as personnel are reassigned to areas of their greatest expertise, EIA has effectively minimized such dislocations. Nevertheless, plans must change to accommodate the impact of personnel reductions. We have made and are continuing to make these changes based on staff discussions and negotiations between offices.

APPENDIX III

ANALYTICAL SERVICES PROVIDED BY EIA FROM JULY 1980 THROUGH JUNE 1981

ANALYSIS REPORTS

Report Title	Requester
1. Electric Utilities in the 1970's - Financial Practices and Performance	Internal EIA
2. The Impact of 1980 Scheduled Capacity Additions on Electric Utility Oil Consumption	DOE
3. Replacement Energy Costs in the Residential and Commercial Sector 1985, 1990, and 1995	DOE
4. Financing Increased Coal Production	Mandated by Powerplant and Industrial Fuel Use Act
5. Price Elasticities of Demand for Motor Gasoline and other Petroleum Products	DOE
6. Fuel Choice for Heating New Single Family Houses	EIA
7. Energy Forecasts Through 2010: The Effect of Efficiency Improvements in the Transportation Sector	DOT
8. The Natural Gas Market Under the Natural Gas Policy Act	Congress
9. Middle East-Crude Oil Potential from Known Deposits	Prepared under Foreign Energy Supply Assessment Program of DOE.

- A symposium held in January 1982, to get user input on the Short-Term Energy Outlook. 400 participants were attracted (250 private and 150 Government) by notices in the Short-Term Energy Outlook, advertisements in trade association publications, and letters to subscribers, to discuss ways of improving the data and the publication.

- A symposium last year and the year before to get user input on the Annual Report to Congress.

The closer linkage between data collection and data analysis facilitated by reorganization also has improved the informal communication of user needs.

- In the areas of validation, quality assurance, and statistical standards the Office of Statistical Standards will continue to develop standards and work with line managers responsible for data systems, models, and publications to ensure effective implementation and the maintenance of high quality products. EIA will continue to weed out systems which are unnecessarily complex and to improve operating procedures to reduce any problems from those sources. Quality control, distinguished from quality assessment, has been and will remain an important primary responsibility of line managers. The Office of Statistical Standards will provide quality assessment in carrying out its overall responsibilities.

Sincerely,

J. Erich Evered
Administrator
Energy Information Administration

Enclosures

APPENDIX III

SERVICE REPORTS

Report Title	Requester
8. Domestic Nuclear Fuel Cycle Requirements Associated with Nuclear Power Forecasts of EIA	Nuclear Exchange Corporation
9. National Gas Pricing Decontrol Scenarios in the Residential and Commercial Sectors	DOE

APPENDIX III

ENERGY POLICY STUDIES

Report Title	Requester
1. Federal Pipeline Regulation	Congress
2. Governmental Actions Affecting the Environment and Their Effects on Energy Markets	Congress
3. Energy Taxation: An Analysis of Selected Taxes	Congress
4. Energy Programs/Energy Markets--Overview	Congress
5. Energy Programs/Energy Markets--Technical Papers	Congress
6. Federal Support for Nuclear Power: Reactor Design and the Fuel Cycle	Congress

SERVICE REPORTS

Report Title	Requester
1. An Assessment of a Potential Disruption in Petroleum Supplies	DOE
2. Preliminary 1985, 1990 and 1995 Energy Forecasts for the Annual Report to the Congress, 1980	Internal EIA
3. Household Energy Expenditures: Estimates of Recent Trends	DOE
4. Macroeconomic Effects of a Potential Disruption in Petroleum Supplies 1981-1982	DOE
5. Petroleum Supply Vulnerability 1985 and 1990	Executive Office of the President, OMB
6. 1975 Consumer Expenditures on Energy and Non-Energy Goods	Congress
7. Foreign Nuclear Fuel Cycle Requirements Associated with the Nuclear Power Forecasts of EIA	DOE

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