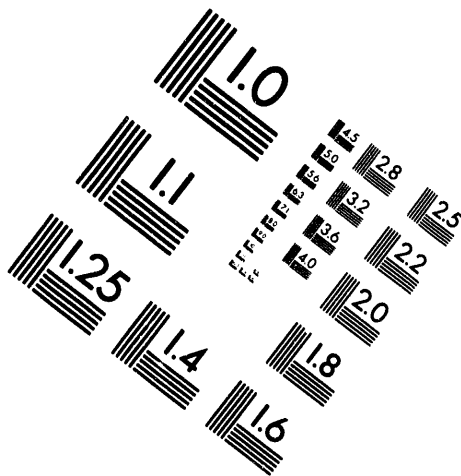
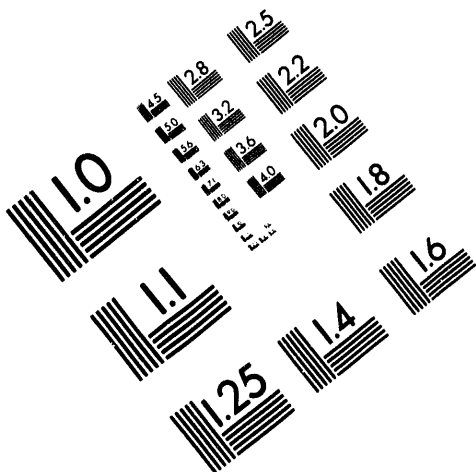




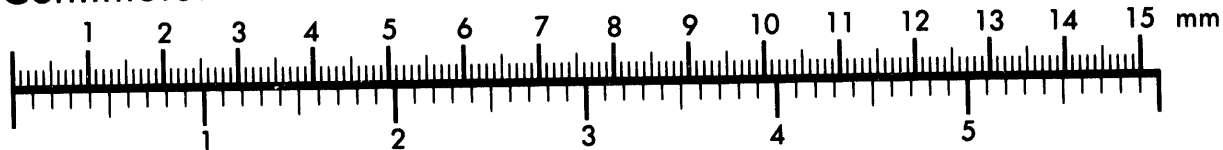
AIM

Association for Information and Image Management

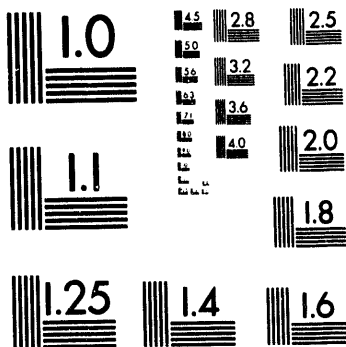
1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910
301/587-8202



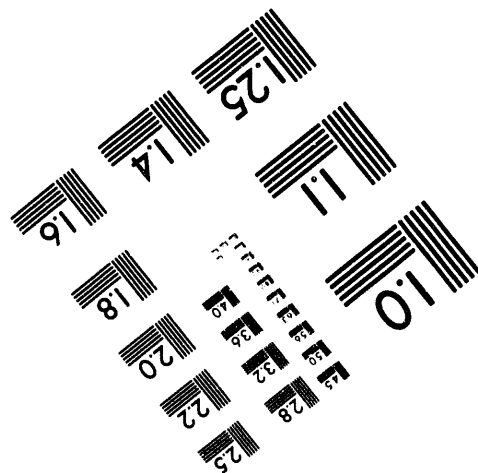
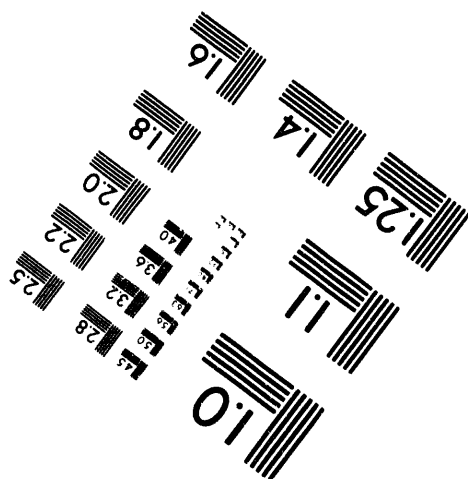
Centimeter



Inches



MANUFACTURED TO AIM STANDARDS
BY APPLIED IMAGE, INC.



1 of 1

DOE/EIA-0173(93)
Distribution Category UC-950

Annual Report to Congress 1993

Energy Information Administration
U.S. Department of Energy
Washington, DC

MASTER

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

ep
DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

About the Administrator

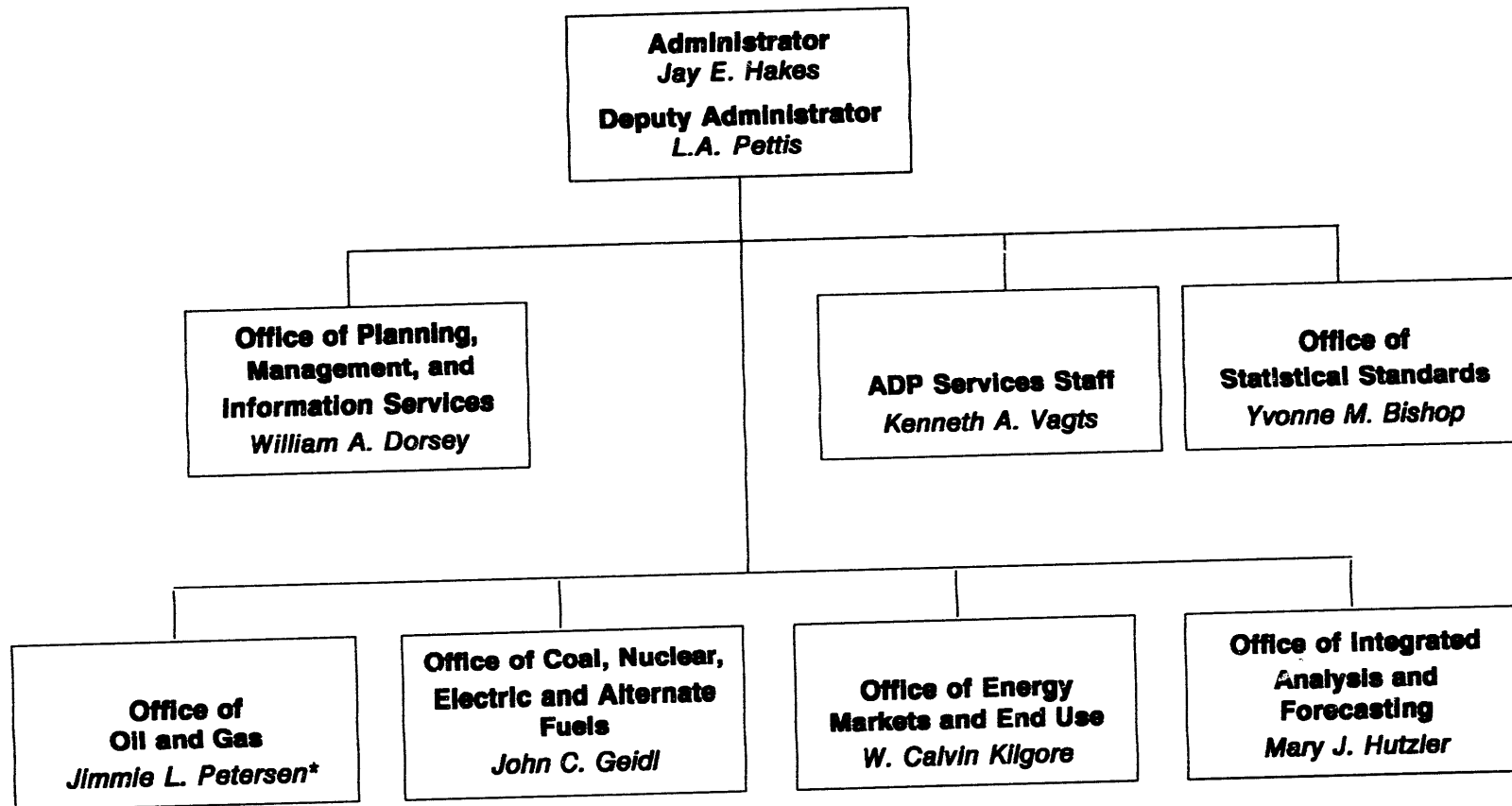
The EIA welcomed aboard its fifth Administrator, Jay E. Hakes, who was confirmed by the U.S. Senate on September 23, 1993. Mr. Hakes has had previous experience in the field of energy, and he has been an academician. From 1981 to 1985, he directed Florida's energy office and later served as Chief of Staff to the then-Governor Graham. He holds a Ph.D. from Duke University and taught political science at the University of New Orleans from 1970 to 1977. His previous Federal experience includes holding positions at the Agency for International Development, the Department of Interior, and the Executive Office of the President from 1977-1980.

From the very beginning, Mr. Hakes, like his predecessors, has stressed that the worth of EIA's information "lies in its accuracy, timeliness, focus, analysis, accessibility to readers, and value for dollar. These concepts provide convenient benchmarks to assess how well we are doing in achieving our goals." He also stresses those concepts of Total Quality Management which emphasize customer satisfaction.

Contents

	<i>Page</i>
Introduction	1
The Year in Review, 1993	3
Energy Policy Act	3
National Energy Modeling System	3
Clean Air Act Amendments	3
Analytical Activities	3
COGIS	3
OGIRS	4
Total Quality Management	4
Symposium Issue of <i>GIQ</i>	5
International Activities	5
Program Highlights, 1993	7
Petroleum	7
Natural Gas	11
Integrated Analysis and Forecasting	12
Coal	14
Electricity	16
Nuclear	17
Energy Markets and End Use	19
Statistical Standards	20
Energy Policy Act Implementation	22
Symposium Issue of <i>Government Information Quarterly</i>	24
International Activities	25
EIA Special Reports on Current Issues, 1993	29
Appendices	
A. Data Collection Surveys of the Energy Information Administration	39
B. Models of the Energy Information Administration	63
C. Publications of the Energy Information Administration	77
D. Major Laws Affecting EIA, 1974-1993	95

Energy Information Administration



*Mr. Petersen will retire in the spring of 1994. The director-designate is Diane W. Lique.

Introduction

Created by Congress in 1977 as an independent entity within the Department of Energy, the Energy Information Administration (EIA) is the principal and authoritative source of comprehensive energy data for the Congress, the Federal Government, the States, and the public. With the mandate to "collect, assemble, evaluate, analyze, and disseminate data and information," EIA's mission has been defined to:

- Maintain a comprehensive data and information program relevant to energy resources and reserves, energy production, energy demand, energy technologies, and related financial and statistical information

relevant to the adequacy of energy resources to meet the Nation's demands in the near and longer term future.

- Develop and maintain analytical tool and collection and processing systems; provide analyses that are accurate, timely, and objective; and provide information dissemination services.¹

This annual report summarizes EIA's activities and accomplishments in 1993.

¹Public Law 95-91 (Department of Energy Organization Act), Section 205, 1977.

The Year in Review, 1993

Energy Policy Act

EIA was actively engaged in the implementation of the Energy Policy Act (EPACT) during 1993. EIA provided several mandated reports to Congress. The Residential Energy Consumption Survey sample was increased, and questions regarding lighting, conservation, and demand-side management participation were added. Identification of data needs was begun for alternative fuels and alternative fuel vehicles. The first inventory of greenhouse gas emissions was published. Development of a pilot study to assess fleet composition and use was begun; the study is intended to serve as market assessment information for the Clean Cities program.

National Energy Modeling System

EIA completed the first version of the National Energy Modeling System (NEMS) in 1993. The new system was developed with the help of major outreach efforts to draw upon the expertise of the modeling community, industry, academia, and environmental groups to address the needs of customers both within the Department of Energy and elsewhere. Among major enhancements over previous models are expanded levels of regional detail, greater structural data in the demand models, and improved macroeconomic forecasts. NEMS was used to develop the projections contained in the *Annual Energy Outlook 1994*.

Clean Air Act Amendments

EIA undertook several 1993 activities associated with the Clean Air Act Amendments (CAAA) of 1990. Seven of the ten forms used to collect petroleum marketing data were revised to provide more relevant crude oil and propane price information. The *Petroleum Marketing Monthly*

was also revised to reflect these changes. The petroleum supply data collection forms, publications, systems, and procedures were reviewed to determine revisions required by the CAAA, and the revisions were begun.

Analytical Activities

EIA issued fourteen analytical reports in 1993. Among these are reports dealing with the changing structure of the U.S. electric power and coal industries, historical trends in the petroleum industry, and current issues and trends in the natural gas industry. Two reports required by the Energy Policy Act on transportation rates and greenhouse gas emissions were published. Drilling techniques in the petroleum industry were addressed, as were the forecasted uses of renewable resources in the U.S. electricity supply. At the request of other federal programs, two reports were prepared dealing with spent nuclear fuel discharges from US reactors and State energy price projections for the residential sector.

COGIS

For customers wishing to download large oil and gas databases, EIA developed the Comprehensive Oil and Gas Information System (COGIS) as a reinvention laboratory project under the National Performance Review and installed it on the Department of Commerce's Economic Bulletin Board (EBB). COGIS contains virtually all of the oil and natural gas data published for the last decade by EIA in the *Petroleum Supply Monthly*, *Petroleum Marketing Monthly*, *Natural Gas Monthly*, *Weekly Petroleum Status Report*, and other reports and articles. Through the EBB's Internet and dial-up services, COGIS files were downloaded more than 1000 times by year's end, including university downloads for repackaging

and retransmission that could make the total number of COGIS users many times greater.

OGIRS

For analysts wishing a highly interactive Windows or DOS environment in which to combine and manipulate oil and gas data, EIA developed the Oil and Gas Information Resource System (OGIRS). OGIRS contains over 11,000 different data series from EIA petroleum and natural gas monthly publications, plus energy data series from non-EIA sources. The database features price and volume information on an annual, monthly and weekly basis, as well as daily and periodic international spot and future prices. Although still in testing at year's end, OGIRS will be on-line within EIA in early 1994 and eventually available for departmental and external customers.

Total Quality Management

EIA began its quality journey in 1993, spurred by the Secretary's commitment to quality throughout the department and by the seminal quality program established by the Office of Oil and Gas the year before. Highlights of EIA's journey in 1993 include:

Strategic Planning. Administrator Jay E. Hakes convened a multi-session, facilitated strategic planning forum among the agency's senior managers. Out of that forum, which came to be known as "Vision 2000," grew a new statement of EIA's vision, mission, and strategic goals and objectives. These results were shared widely with, and discussed extensively among, all EIA staff members. In 1994, in partnership with the National Treasury Employees Union, EIA will establish a quality council to oversee improvement activities necessary to meet the strategic goals and objectives in the years to come.

Customer Focus. One of EIA's strategic goals is to make its data and analyses relevant to the needs of its customers, in keeping with the Administration's program to set Federal customer service standards equal to the "best in business." Begun in 1993, the EIA customer focus program will include identifying current and potential customers; surveying them to determine their needs, expectations, and level of satisfaction; fashioning service standards based on this customer input; and mounting a customer awareness program within the agency so that customer focus becomes a way of life for everyone.

Performance Measurement. EIA's quality journey is also leading toward performance budgeting, as introduced in the Government Performance and Results Act of 1993 (GPRA), to improve the effectiveness and efficiency of its programs by developing the information necessary to assess program performance and make resource allocation decisions. In 1993, EIA applied to be a pilot project under the GPRA (the application has been approved), to become one of the early test sites for building a budget based on performance indicators. In the early stages of the pilot project, EIA will measure customer satisfaction with its products and services, exposure of its information in the general media, electronic accessions of its databases, and improvements in the timeliness of information release.

Even in its early stages, EIA's quality journey has produced notable accomplishments. On the process side, staff communication has improved markedly, strongly facilitated by e-mail and the establishment of several informal process teams. On the products and services side, COGIS and OGIRS, mentioned above, are good examples, as is the successful culmination of a project to release weekly petroleum data a full business day earlier than previously possible.

Symposium Issue of *GIQ*

The editors of *Government Information Quarterly (GIQ)* devoted an entire issue of this distinguished journal to EIA. The issue featured 10 articles on different facets of the agency's work, all written by EIA staff members. Subjects included survey design, data collection, data integration, data analysis, modeling and forecasting, confidentiality, and quality control. Keynoted by then Administrator Calvin A. Kent's history of the agency, which presented an interpretive framework for understanding why EIA was created and what it has accomplished, the symposium issue defines EIA contributions to the Nation's debate on energy issues.

International Activities

EIA participated in numerous international cooperative efforts in 1993. Energy data collection, analysis, and modeling issues were addressed with officials from former Centrally Planned Economy countries, including Ukraine, Poland, and Romania. Support was provided to the Nuclear Energy Agency of the Organization for Economic Cooperation and Development and the International Atomic Energy Agency for a joint report on worldwide uranium resources, production, and demand. EIA was also involved in an international effort to develop data bases and methodologies for comparative assessments of electricity generation methods to provide developing countries with information on the economic, health, and environmental impacts of each technology.

Program Highlights, 1993

Petroleum

Data Collection Activities Increased

During 1993, EIA managed an indepth study of the impact of the Clean Air Act Amendments (CAAA) of 1990 on petroleum markets and the resulting implications for EIA's surveys and publications. The study resulted in proposed changes to data collection forms, systems, and publications which were presented to senior EIA officials, the American Petroleum Institute, Independent Petroleum Association of America, National Processed Gas Association, various oil company respondents and analysts, and numerous data users in other Federal and State agencies prior to submission to the Office of Management and Budget for approval.

EIA revised seven of the ten survey forms that collect petroleum marketing data to reflect new requirements resulting from the CAAA and to provide more relevant crude oil and propane price data. The changes include the collection of price and volume sales data on oxygenated and reformulated gasoline; wholesale gasoline data broken out by end-use; diesel fuel data broken out by low and high sulfur content; and domestic crude first purchase data by crude stream. Collection of the revised data began with the October 1993 reference month to coincide with the start of the oxygenated gasoline season. To reflect these changes, EIA revised the *Petroleum Marketing Monthly* and began a desktop publishing version of the report. In addition, EIA developed a new system which permits on-line, real-time monitoring and execution of the processing system, thereby greatly reducing the time and resources required for data editing and validation.

Also in response to the CAAA, EIA directed a study to determine the changes to petroleum supply data collection forms, publications, systems, and procedures that would be required. Working closely with industry and government, EIA staff fully implemented an approach that is widely recognized as being comprehensive, innovative, and cost-effective. EIA is in the process of revising 13 weekly, monthly, and annual data collection forms; all of its weekly, monthly, and annual publications; and all of the systems that process the millions of records submitted by industry. In addition, EIA co-chaired American Petroleum Institute Task Groups on the inter-PAD District movement of petroleum supplies and low sulfur diesel fuel, as well as the supply form changes in response to the CAAA.

Comprehensive Oil and Gas Information Source Developed

One of the latest of EIA's effort to make its information more timely and relevant to its customers' needs is the Comprehensive Oil and Gas Information Source (COGIS). COGIS is a joint project developed by EIA in cooperation with the U.S. Department of Commerce. COGIS contains virtually all of the oil and gas data published by EIA for the last decade in its *Monthly Energy Review*, *Natural Gas Monthly*, *Petroleum Marketing Monthly*, *Petroleum Supply Monthly*, *Winter Fuels Report*, *Short-Term Energy Outlook*, *Weekly Petroleum Status Report*, and other reports and articles. Specific subjects covered include:

- Reserves
- Transportation
- Production

Highlights

- Imports
- Refining
- Exports
- Products Supplied
- Consumption
- Distribution
- Prices
- Storage.

COGIS is designed to instantly answer such questions as: How much petroleum is left in Alaska? How much gasoline was imported into New York last month? What were last month's prices of natural gas coming from Canada? What was the refinery utilization rate in Texas in June 1986?

COGIS is available through the Commerce Department's Economic Bulletin Board, which now offers both Internet and dial-up access. Anyone with a workstation connected to an Internet mode or with a personal computer and modem can have immediate access to information about the oil and gas industry. (Information about becoming a COGIS subscriber can be obtained by calling the Commerce Department at 202-482-1986.)

EIA Decreases Respondent Burden

EIA reduced respondent burden by 2,957 hours by eliminating the collection of data on two surveys. The Form 822A-D, "Oxygenate Operations Identification Survey," was dropped because comparable information could be obtained from another survey form at a substantially reduced burden. The Form EIA-818, "Monthly International Energy Agency Imports/Stocks-At-Sea Report," was eliminated after joint sessions with the International Energy Agency concluded that comparable information was already available.

EIA directed an extensive investigation into potential sources of bias in the reporting of sales

data on EIA's prime supplier survey, the EIA-782C, "Monthly Report of Prime Supplier Sales of Petroleum Products Sold for Local Consumption." The study conclusively showed that growing trader activity was responsible for most of the distortion in consumption trends and that revised reporting procedures would likely eliminate the bulk of apparent double-counting.

Finally, EIA participated in interagency committees, along with the Army Corps of Engineers, Bureau of the Census, U.S. Customs Bureau, U.S. Maritime Administration, and the Environmental Protection Agency to assess the quality of transportation data collected by the government and to seek ways to share data and eliminate any duplicate data collection.

New PC/LAN-Based Analytical Data Base Developed

To make the validation of survey data more efficient and improve the timeliness and quality of interpretations of market/industry events, as well as enable the preparation of longer-term analyses of energy issues for the Congress and other customers, EIA completed development of a PC/LAN-based analytical data base. This system provides ready access to daily, weekly, and monthly petroleum supply, demand, and price statistics. More than 2,000 time series taken from such sources as Reuters, Telerate, Lundberg, Computer Petroleum Corporation, the American Petroleum Institute, and about 10,000 EIA data series derived from the *Petroleum Marketing Monthly*, *Petroleum Supply Monthly*, *Weekly Petroleum Status Report*, and *Winter Fuels Report* were incorporated in the data base. It has been used to support feature articles, analyses, modeling efforts, and internal reports, such as the *Daily Price Report*, which is widely circulated to senior officials. EIA installed a portion of the published data on Internet (see COGIS, above), to be easily accessible to outside users as one of the DOE reinvention labs, under

the Vice-President's Reinvention of Government program.

EIA continued the development and transfer of state-of-the-art electronic data collection technology with potential for achieving multi-million dollar cost savings in both government and industry. The Environmental Protection Agency (EPA), the Bureau of the Census, the American Petroleum Institute (API), the National Science Foundation (NSF), and others have noted its flexibility, innovative approach, and technical excellence. The results of these efforts led to the return of \$300,000 of its budget on a permanent basis. EIA recently developed a plan for the further expansion and transfer of the technology throughout the government. Versions of the PC Petroleum Electronic Data Reporting Option (PEDRO) software have been provided free of charge to such agencies as the Bureau of the Census, Environmental Protection Agency, Federal Aviation Administration, Department of Health and Human Services, Department of the Interior, and Army Corps of Engineers. An interagency task group, chaired by EIA, has been formed to transfer this technology throughout the government.

EIA enhanced its outreach program by providing data earlier than ever. Weekly propane statistics are now available electronically a day earlier than they were last year and are now released on Wednesday at 5:00 p.m. EIA instituted a fax-on-demand system to transmit key heating fuel statistics to a large number of media, State Energy Offices, and key industry and government officials. EIA also developed the "Propane Watch" to transmit data and highlights of the propane situation through fax-on-demand.

EIA improved portions of its Energy and Natural Resources Information Mapping System (ENRIMS), a PC-based system consisting of both

a full-scale data base management system and a full-scale geographic information system. Current users include various offices within the Office of Policy, Office of Fossil Energy, Office of Energy Emergencies, and the National Renewable Energy Laboratory. The system has been enthusiastically received and output has been used by the Secretary in various presentations. A subset of ENRIMS, PipeNet, has been developed for the Department's Office of Energy Emergencies and the Office of Economic Policy at the Federal Energy Regulatory Commission for use in analysis of natural gas supply or pipeline interruptions.

Finally, EIA maintained a PC-based, data collection system designed to monitor worldwide spot and futures markets. Routine use of this system produced ad hoc reports and analyses contained in the *Petroleum Monthly Report* and the *Daily Price Report*, which were widely circulated.

Support of National Petroleum Council Continued

Continuing EIA's long history of support to the National Petroleum Council (NPC), 1993 saw extensive use of EIA's counsel, data, and analyses for recent Council studies. More specifically:

- EIA was an active participant in the recently completed Study on Refining. EIA co-chaired the Supply Demand/Logistics Task Group of the NPC's Study on Refining and was responsible for determining how the U.S. refining industry is expected to perform in the worldwide petroleum supply and demand system as a result of the enactment of the Clean Air Act Amendments of 1990. EIA was commended for its outstanding efforts in developing and presenting

Highlights

the only comprehensive statistics on oxygenate supply and demand. The NPC has incorporated, *verbatim*, EIA's publication *The U.S. Petroleum Industry: Past as Prologue, 1970-1992* in its recent NPC "Study on Refining" as the authoritative reference documenting the industry's history.

- EIA also participated in the NPC's assessment of the implications from an energy production perspective of a proposal by the Department of Interior's Mineral Management Service to implement the financial requirements of the Oil Pollution Act of 1990. A draft report presenting the Council's findings was presented to the Secretary in December 1993.

Important Petroleum Studies Produced

EIA published a report on *The U.S. Petroleum Industry: Past as Prologue, 1970-1992*, which describes activities and events during this period that influenced the petroleum refining industry. This primer received favorable comment from within the Department and from a wide range of energy analysts and was quoted in major industry publications.

EIA contributed to a better understanding of a topical market with "The Economics of the Clean Air Act Amendments of 1990: A Review of the Oxygenated Motor Gasoline Season," which was published in the *Petroleum Marketing Monthly*, the *Petroleum Supply Monthly*, the *Oil and Gas Journal*, and *Octane Week*, and was presented at the latter's conference on oxygenate fuels. EIA also demonstrated the techniques used to withhold survey data for confidentiality in the "Disclosure Avoidance Techniques Used in Petroleum Marketing Data," presented at

American Statistical Association meetings and published in its proceedings as well as in the *Government Information Quarterly*.

Benefitting from the ready availability of EIA and non-EIA time series data and an enhanced short-term modelling capability, EIA produced an indepth analysis of "Midwest Propane Markets," which dealt with markets which were beset with perceived supply shortages and a price runup. The article was published in the *Winter Fuels Report* in February 1993 and the timeliness of the analysis was cited by the trade press as a calming influence on Midwestern propane markets.

EIA chaired a conference in Falmouth, Massachusetts, in August 1993, which was attended by Department staff, industry, and National Association of State Energy Officials to coordinate plans for monitoring heating fuel markets during the winter. EIA briefed attendees on the status and prospects for heating oil and propane prices and supplies, emphasizing the potential impact of last winter's historically low Midwest propane inventories and high prices. Among the subjects covered in the statistical and analytical papers prepared for the *Weekly Petroleum Status Report*, the weekly *Winter Fuels Report*, or as information memoranda, were: outlooks for propane, distillate fuel, motor gasoline, and the military's planned phaseout of naphtha-based JP-4 jet fuel.

EIA conducted an indepth analysis of gasoline, distillate, and kerojet sales and product supply patterns since 1988 to evaluate potential sources of disparity between growth figures based on these EIA series. The analysis concluded that growing trader activity underlay the inflated historical sales data, while a number of factors, including downstream reporting changes, reclassification, and intertemporal comparisons

across different reporting systems, contributed to overstated 1993 product supplied figures and growth rates.

Lastly, during Hurricanes Andrew and Inki, the Midwest propane shortage last winter, and the recent Midwest floods, EIA worked round the clock to ensure that Federal and State Governments were in receipt of timely and accurate information and analysis describing the current and expected petroleum supply situation.

Natural Gas

EIA submitted the Natural Gas Program Package to the Office of Management and Budget for clearance on its regular three-year cycle. The package contains some significant changes to EIA's data collection forms as a result of changes in the industry and the passage of EPACT. The simplification of the monthly underground storage data collection form, "Annual Report of Natural and Supplemental Gas Supply and Disposition," will result in a slight reduction in burden to storage operators, who will no longer be required to report on the ownership of the gas being stored.

The Form EIA-176, "Annual Report of Natural Gas Supply and Disposition," has been expanded to collect a breakout of firm and interruptible volumes of gas delivered and transported to end users. Data will also be collected on deliveries to nonutility generators. A Fleet Vehicle Survey Schedule has been added which will be used to collect data to meet the provisions of EPACT.

In addition to their standard weekly, monthly and annual reports, EIA produced a variety of reports to inform their customers on the latest developments in the oil and gas industry and markets. Among these reports were the following:

- *Drilling Sideways - A Review of Horizontal Well Technology and Its Domestic Applications and Largest U.S. Oil and Gas Fields*, which reinstituted EIA's Technical Report Series.
- *Drilling Sideways* and the analytical feature article, "Three Dimensional Seismology," were reprinted in their entirety by the American Gas Association in *Gas Energy Review*. Reprints of this article were distributed by the Deputy Secretary's Office of Industry.
- *Geological Distribution of U.S. Oil and Gas* was described by organizations ranging from the Massachusetts Institute of Technology to the New Mexico Bureau of Mines and Mineral Resources as a document which "serves as a benchmark...that improves our ability to carry out investigations of oil and gas policy alternatives."
- *Natural Gas 1992: Issues and Trends*, the first publication in a new annual series which focuses on putting current natural gas data within context of the changes taking place in natural gas markets. The report received acclaim at all levels within the Department, at the Federal Energy Regulatory Commission, by Congressional staff, by trade associations, and by industry. This report was cited by industry as "showing government working at its best."
- *Natural Gas Productive Capacity for the Lower 48 States* was EIA's second wellhead deliverability study. It is often quoted whenever discussions of natural gas deliverability occur.

Highlights

EIA also co-sponsored and helped organize a recent one-day seminar on electronic bulletin boards as used by interstate natural gas pipelines for implementation of FERC Order 636.

Integrated Analysis and Forecasting

National Energy Modeling System Completed

EIA completed the first version of the National Energy Modeling System (NEMS) in late 1993. This new system significantly enhances EIA's ability to represent and analyze alternative energy policies. Major improvements over existing models include:

- **Expanded Levels of Regional Detail:** The system as a whole now forecasts energy consumption and prices at the nine Census region levels. Within submodels for each energy sector, regions are tailored to better represent specific industries, such as the North American Electric Reliability Council (NERC) regions for electric utilities.
- **Greater Structural Detail in the Demand Models:** These areas include expanded end-use and appliance data in the residential and commercial sectors, additional automobile types and vintages used in transportation, and a restructuring of the industrial sector around process/assembly, building, and boiler energy use.
- **Internal Forecasts of World Oil Prices:** The system now estimates the effect on world oil prices of changes in demand and supply within the United States.

- **Improved Macroeconomic Drivers:** The macroeconomic forecasts have been expanded to include Census region detail, as well as economic output projections for 35 industrial groups.
- **Renewable Technologies for Electricity Generation:** these were incorporated into the electric utility's capacity planning and dispatching decisions, thus allowing renewables to compete on an economic basis with other electricity generation technologies.
- **Addition of a More Detailed Representation of the Natural Gas and Refining Industries:** End-use prices of natural gas now more fully represent the decisions made by natural gas producers and distributors, while end-use petroleum prices respond to changes mandated by the clean air regulations concerning transportation fuels.

Many of these modeling changes were made in response to a study by the National Research Council. In addition, EIA has sought modeling advice from numerous client groups, including representatives from industry, Federal and State governments, and academia.

The NEMS was used to develop the projections contained in the *Annual Energy Outlook 1994* (AEO). A redesigned and expanded series of tables in the AEO and its supporting *Supplement* reflect the new regional and sectoral details.

NEMS Accomplished by Means of Outreach

To identify the internal customer needs for policy analysis and forecasting, EIA formed working groups to meet regularly with representatives

from around the Department. Throughout the year, presentations of the NEMS and preliminary *Annual Energy Outlook* projections were made at these meetings. The working groups were structured around the individual NEMS modules, including all of those for the demand sectors, and for the major sources of energy supply.

A public conference on NEMS was held on February 1 and 2, 1993, to draw upon the expertise of the modeling community, industry, and academia. Presentations by EIA model designers in 15 subject areas were followed by formal review and comment by invited speakers who provided advice and comparisons to other modeling efforts. The conference attracted almost 400 attendees who applauded the conference for the forum it provided for discussion and feedback. Proceedings of the conference documented these interactions and have received wide distribution, generating additional interest in the NEMS development effort.

EIA sponsored a program where Independent Expert Reviewers have conducted reviews of the NEMS design, results, and documentation. The reviewers have participated in discussions on how to resolve difficult modeling design issues.

The NEMS Users Group, composed of non-DOE Federal agencies and environmental groups, met twice during 1993. Demonstrations of 5 NEMS modules (electricity dispatch, macroeconomic, transportation, petroleum markets, and coal) were held on January 7 and 8, 1993, and demonstrations of 5 additional NEMS modules (oil and gas supply, natural gas transmission and distribution, coal exports, electricity capacity planning, and international oil) were held on July 8 and 9, 1993. Comments of the

attendees were incorporated in further design and development work.

Also during the year, EIA participated in the Energy Modeling Forum XIII on conservation. Using the newly developed NEMS demand modules, EIA participated in the scenario analysis and reviewed the results of the other modelers in their efforts to address energy conservation trends and analysis.

Outlook Support Provided to the Department and Other Government Agencies

EIA responded to many diverse requests for analysis and projections from various interagency working groups. For example, EIA presented the *Annual Energy Outlook* projections to the White House Conference on Global Climate Change, attended by industrial, governmental, labor, and consumer group leaders charged with formulating future government policy on greenhouse gas emissions from energy. Once the Department's Policy Office developed its Global Climate Change Plan, EIA was requested to perform a macroeconomic analysis of its provisions.

The budget debate of 1993 involved an intense analysis of energy tax options. To assist the Department and the Office of Management and Budget (OMB), EIA conducted an in-depth analysis of the macroeconomic impact of alternative energy taxes and alternative rebate systems. The OMB requested an analysis of a \$1.00-per-gallon gasoline tax phased in over a 5-year period. The analysis, completed in January 1993, showed the impact of the tax on domestic oil consumption and Gross Domestic Product. Macroeconomic cases were also evaluated that returned revenues through a reduction in the personal income tax rate and the social security rate. In addition, the Depart-

Highlights

ment's Policy Office requested an analysis of the impact of energy taxes (Btu, carbon, oil import fee, motor fuels, *ad valorem* at the source and at the end use) on a range of macroeconomic measures and on energy consumers. EIA analyzed rebating schemes and alternative assumptions about monetary policy. In addition, EIA provided estimates of the distributional impacts of the taxes on households in different income groups. The Intermediate Future Forecasting System was used to provide regional analyses of the major supply sectors.

The Office of Civilian Radioactive Waste Management requested a forecast of nuclear capacity and generation through the year 2030 to aid it in making its long-term decisions concerning disposal of domestic nuclear waste. EIA provided a number of forecasts under alternative assumptions about the nuclear industry by using the World Integrated Nuclear Evaluation System. These results were also used by the Uranium Group of the Nuclear Energy Agency for its projections of world nuclear fuel requirements.

Congress requested information on the tradeoff of funding the Strategic Petroleum Reserve (SPR) versus funding conservation measures that would reduce the Nation's reliance on petroleum products. EIA prepared a response on the impact of various conservation measures and SPR funding strategies; the response was based on former EIA analyses.

EIA also supported the Department's domestic gas and oil initiative by producing a briefing package describing the strategic importance of the U.S. oil and natural gas industries and by developing nearly 30 charts covering employment, gross domestic product, and imports.

Finally, EIA provided data and forecasts on coal exports and prices in response to a request from

the Army Corps of Engineers. The study analyzed the impact of a \$1.00-per-gallon user fee on diesel fuel used for barge traffic. The Coal Supply and Transportation Model was used in this analysis to evaluate the distributional effects on coal supply, demand, and exports.

Significant Forecasting Publications Produced

During the year, EIA published *The Annual Energy Outlook 1993 (AEO93)*, which incorporated the provisions of the Energy Policy Act of 1992. Besides including alternative cases of low and high world oil price and macroeconomic growth, the AEO93 included two new scenarios on high and low oil and gas resource recovery. These latter cases provided a wider range on wellhead natural gas prices and reflected the uncertainty in those forecasts. EIA prepared two companion publications: the *Assumptions to the Annual Energy Outlook 1993* and the *Supplement to the Annual Energy Outlook 1993*, which contained detailed assumptions associated with the forecasts and regional forecast results, as well as the *International Energy Outlook 1993*, which provided an analysis of world energy markets through 2010.

Coal

Information Provided to Help Monitor Effects of Labor Strike and Floods in the Midwest

One of the important contributions of EIA was its analysis of the potential impact of a labor strike on coal supplies in anticipation of the February 1, 1993, expiration of the 1988 contract between the United Mine Workers of America and the Bituminous Coal Operators' Association. The impact was evaluated by estimating the potential supply shortfalls from production during the strike and the coal supplies stockpiled

at electric and manufacturing facilities. The EIA not only provided the impact analysis to the Department's Office of Energy Emergency Planning and Operations but also coordinated closely with the office during the strike that ensued, providing additional company-specific information to help monitor the strike.

Subsequently, in the fall of 1993, EIA participated in the National Association of State Energy Officials' Winter Fuels Conference, which was sponsored by the Office of Emergency Planning and Operations, on the prospects for the coal and electric utilities in the Winter of 1993-1994. EIA's presentation provided the representatives at the conference with information that there were likely to be adequate supplies of coal for the winter even though there was a disruption of some coal supplies due to the floods in the Midwest and the strike by the United Mine Workers of America.

Changing Structure of U.S. Coal Industry Documented

The EIA report *The Changing Structure of the U.S. Coal Industry: An Update* documents the change in mine size, number of large companies producing coal, ownership by company type, and foreign ownership from 1976 through 1991. In addition, it contains statistics on coal production and coal reserves concentration ratios. Explanations of the trends over that time period are provided, such as the fact that the primary factor contributing to larger mines and companies was the shift in production toward the West, where low-sulfur coal is produced from thick seams in large surface mining operations.

U.S. Coal Reserves Analyzed by Quality, Accessibility, Reserves

EIA published *U.S. Coal Reserves: An Update by Btu and Sulfur Content*. This report provides some of the detailed data necessary to analyze the reliability of future U.S. coal supplies. This includes information on quality of the coal, accessibility of the known in-ground resource for actual mining, and reserves (the net amount that may be ultimately recoverable from the accessible resource). The data are EIA's best estimates based on currently available mapping and coal sampling. This report is the first of a series of updates planned to access existing State agency data holdings in an attempt to develop a more valuable coal reserves data base through cooperative efforts. Updates, performed under EIA's Coal Reserves Data Base program, have been completed for priority coal resources in Ohio and Wyoming (included in the report) and were in progress in 1993 for eastern Kentucky and northwestern New Mexico. The report also includes EIA updates of coal resource and reserve estimates in the Pennsylvania anthracite field and coal quality assessments based on published reports and EIA file data in parts of 11 States.

Royalties from Coal Compared with Royalties from Oil and Gas on Federal and Indian Lands

EIA published an interesting feature article, "Federal and Indian Coal Lands: A Growing Source of Energy and Revenue," in the annual report *Coal Production 1992*. This article provided the first comprehensive analysis of the fastest

Highlights

growing areas of coal production in the United States. It describes the increase from 2 percent in 1970 to an average of 27 percent in 1990 through 1992 in the share of total U.S. coal production from Federally administered lands. It provides the history of leasing policies and activities on Federal and Indian lands. It also compares the royalties from coal leases with royalties from crude oil and natural gas.

Electricity

New Short-Term Hydroelectric Forecasting Model Developed

EIA developed a new model for forecasting short-term hydroelectric generation. It produces an 18- to 27-month forecast of net hydroelectric generation in the United States by using an ARIMA (autoregressive integrated moving average) time series model with precipitation as an explanatory variable. The model has improved the accuracy of the hydroelectric generation forecasts published in the *Short-Term Energy Outlook*. In addition, EIA presented a paper on evaluating the accuracy of the forecast at the September 1993 Federal Forecasters Forum.

Nation's Use of Municipal Solid Waste for Heating Described

The October issue of the *Electric Power Monthly* included the feature article "Municipal Solid Waste in the U.S. Energy Supply." The article describes the Nation's use of municipal solid waste (MSW) for heating applications and, particularly, for generating electric power. It chronicles the growth in the use of MSW for energy, from virtually nothing in 1970 to 15 percent of all MSW produced in 1990. Nevertheless, waste-to-energy represents only about one-half percent of all U.S. energy use, 0.4 quadrillion Btu of the total 84.1 quadrillion Btu

consumed in the United States in 1990. Most is used to produce electricity.

The article notes that, in spite of rapid expansion in the 1980's and early 1990's, the waste-to-energy industry faces short-term challenges. While some view landfiling, recycling, and composting as attractive substitutes, the industry faces environmental concerns, such as air-borne emissions and ash disposal. Proposed waste-to-energy facilities encounter opposition from neighbors. They also face court challenges to energy plant monopolies over local trash, a fact which may limit new facilities' access to financing. Nevertheless, expectations for the longer run remain optimistic, as the Nation faces growing volumes of municipal solid waste and as landfill space becomes more scarce.

The Changing Structure of the U.S. Electric Power Industry Studied

EIA published *The Changing Structure of the U.S. Electric Power Industry, 1970-1991*, which provides comprehensive data on the nonutility capacity and generation that began to grow in the 1980's. It explains the legislative, regulatory, economic, and technological changes that contributed to the development of nonutilities, which now provide approximately 9 percent of electricity in the United States. It also compares the types of ownership, fuel use, and financial characteristics of utilities with those of nonutilities.

In February, EIA released the report *Renewable Resources in the U.S. Electricity Supply*. The publication is designed as a primer on renewable energy resources used for electricity generation. It describes the use of water, wind, solar, geothermal, biomass (primarily wood), and waste resources for electricity generation. As of 1990, renewable energy provided 7.4 percent of all U.S. energy use, but nearly 12 percent of the Nation's electricity supply. Almost 10 of this 12 percent comes from conventional hydroelectric

power. Biomass and municipal solid waste (MSW) together contribute more than 1 percent; all others, including geothermal, wind, and solar, combined, provide less than 1 percent.

The publication also gives basic estimates of renewable energy resources and reserves, as well as basic descriptions of the technologies used to convert renewable resources to electricity. It notes that, although such renewable resources as geothermal, wind, and solar are far more plentiful than fossil or uranium resources, they are widely dispersed and are nearly always more expensive to use today. Nevertheless, improvements in lowering the costs of converting them to electricity have resulted in the growth of electricity applications for renewable resources in the 1980's and lead to generally optimistic expectations for additional expansion in the future.

Nuclear

Nuclear Information System Developed

EIA developed the Nuclear Information System (NIS), a microcomputer-based system which provides easy access to a wide range of nuclear data derived from electronic and published sources. The NIS uses external data sources for its entire library of data bases. The NIS consists of over 40 nuclear data bases, a library of documentation, and application software to manage the data bases.

The NIS is intended to:

- Serve as a comprehensive nuclear data repository allowing analysts to access and evaluate selected nuclear data sources during a single session on the system.
- Provide a system so that inquiries, analyses, and reports can be produced

by users without the requirement for extensive training.

- Provide modularity for incorporating additional nuclear data sources, both electronic and published, in order that new sources can be efficiently added to the NIS.
- Provide controls to insure that timely updates are made to the system once the source data are available.

EIA Produces Important Nuclear Publications

Domestic Uranium Mining and Milling Industry 1992: Viability Assessment, released in 1993, is the last of the 10 Congressionally-mandated reports which are used by the Secretary of Energy to make her determination of the viability of the uranium industry for the President and the Congress. The Secretary's assessment, which is required for 1983 through 1992, is mandated by the Nuclear Regulatory Commission Authorization Act of 1983.

In order to help measure the ability of the domestic uranium industry to meet domestic requirements, the report addresses four primary criteria: the uranium industry's resource, supply, and financial capability, as well as the Nation's uranium import dependency. The report also contains a 10-year retrospective of the changes in the industry.

The report indicates that, if a disruption of projected foreign supplies of uranium were to occur, estimated low-cost domestic uranium reserves would be adequate to meet uranium demand through 2006. However, uranium import dependency (as a percentage of U.S. requirements) is rising and reached 73 percent in 1992. Natural and enriched uranium imports are expected to account for at least 80 percent

Highlights

of domestic utility requirements for the period 1993 through 2003.

Another key finding of the report concerns the financial status of the uranium industry. The industry reported 1992 operating revenues of \$231.3 million, their lowest since EIA began its financial surveys and a 31.4 percent drop from 1991 revenues. The aggregate reported net income for 15 domestic producers was \$16.3 million. However, this is in contrast to the \$1.1 billion which the industry has lost over the last 10 years. Both the industry's internally generated funds from operations and capital expenditures dropped sharply in 1992 from their 1991 levels.

The *Uranium Purchases Report 1992*, a new annual report required by the Energy Policy Act of 1992, was transmitted to Congress for the first time in August 1993. It provides data on the country of origin and seller of any uranium, enriched uranium, or uranium enrichment services purchased during 1992 by owners and/or operators of U.S. civilian nuclear power reactors. The report indicated that U.S. utilities purchased 23.6 million pounds of uranium from domestic suppliers during 1992, 12 percent less than in 1991. Of this amount, 15.1 million pounds were of non-U.S. origin. U.S. utilities also purchased 11.8 million pounds of imported uranium in 1992, 16 percent less than in 1991. Canada, Australia, and Russia (combined) accounted for 89 percent of the imported uranium. In addition, three new long-term enrichment service contracts were signed by U.S. utilities in 1992, all with foreign enrichers.

EIA added two new chapters to the annual report *World Nuclear Capacity and Fuel Cycle Requirements 1993*. One covers the historical trends in nuclear power plant capacity factors and the other contains a summary of the nuclear power programs in each foreign

country. The report contains projections of worldwide nuclear capacity, generation, uranium and enrichment requirements, and spent fuel discharges. It is used by the Office of Civilian Radioactive Waste Management in developing plans for the Department's permanent repository for commercial nuclear waste. The projections are also provided to the Nuclear Energy Agency of the Organization for Economic Cooperation and Development and the International Atomic Energy Agency.

EIA published "Decommissioning of Conventional Uranium Production Centers," a feature article in *Uranium Industry Annual 1992*. This article, which focuses strictly on the decommissioning of commercial operations covered by Title II of the Uranium Mill Tailings Radiation Control Act of 1978 (P.L. 95-604), for the first time presents costs of dismantling the uranium mills, groundwater restoration, and mill tailings reclamation, and then discusses the potential impact on the future of the uranium industry. For conventional uranium production centers, decommissioning involves decontamination and dismantling the mill itself, reclaiming the tailings piles, restoring groundwater to acceptable conditions, and long-term monitoring of the site. This article compares aggregated decommissioning cost data for six selected conventional uranium processing mills on the basis of filings with the U.S. Nuclear Regulatory Commission.

Another feature article, "Improvements in Nuclear Power Plant Capacity Factors," was published in the *Electric Power Monthly*, February 1993. The article provides statistics on the average nuclear capacity factor from 1975 through 1991. It described the reasons contributing to the low capacity factors in 1979 through 1988 and the reasons for the improved performance beginning in 1989. Trends by age and size are given, as well as a discussion of future issues. Information from the report was used

by the Office of Technology Assessment for their study on *Aging Nuclear Power Plants: Managing Plant Life and Decommissioning* and by the U.S. Council for Energy Awareness.

Energy Markets and End Use

During 1993, EIA continued its energy consumption survey work. Specifically, EIA:

- Received the first data from the Bureau of the Census for the 1991 Manufacturing Energy Consumption Survey and published preliminary estimates of total heat and power consumption and end use breakdowns in the September 1993 *Monthly Energy Review*.
- Began fieldwork for the 1994 Residential Transportation Energy Consumption Survey, merging the beginning-of-year data collection with the data collection for the 1993 Residential Energy Consumption Survey (RECS).
- Began data collection for the Household Survey portion of the 1993 RECS in October 1993. The 1993 RECS includes an oversample of newly constructed homes, a Lighting Supplement, and additional questions related to the Energy Policy Act of 1992.

During 1993, EIA also published the Energy Consumption Series report "Assessment of Energy Use in Multibuilding Facilities," describing results from an adjunct survey to the 1989 "Commercial Buildings Energy Consumption Survey."

EIA's publications *Households Energy Consumption and Expenditures 1990* and *Households Energy Consumption and Expenditures 1990 Supplement:*

Regional, which are based upon data from the 1990 RECS, focus on energy end-use consumption and expenditures of households. The 1990 RECS is the eighth in a series conducted since 1978 by EIA. Over 5,000 households were surveyed, providing information on their housing units, housing characteristics, energy consumption and expenditures, stock of energy-consuming appliances, and energy-related behavior. The information provided represents the characteristics and energy consumption of 94 million households nationwide.

EIA's publication *User-Needs Study for the 1993 Residential Energy Consumption Survey* documents the effort undertaken during 1992 to ascertain the requirements of RECS data users. EIA sent letters to more than 750 persons, received responses from 56, and held 15 meetings with users. This report summarizes the major suggestions that were made by the users and EIA's responses to the suggestions.

EIA continued to publish the *Monthly Energy Review* (MER), EIA's most comprehensive monthly report. It presents summaries of annual data from 1973 forward and monthly data for the past 2 or 3 years for key energy time series. Sections of the report cover each of the major sources of energy -- petroleum, natural gas, coal, and electricity -- in terms of production, consumption, trade, stocks, and prices. The report also includes summaries of total energy activities standardized in British thermal units and sections on international energy data, oil and gas resource development, and nuclear energy. In addition, the MER often presents one-time features on topics of special interest to energy analysts. In 1993, for example, the MER reported on many topics of special interest, such as greenhouse gas emissions, the outlook for low-sulfur diesel fuel, Federal energy subsidies, natural gas transported for the account of others, the structure of the coal industry,

Highlights

household energy use, manufacturing energy use, and residential transportation use of energy.

EIA continued to publish the *Annual Energy Review* (AER). The AER, which satisfies a requirement of law and covers the post World War II economy, is EIA's most comprehensive annual report. It presents data on all the major forms of energy and their key activities, such as production, consumption, trade, stocks, and prices associated with each form of energy. Summaries of energy data allow analysts to evaluate trends in U.S. energy activities over a period that covers more than half a century. Particularly interesting are the many detailed graphics that illustrate the data.

EIA also continued to publish two important State-level reports. The *State Energy Data Report, Consumption Estimates* presents estimates of annual energy consumption at the State and national levels by major economic sector and by principal energy source for 1960 forward. Data are shown in both physical units and British thermal units. The report includes documentation describing how the estimates were made for each source and lists the data sources. The *State Energy Price and Expenditure Report* presents annual estimates of energy prices and expenditures at the State and national levels for all major sources of energy by consuming sector for 1970 forward. Detailed documentation describes the estimation procedures and data sources.

Finally, EIA prepared State-level energy price forecasts for the Department of Health and Human Services, Administration for Children and Families, for use in the Low Income Home Energy Assistance Program.

Statistical Standards

EIA Guidelines for Statistical Graphs Drawn Up

The original *EIA Publications Manual for Statistical Graphs* was published in 1985. Since then, the knowledge about visual perception of graphs and tables has grown significantly. Research has shown that readers more quickly and accurately assess data in some graphic formats and tabular forms than in others. EIA plans to publish an updated version of this manual, in 1994, entitled the *EIA Guidelines for Statistical Graphs*. It is designed to enable EIA authors to utilize this research to construct statistical graphs that will better serve the needs of its users.

A Revision of EIA's Standards Initiated

In July 1993, EIA initiated a process to review and revise, as necessary, its *Statistical Standards Manual*. This process is designed to ensure that all EIA offices have a role in this effort. The goal is to reach a shared consensus within EIA on whatever revisions are deemed necessary to help ensure the continuing high quality of all EIA products and analyses.

EIA has standards stating the purpose, applicability, and required actions for specific subjects in the life cycle of EIA products. (Standards for EIA have existed since the first standards manual was issued in 1983 and was last updated in April 1989.) These standards outline the fundamentals forming the basis for ensuring the reliability and validity of EIA's data and modeling systems, assist in avoiding duplication, promote efficiency and economy by providing for the interchangeability and transferability of systems and procedures, and promote the clearest possible data presentation by removing ambiguities and inconsistencies from EIA products.

Technical Reviews of NEMS Provided

In 1993, EIA conducted various technical reviews of the National Energy Modeling System (NEMS). Outside experts, contracted through EIA's Independent Expert Review program, and in-house quality assurance staff conducted reviews of: (1) the Component Design Reports (CDRs) that detailed plans for the structure of component modules of NEMS and (2) plans and analysis performed by designers and their contractors towards construction of response surface approximations for NEMS' modules. In-house quality assurance staff also produced their own algorithms and performed comparison tests for response surface modeling. The level of openness, the detail of the description, and the thoroughness of the review of NEMS are unprecedented for EIA energy modeling. This became evident during a two-day conference that EIA sponsored on NEMS plans in February. EIA also prepared a position paper for uncertainty analysis of NEMS, and nine outside experts supplied comments on this paper. This work, it is hoped, will result in improvements to NEMS and will enable EIA to better evaluate the quality of its forecasts in the future.

Participated With American Statistical Association Committee on Energy Statistics

EIA met with the American Statistical Association (ASA) Committee on Energy Statistics in April and November of 1993. The Committee is composed of internationally recognized statisticians and economists who provide technical advice on methodological techniques which can be used to help improve the quality of EIA's survey data and forecasts.

Topics included a panel discussion on how EIA is implementing provisions of the Energy Policy Act. There were formal and informal sessions

on other issues. Among the formal presentations were a discussion of the development of EIA performance measurements and a report on the Office of Management and Budget's Customer Survey Interest Group. Other topics during the year included a discussion of the Energy Policy Act requirement on greenhouse gases emissions reductions, a Status Report on the National Energy Modeling System (discussed above), an Assessment of the Quality of EIA Published Data on Imports and Exports, and a discussion of End-Use Taxes and Current EIA Practices.

Customer-Oriented Activities Conducted

In response to Executive Order No. 12862, "Setting Customer Service Standards," in 1993 EIA staff helped the Office of Management and Budget develop a *Resource Manual for Customer Surveys*. The manual includes information on developing and implementing customer surveys, strategies for expediting approval for these surveys under the Paperwork Reduction Act, and techniques for improving the quality of these surveys.

The Department of Energy has set up a task force to conduct a pilot survey to determine the current level of customer service in five core business lines: Energy Resources, Industrial Competitiveness, Science and Technology, National Security, and Environmental Quality. The survey will provide a baseline for measuring customer service and test the usefulness of the survey instrument and methodology. EIA staff are serving on this task force in an advisory role, providing expertise on questionnaire design, statistical sampling, and data analysis.

EIA plans to conduct customer satisfaction surveys during 1994. Staff are working with customer focus advocates to develop measures of customer satisfaction, including measuring the nature, extent, and satisfaction with customer contacts throughout the agency.

Highlights

As part of a separate effort to develop a Human Resources Strategy, the Department set up a subcommittee to collect employee input for the strategy. EIA statisticians served on this group. They provided assistance in the compilation and interpretation of existing data and designed the sampling scheme for an employee satisfaction survey of DOE employees.

EIA Energy End-Use Price and Tax Study Initiated

EIA initiated the *EIA Energy End-Use Price and Tax Study* as a result of a quality assurance review finding on EIA's State price and expenditure data. The focus was on whether Federal, State, and local government sales and excise taxes were included in EIA's end-use prices for the various energy sources and end-use sectors. A report will be issued in 1994 regarding the consistency of EIA published price data with respect to sales and excise taxes and the variations, if any, across the various fuels, economic end-use sectors, and publications.

Energy Policy Act Implementation

EIA was involved in a number of critical efforts to implement the requirements of the Energy Policy Act (EPACT), which was enacted on October 24, 1992.

One action was to develop a report to Congress, *Energy Policy Act Transportation Rate Study, Availability of Data and Studies*, pursuant to Section 1340 of EPACT. The report provides the findings of the EIA regarding the extent to which any Federal agency is studying the impacts of the Clean Air Act Amendments of 1990 and other Federal policies on the transportation rates and distribution patterns of domestic coal, oil, and natural gas. It also provides a review of data collected by the Federal government on rates for rail and pipeline transportation of domestic coal, oil, and natural

gas for the years 1988 through 1997, along with proposals for developing an adequate data base for each fuel type. The report recommended that an existing National Petroleum Council report, *U.S. Petroleum Refining - Meeting Requirements for Cleaner Fuels and Refineries*, be used to satisfy the requirement for petroleum. For coal transportation rate data, the Federal Energy Regulatory Commission Form-580 is expected to be used. The report also recommended that the EIA Form-176 would be amended to collect natural gas transportation rate data. This effort was coordinated with various government and non-government representatives to ensure that the concerns of all stakeholders were addressed properly, including representatives from the American Electric Power Company, American Gas Association, Association of American Railroads, Consumers United for Rail Equity, Interstate Natural Gas Association of America, National Coal Association, other Government agencies, and several Senate and House committees. A notice was also placed in the *Federal Register*.

Another report to Congress, which EIA will prepare annually, the *Uranium Purchases Report 1992*, was published in August 1993 in response to Section 1015 of EPACT. This report contains data on the country of origin and seller of any natural or enriched uranium purchased or imported into the United States by the owner or operator of a civilian nuclear power plant. It also reports on the country of origin and seller of any enrichment services purchased by such owners or operators.

In addition, EIA participated with representatives of the Department, other Government agencies, and the uranium industry to develop and implement recommendations to improve U.S. uranium exports, as mandated in Section 1014(b) of EPACT. These efforts resulted in several recommendations, including:

- Instituting a networking program among Government agencies and industry;
- Identifying target opportunities for near- and long-term focus and developing associated action plans;
- Commissioning a study to identify and to analyze explicit and implicit U.S. and/or foreign impediments;
- Developing an awareness of the global uranium excess supply situation and the effects of policies regarding weapons dismantlement on U.S. uranium enrichment and mining activities.

EIA also assisted the Office of Environmental Restoration and Waste Management in developing the DOE program for reimbursement for the cost of remedial action at active uranium and thorium processing sites due to Atomic Energy Commission (AEC) purchases, as mandated by Title X of EPACT. This part of the Act set aside \$440 million to pay \$5.50 per dry short ton of tailings to facilities which stored tailings produced from uranium for the AEC. EIA's work included site visits to processing sites in Illinois, New Mexico, Colorado, and Nevada to audit the documentation of the tailings at selected facilities. EIA's efforts led to a potential reduction of licensee claims for reimbursement that amounted to \$11.8 million, representing 2.1 million tons of tailings.

In response to Section 171 of the EPACT legislation, the sample for the 1993 Residential Energy Consumption Survey was increased and the questionnaires were expanded to include

several questions about lighting, conservation measures, and demand-side management participation.

EIA conducted a detailed information-gathering program on data needs related to data acquisition for alternative fuels and alternative-fuel vehicles as specified in Section 407 of EPACT. EIA also issued a combined *Federal Register* notice asking for comments on such a program, as well as for comments regarding related requirements stipulated in Section 503 of EPACT.

To address data and needs identified during this process, EIA developed a questionnaire, survey procedures, and sample design for a survey of fleet composition and use by propane suppliers, working closely with appropriate staff elsewhere in the Department. This survey will be conducted during 1994 and is designed to complement similar data to be obtained from the supplements to Forms EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Dispositions," and EIA-861, the "Annual Electric Utility Report."

EIA began a cooperative research project with the newly formed Master's Degree program in survey methodology at the University of Maryland. The two-semester practicum class in this program involves designing, conducting, and analyzing the results of a survey on residential consumer preferences pertaining to alternative-fuel vehicles. This survey is being conducted at no cost to the Government other than the minimal staff time involved in observing and advising the class on data needs and subject-matter issues. As envisioned, the students hopefully will gain real-world survey experience in an academic environment, and the Department will receive a database which EIA could not otherwise have provided with available funding for implementation of EPACT. EIA also began development of a pilot study

Highlights

to assess fleet composition and use for the Atlanta Clean City program. The project will be revised on the basis of the Atlanta experience and will be conducted in other Clean Cities in future years. EIA's data will serve as market-assessment information to assist the Clean Cities program in Atlanta, in addition to fulfilling data requirement of Section 407 of EPACT.

Title XVI, Section 1605(a) of EPACT requires that EIA develop, within one year after the date of the enactment of the Act, an inventory of the national aggregate emissions of each greenhouse gas for each year for a baseline period of 1987 through 1990. EIA published the first report, *Emissions of Greenhouse Gases in the United States 1985-1990*, in October 1993. The report provides estimates of U.S. emissions of the principal greenhouse gases for the period 1985 to 1990. Preliminary estimates for 1991 are also included.

Related 1993 activities included EIA's preparing quarterly, short-term energy supply, demand, and price projections for publication in February, May, August, and November in the *Short-Term Energy Outlook* and the companion piece, the *Short-Term Energy Outlook, Supplement*, which examines the forecast accuracy and presents an analysis of likely effects of the Clean Air Act Amendments of 1990 as they impact sulfur diesel fuel.

In addition, EIA prepared two interagency classified studies of U.S. energy vulnerability. Other agencies include the National Security Council, Department of Defense, Central Intelligence Agency, Department of Commerce, Department of the Interior, Department of Transportation, State Department, and Department of Energy. EIA also prepared analytic and statistical reports on economic and financial performance of major U.S. energy producers for *Performance Profiles of Major Energy Producers*, *Profiles of Foreign Direct Investment in U.S.*

Energy, and *U.S. Energy Industry Financial Developments*.

Finally, EIA obtained a generic approval from the Office of Management and Budget to conduct studies on survey and questionnaire design. This authority will facilitate EIA's outreach efforts by allowing it to initiate pretest/pilot surveys, methodological procedures and response analysis followup studies, and related research on a more timely basis. This is especially important as EIA addresses the full impact of EPACT on its data and analysis programs. In addition to improvements in survey design, the results of such projects should provide EIA, other Departmental components, and other Federal agencies with a better understanding of the energy data needs of our stakeholders in both the private and public sectors and the Congress.

Symposium Issue of *Government Information Quarterly*

Government organizations are seldom afforded the luxury of presenting accounts of their best work and most significant issues in a public forum. A 1993 symposium issue of *Government Information Quarterly* (Volume 10, Number 1) is the result of a generous offer made by the editors to EIA to engage a selection of EIA's professional staff members in a recounting of their most challenging projects.

EIA is a statistical agency with a unique amalgam of data and analysis responsibilities. The subjects covered by the articles in this symposium issue—survey design, data collection, data integration, data analysis, modeling and forecasting, confidentiality, and quality control—represent many of the most pivotal activities EIA undertakes today. The authors represent as much diversity as do their topics, with a

wealth of quantitative, technical, sectoral, and management skill and experience.

The first article, written by the former Administrator, Calvin A. Kent, is a history of the agency and presents an interpretive framework for understanding why EIA was created and what it has accomplished in 15 years. Each of the nine articles that follow presents a different facet of the agency today. Taken as a whole, these articles describe an organization whose sole purpose is to provide credible, timely, and useful energy information to aid in the decision-making process in all sectors of the society.

The specific topics covered in this symposium edition are the following:

- "An Analytical History of the EIA"
- "EIA's Role in the Analysis of the Clean Air Act Amendments of 1990 and the Development of the National Allowance Database"
- "National Energy Modeling System"
- "Objective Information About Energy Models"
- "The Coal Reserve Database Program"
- "The Role of Focus Groups in the Identification of User Needs and Data Availability"
- "Integrating Energy Data for Policy Analysis"

- "EIA's Approach to Information Quality"
- "Policy Analysis Without Data"
- "Disclosure Avoidance Techniques Used in Petroleum Marketing Data."

International Activities

During 1993, EIA provided information on domestic nuclear operating and maintenance (O&M) costs to the Nuclear Energy Agency for its study of comparative nuclear O&M costs worldwide. The purpose of the study, which is continuing, is to resolve the wide variations in past trends and current costs reported by member countries by establishing a common framework and consistent definitions for cost information. The result is expected to be a better understanding of what factors are responsible for reported cost variations and insight into why the rate of nuclear penetration differs markedly among the world's industrialized countries.

An important international cooperative effort was with the Uranium Group of the Nuclear Energy Agency of the Organization for Economic Cooperation and Development. The Group met to prepare a joint report with the International Atomic Energy Agency on worldwide uranium resources, production, and demand. The EIA representative served as the chairman of the subcommittee responsible for the section of the report on demand. In addition, EIA provided data and projections on uranium resources, production, and demand in the United States.

Also during the year, EIA met with officials from the Ukraine's Institute of Energy Savings Problems to discuss energy modeling issues, specifically those involving EIA's National

Highlights

Energy Modeling System and the Ukraine's INTERELLAGO model. In addition, several EIA officials briefed officials from the Newly Independent States on energy data and analysis activities. EIA made six presentations on energy data collection and short- and long-term forecasting.

One of the most important international forums that EIA participated in during the past year was the "Senior Expert Symposium on Electricity and the Environment" in Vienna, Austria, in November 1993. This meeting was held to obtain information from nine countries to help develop data bases and methodologies for comparative assessments of different electricity generation methods and technologies. This effort, known as the DECADES project, had its beginnings in the International Symposium held in Helsinki, Finland, in 1991, and is being sponsored by 11 international organizations. Information developed from this DECADES project will be used to provide underdeveloped countries with information on the economics and health and environmental impacts of each technology.

Still another important international effort in which EIA participated was the annual United Nations/Economic Commission for Europe Meeting of Experts on Coal Trade, Statistics and Transport, held in Vancouver, Canada, in September 1993. At this meeting, the United States presented the most recent short-term outlook for the U.S. coal industry. The group finished work on the draft survey techniques to be used by coal shippers and a coal classification standard which several coal-importing countries have implemented. Future work was agreed on which will look at the costs of transporting coal exports and explaining to representatives of the former Centrally Planned Economies how market economies work.

EIA provided the International Trade Commission, State Department, and the Department's Office of International Affairs with information on the uranium industry in the Commonwealth of Independent States (CIS) and the world uranium market. Information provided included uranium production, capacity, resources, exports to the United States, and world uranium market perspectives. The International Trade Commission used the information to review requests by Ukraine and Tajikistan that they be separated from the import quotas established for states of the former Soviet Union. The State Department used the information in assessing the impact of the suspension agreements limiting CIS uranium imports to the United States on bilateral relations. The information was also used to develop an options paper for the Secretary of Energy to help in the determination of what position the Department would take on CIS uranium exports.

EIA provided an issue paper to the Office of International Affairs on the historical trends of U.S. coal exports to South Korea in light of the growing markets for both steam and metallurgical coals in that country. This issue paper was provided for use in the 8th Annual U.S.-South Korea bilateral energy talks in Seoul, South Korea, which is scheduled for early 1994. The information from this issue paper was also used for a briefing of the Secretary in preparation for a meeting with the South Korean Minister of Trade, Industry, and Energy in July 1994. In addition, EIA gave a presentation to representatives from the Korea Petroleum Development Corporation. The presentation included a demonstration of the Petroleum Electronic Data Reporting Option system and a discussion on how EIA processes and disseminates energy data.

Two EIA staff members participated in a recorded 90-minute Voice of America (VOA)

panel discussion about the worldwide oil and gas industry, its technology, and its economics. The VOA will use the tape as background and input in preparing programs and program segments about the industry for broadcast in 45 different languages.

EIA worked with officials from former Centrally Planned Economies to share information about energy data collection systems, statistical standards, estimation procedures, projection methodologies, and other statistical issues of a market economy. Specific examples include (a) participation in a workshop in Warsaw, Poland, sponsored by the International Energy Agency and the Polish Government to share experience among Western economies and former Centrally Planned Economies in the development of energy data collection systems; (b) participation in an International Energy Agency-sponsored program to provide recommendations for energy price reforms and policy development in Romania; and (c) participation with the Japanese Ministry of Foreign Affairs in an energy workshop to share energy data and analysis experience with representatives from the former Soviet Union. In December 1993, EIA released a report, prepared in cooperation with the U.S. Geological Survey, on oil and gas in the Fergana basin of the

former Soviet Union. The estimated quantity of discovered and undiscovered oil in the basin is 4 billion barrels, which is roughly equivalent to 18 months of oil production in the United States.

EIA published international energy information pertaining to all countries of the world. The international database includes information about petroleum, natural gas, coal, electricity, and energy prices. These data were published in the *International Energy Annual* and *International Petroleum Statistics Report*. EIA also published international energy forecasts in its *International Energy Outlook*. In addition, EIA continued to coordinate responses to energy questionnaires from international organizations and maintained data systems to ensure the accuracy of these submissions. Specifically, EIA provided responses to the Asia-Pacific Economic Cooperation Program, Economic Commission for Europe, International Energy Agency, North Atlantic Treaty Organization, and World Energy Council.

Finally, EIA provided two papers for the June 1993 International Conference on Establishment Surveys in Buffalo, NY. The papers were entitled the "Use of Focus Groups to Identify User Needs and Data Availability," and "Surveying an Uncharted Field."

Special Reports on Current Issues, 1993

EIA Analytical Reports result from analysts' examinations of current and projected U.S. economic, regulatory, technical, technological, and marketing subjects and their impact on energy supply and demand. They are special, usually one-time, reports. EIA Service Reports

are also analyses, but they are prepared, as the name implies, as a service, upon specific request from other Executive Branch agencies or Congress. Service Reports are often based on assumptions provided by the requestor. During 1993, EIA produced 12 Analytical Reports and 2 Service Reports.

Analytical Reports

The Changing Structure of the U.S. Electric Power Industry, 1970-1991

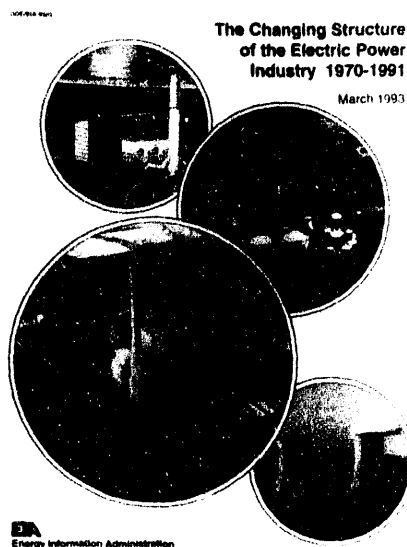
This report provides comprehensive data on the growth of nonutility capacity and generation in the 1980's. By 1991, nonutilities were providing approximately 9 percent of the electricity generated in the United States. The report also explains the legislative, regulatory, economic, and technological changes that contributed to the development of nonutilities. It compares the types of ownership, fuel use, and financial characteristics of nonutilities with those of utilities. (Published: March 1993)

The Changing Structure of the U.S. Coal Industry: An Update

This report documents the change in mine size, number of large companies producing coal, ownership by company type, and foreign ownership from 1976 through 1991. In addition, it contains statistics on coal production and coal reserves concentration ratios. Explanations of the trends over that time period are provided, such as the fact that the primary factor contributing to larger mines and companies was the shift in production toward the West, where low-sulfur coal is produced from thick seams in large surface mining operations. (Published: July 1993)

Drilling Sideways -- A Review of Horizontal Well Technology and Its Domestic Application

This report presents a review of the use of horizontal drilling technology in oil exploration, development, and production operations. Horizontal drilling achieved commercial viability during the late 1980's, particularly in the Bakken Shale of North Dakota and the Austin Chalk of Texas. Its successful employment has encouraged the testing of the technology in many domestic geographic regions and geologic situations. Of the three major categories of horizontal drilling, short-, medium-, and long-radius, the medium-radius well has been most widely used and productive. Achievable

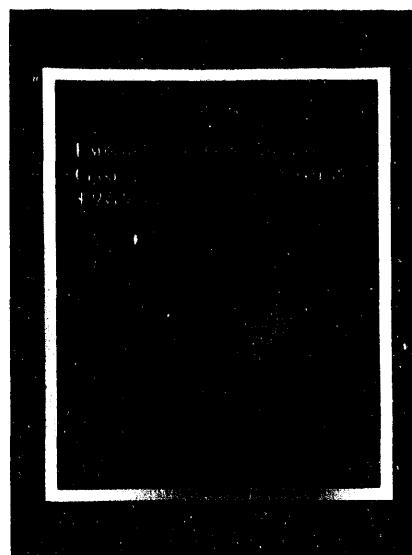


horizontal bore hole length grew rapidly as familiarity with the technique increased; horizontal displacements have now extended to over 8,000 feet. Some wells have featured multiple horizontal bores. Completion and production techniques have been modified for the horizontal environment, with more change required as the well radius decreases; the specific geologic environment and production history of the reservoir also determine the completion methods employed. Most horizontal wells have targeted crude oil reservoirs. The commercial viability of horizontal wells for production of natural gas has not been well demonstrated yet, although some horizontal wells have been used to produce coal seam gas. The Department of Energy has provided funding for several experimental horizontal gas wells. (Published: April 1993)

Emissions of Greenhouse Gases in the United States, 1985-1990

This report, mandated by Title XVI, Section 1605(a) of the Energy Policy Act of 1992, states that research is intensifying to improve our understanding of the role human activities might play in influencing atmospheric concentrations of greenhouse gases, and to identify a range of actions which might reduce the consequences of human actions. Because new scientific findings concerning global climate change may influence every facet of life on this planet, it is being closely followed by government policymakers, industrial managers, and concerned citizens alike. On the basis of scientific findings of the past few decades, the U.S. Government and the international community at large are now taking steps toward stabilizing greenhouse gas emissions. This report, to be issued annually, contributes to that process by providing estimates of U.S. emissions of the principal greenhouse gases -- carbon dioxide, methane, nitrous oxide, chlorofluoro-

carbons, carbon monoxide, nitrogen oxides, and nonmethane volatile organic compounds. Estimates are for the period 1985 to 1990. Preliminary estimates for 1991 have also been included, whenever data were available. A summary of EIA's estimates of U.S. greenhouse gas emissions appears in Table ES1. Appendix A discusses the uncertainties associated with these estimates. The carbon dioxide estimates presented in this report were used in the President's Global Climate Change Action Plan, issued at the same time. (Published: October 1993)

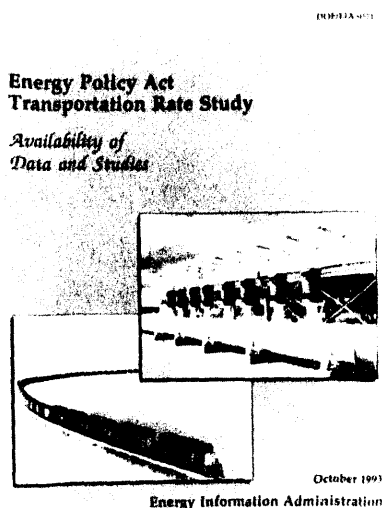


Energy Policy Act Transportation Rate Study: Availability of Data and Studies

Pursuant to Section 1340(c) of the Energy Policy Act of 1992 (EPACT), this report presents the Secretary of Energy's review of data collected by the Federal Government on rates for rail and pipeline transportation of domestic coal, oil, and gas for the years 1988 through 1997, and proposals to develop an adequate data base for each of the fuels on the basis of the data availability review. This report also presents

Special Reports

EIA's findings regarding the extent to which any Federal agency is studying the impacts of the Clean Air Act Amendments of 1990 and other Federal policies on the transportation rates and distribution patterns of domestic coal, oil, and gas. While the availability of data differs considerably among the fuels, existing data are found to be generally inadequate to satisfy the requirements of EPACT's Section 1340(a). The inadequacy of data thus necessitates collection of additional data, as proposed in the report. (Published: October 1993)



Largest U.S. Oil and Gas Fields

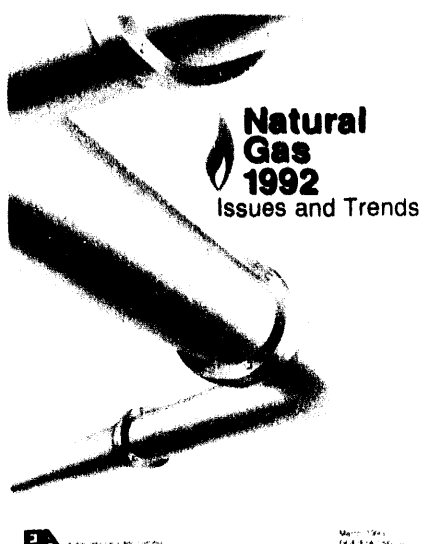
This technical report is part of an EIA series presenting distributions of U.S. crude oil and natural gas resources, developed by using field-level data collected in EIA's annual survey of oil and gas proved reserves. The series' objective is to provide useful information beyond that routinely presented in the EIA annual report on crude oil and natural gas reserves. These special reports also provide oil and gas resource analysts with a fuller understanding of the nature of U.S. crude oil and natural gas occurrence, both at the macro level

and with respect to the specific subjects addressed. The series' approach is to integrate EIA's crude oil and natural gas survey data with related data obtained from other authoritative sources and then to present illustrations and analyses of interest to a broad spectrum of energy information users ranging from the general public to oil and gas industry personnel. The report provides the top 100 proved reserves field listings (1991 rankings) in advance of the 1992 EIA reserves report and additionally identifies the top 100 fields in three other categories: 1991 annual production, cumulative production, and estimated ultimate recovery. Also presented are similar listings based on the fields' total hydrocarbons, plus comparisons of the contribution of crude oil versus natural gas, and large fields versus small fields. Finally, the report clearly portrays the Nation's heavy reliance on this relatively small number of fields. (Published: August 1993)

Natural Gas 1992: Issues and Trends

This report is the first in a series of reports analyzing a variety of issues currently affecting the natural gas industry. The report provides up-to-date data on basic measures of activity in the industry, such as production, consumption, and price; it also presents more indepth analyses of several important issues. These issues are: (1) significant changes in laws and regulations affecting the industry (including Federal Energy Regulatory Commission Order 636 and the Energy Policy Act of 1992); (2) trends in supply, focusing on drilling, reserves, production, productive capacity, and wellhead prices; (3) the impact of changes in transportation rate design contained in Order 636; (4) how changes in wellhead prices influence end-use prices seen in the residential, commercial, industrial, and electric utility sectors; (5) the level of recent and proposed interstate pipeline capacity expansions (examined on a regional basis); and (6) the level of activity in the natural

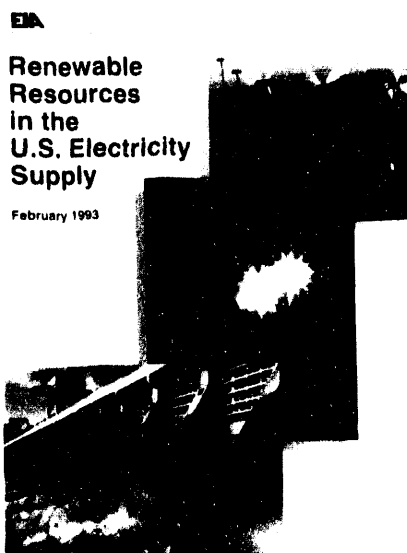
gas futures market, a market that is playing an increasingly important role in the industry. (Published: March 1993)



emerging issues to which the industry and those who regulate it must respond. (Published: January 1993)

Renewable Resources in the U.S. Electricity Supply

This report provides an introductory overview of current and long-term forecasted uses of renewable resources in the Nation's electricity marketplace, the largest domestic application of renewable resources today. It is intended for a general audience, but it should be of particular interest to public utility analysts, policy and financial analysts, investment firms, trade associations, Federal and State regulators, and legislators in support of their deliberations and decisions. (Published: March 1993)



The Public Utility Holding Company Act of 1935: 1935-1992

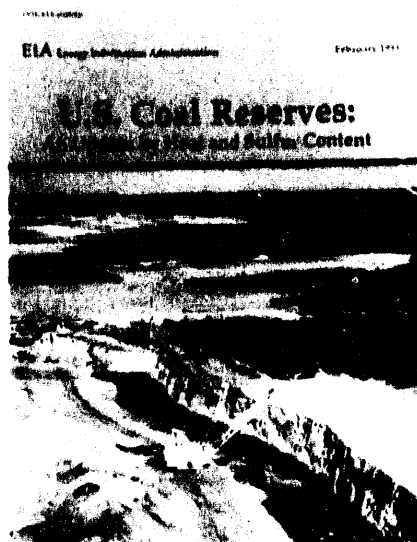
This report presents an economic and legislative history and analysis of the Public Utility Holding Company Act of 1935 (PUHCA). That Act was born of events occurring during the Great Depression and continued with only minor alterations until substantially reformed by the Energy Policy Act (EPACT) of 1992. The debate which led to this reform reflects the rapid and dynamic changes which took place in the structure of the electric utilities industry, especially those of the past two decades. Those changes are continuing and may accelerate because of EPACT. The 1935 Act shaped the electric industry for over half a century by creating the legal parameters within which it was allowed to develop. By changing the legal framework, EPACT will alter the course which the industry will take. This report and its analysis not only portray the reasons change transpired, but they allow the reader to see the

U.S. Coal Reserves: An Update by Heat and Sulfur Content

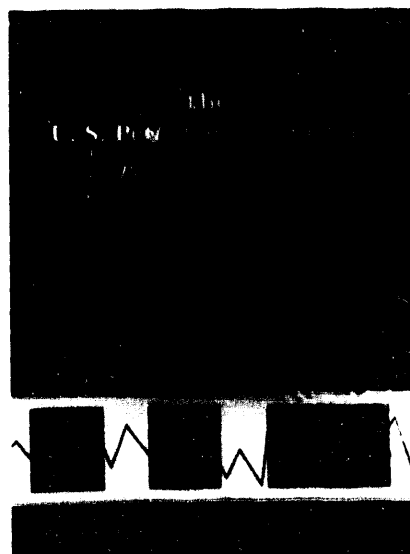
This report provides some of the detailed data necessary to analyze the reliability of future U.S. coal supplies. It includes information on quality of the coal, accessibility of the known in-ground resource for actual mining, and reserves (the net amount that may be ultimately recoverable

Special Reports

from the accessible resource). This report is the first of a series of updates planned with existing State agency data holdings to develop a more valuable coal reserves data base through cooperative efforts. (Published: February 1993)



describes the actions or reactions of the petroleum industry to the events, and the impact of the events and actions taken on domestic and/or foreign economies. The report is intended to provide background information on the petroleum industry and its history and to act as a reference for those more familiar with the industry. (Published: October 1993)



The U.S. Petroleum Industry: Past as Prologue, 1970-1992

This report focuses on the developments that shaped the domestic petroleum industry and U.S. supply and demand patterns between 1970 and 1992. Investments made during the past 23 years to modernize the industry's operations now provide a base for decisions to be made as the 1990's progress. It also highlights foreign demand and refinery trends. These events are presented in statistical terms in Chapter 2 and are described in detail in Chapter 3. That is, Chapter 2 describes the patterns of change for each component of supply and demand, and briefly touches on the events (fully described in Chapter 3) that induced significant change or fluctuation, while Chapter 3 presents a chronology of the major petroleum-related events and their consequences. Chapter 3 also

U.S. Production of Natural Gas from Tight Reservoirs

This report updates EIA's tight gas production information through 1991 and considers further the history and effect on tight gas production of the Federal Government's regulatory and tax policy actions. It also provides some high points of the geologic background needed to understand the nature and location of low-permeability reservoirs. For the purposes of the report, tight gas reservoirs were defined as those that met the Federal Energy Regulatory Commission's (FERC) definition of tight.

About 90 percent of U.S. natural gas production comes from conventional gas reservoirs. The remainder comes from a variety of nonconventional sources, the most volumetrically important

of which consists of so-called tight gas reservoirs. The principal distinction between conventional and tight gas reservoirs lies in their marked differences of production rate capability. The initial production rates of tight reservoirs, as compared to those of conventional reservoirs, are very low. This often renders them economically marginal. Consequently, some kind of economic incentive must often be present to induce operators to explore for and develop these gas resources. From 1980 through 1992, the Federal Government has

allowed operators of new domestic wells drilled into tight gas reservoirs to take either a tax credit on the resulting production or to charge an incentive price that was prescribed relative to the price of oil. The unitary purpose of the Crude Oil Windfall Profits Tax Act's Section 29 tax credit and the incentive pricing provided under Section 107 of the Natural Gas Policy Act of 1978 was to stimulate exploration for, and development of, these technically difficult and economically marginal nonconventional gas reservoirs, especially during times of low oil prices. (Published: October 1993)

Service Reports

Spent Nuclear Fuel Discharges from U.S. Reactors, 1991

This report was prepared by EIA under a Memorandum of Understanding with the Office of Civilian Radioactive Waste Management (OCRWM), as a support to their program. The Nuclear Waste Policy Act of 1982, as amended, established the framework for a comprehensive Federal program to manage spent nuclear fuel and high-level radioactive waste. One objective of this program is to provide for the permanent, safe disposal of radioactive waste material currently stored at commercial nuclear power facilities. A key requirement for the success of this program is an information system with detailed data on the amounts and characteristics of radioactive waste material currently stored at commercial nuclear power facilities and the amount of additional waste likely to be produced over the operating lives of existing and planned nuclear reactors. The scope of this report covers discharged nuclear fuel assemblies, their shipments and storage, including storage site capacities and inventories, as of December 31, 1991. This report reflects data collected and processed by September 9, 1992. (Published: March 1993)

State Energy Price Projections for the Residential Sector, 1993-1994

This report is provided at the request of the Administration for Children and Families, U.S. Department of Health and Human Services, which provides State grants to assist eligible households in meeting the costs of home energy use for space heating or cooling under the Low Income Home Energy Assistance Program (LIHEAP). Funds for LIHEAP are allocated according to each State's share of home energy expenditures by low income households, if Congress allocates more than \$1.975 billion for LIHEAP. Whenever less than \$1.975 billion is allocated for LIHEAP, funds are allocated on the basis of the allotment percentages for fiscal year 1984. This has been the case for the last several years. Each State's share of the funds above \$1.975 billion is determined by a formula based, in part, on the price estimates in this report.

The primary purpose of this report is to provide projections of State-level residential prices for 1993 and 1994 for the following fuels: electricity, natural gas, heating oil, liquefied petroleum gas (LPG), kerosene, and coal. Prices for 1992 are also included for comparison purposes. This report also explains the methodology used to produce these estimates and the limitations. (Published: November 1993)

Appendix A

Data Collection Surveys of the Energy Information Administration

Appendix A

Data Collection Surveys of the Energy Information Administration

This Appendix describes 75 energy data-gathering surveys operated by the Energy Information Administration (EIA) in 1993. These forms are listed sequentially by form number, its current title, any previous form number(s) and title(s), its collection frequency, a brief description of the collection, and the report number and titles of publications which are derived from the collected data (including several publications issued by the Department of Energy elements outside of EIA).

Information on the surveys and the availability of the publications and single, blank copies of forms may be obtained from the National Energy Information Center, whose address and telephone number are listed in the introduction to Appendix C. Additional information about EIA's forms is available in the *Directory of Energy Data Collection Forms* (DOE/EIA-0249).

Form CE-63A/B, Annual Solar Thermal Collector Manufacturers Survey and Annual Photovoltaic Module/Cell Manufacturers Survey

Previous Forms: EIA-63, Annual Solar Thermal Collector and Photovoltaic Module Manufacturing Survey

Collection Frequency: Annually

Description: Forms CE-63A/B are designed to gather data for publication on shipments of solar thermal collectors and photovoltaic modules. Data are collected by end use and market sector. Collector types include low-temperature, medium-temperature air, medium-temperature liquid, thermosiphon, flat plate,

concentrator, integral collector storage, and evacuated tube and concentrators. Respondents are manufacturers, importers, and exporters of solar thermal collectors and photovoltaic modules.

Resulting Publications:

DOE/EIA-0174, *Solar Collector Manufacturing Activity*

DOE/EIA-0384, *Annual Energy Review*

Form EIA-1, Weekly Coal Monitoring Report--General Industries and Blast Furnaces (Standby Form)

Previous Forms: None

Collection Frequency: Weekly

Description: Standby Form EIA-1 is used to track coal and coke stocks, receipts and consumption in the manufacturing sector during coal supply disruptions. In conjunction with data on Forms EIA-4 and EIA-20, EIA-1 data are used for supply forecasts and to inform the public, the industry, and the Government of aggregated coal consumption and inventories. Respondents are a selected sample of manufacturing plants that consume coal for all uses other than coke production.

Resulting Publications: Data not published

Form EIA-3, Quarterly Coal Consumption Report-Manufacturing Plants

Previous Forms: BOM-6-1400-M-1, Monthly Fuel Consumption Report - Manufacturing Plants

Collection Frequency: Quarterly

Description: Form EIA-3 is used to collect data related to coal consumption by rank at U.S. manufacturing plants. Information on coal

consumption, stocks, and receipts (quantity and cost) is collected to provide Congress with basic statistics concerning coal consumption, stocks, prices, and quality (coal rank), as required by the Federal Energy Administration Act of 1974 (Public Law 93-275). The data are also used for coal demand analyses and in short-term modeling efforts that produce forecasts of energy (coal) demand and prices. Respondents are all manufacturing companies that consume in excess of 1,000 short tons of anthracite, bituminous, subbituminous coal or lignite for uses other than coke production during the year, defined by the current reporting quarter and the previous three reporting quarters.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*
DOE/EIA-0121, *Quarterly Coal Report*
DOE/EIA-0202, *Short-Term Energy Outlook*
DOE/EIA-0214, *State Energy Data Report*
DOE/EIA-0376, *State Energy Price and Expenditure Report*
DOE/EIA-0383, *Annual Energy Outlook*
DOE/EIA-0384, *Annual Energy Review*

Form EIA-3A, Annual Coal Quality Report--Manufacturing Plants

Previous Forms: None

Collection Frequency: Annually

Description: EIA-3A collects information on the origin (State or Country) and quality of coal receipts for manufacturing plants. Data will be published in the Quarterly Coal Report and used in calculating more accurately the energy consumed in the industrial sector (for coal consumers) as published in the Btu tables of the *Monthly Energy Review*. Respondents are manufacturing plants that consumed in excess of 1,000 short tons of coal during the year.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*
DOE/EIA-0121, *Quarterly Coal Report*

Form EIA-4, Weekly Coal Monitoring Report--Coke Plants (Standby Form)

Previous Forms: None

Collection Frequency: Weekly

Description: Standby Form EIA-4 is used to track coal stocks, receipts and consumption, and coke stocks during a coal supply disruption. In conjunction with Forms EIA-1 and EIA-20 data, EIA-4 data are used for supply forecasts and to inform the public, the industry, and the Government of aggregated coal consumption and inventories. Respondents are producers of coke.

Resulting Publications: Data not published

Form EIA-5, Coke Plant Report-Quarterly

Previous Forms: BOM-6-1365-M, Coke and Coal Chemical Materials

Collection Frequency: Quarterly

Description: Form EIA-5 is designed to provide data used for statistical reports, publications, and analyses. Data collected include production, transfers, consumption, sales, and stocks of coal, coke, and breeze. Respondents include all companies operating coke plants.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*
DOE/EIA-0121, *Quarterly Coal Report*
DOE/EIA-0202, *Short-Term Energy Outlook*
DOE/EIA-0214, *State Energy Data Report*
DOE/EIA-0376, *State Energy Price and Expenditure Report*
DOE/EIA-0383, *Annual Energy Outlook*
DOE/EIA-0384, *Annual Energy Review*

Form EIA-5A, Annual Coal Quality Report -Coke Plants

Previous Forms: None

Collection Frequency: Annually

Description: Form EIA-5A collects coal quality data related to coal consumption at U.S. coke plants to provide Congress with basic statistics concerning the quality of coal consumed in the steel industry as required by the Federal Energy

Administration Act of 1974 (FEAA) (P.L. 93-275) as amended. These data are used for coal demand forecasts of energy (coal) demand and prices requested by Congress.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0121, *Quarterly Coal Report*

Form EIA-6, Coal Distribution Report

Previous Forms: BOM-6-1419-Q, Distribution of Bituminous Coal and Lignite Shipments

Collection Frequency: Quarterly

Description: Form EIA-6 is designed to provide coal distribution data for publications, analyses, and for statistical reports. Data include the origin of coal produced and purchased, distribution by mode of transportation and consumer category, sales to other coal distributors, and end-of-quarter stocks. Respondents are all companies that owned or purchased and distributed in excess of 50,000 short tons of coal during the report year defined by the current reporting quarter and the three previous reporting quarters.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0121, *Quarterly Coal Report*

DOE/EIA-0202, *Short-Term Energy Outlook*

DOE/EIA-0214, *State Energy Data Report*

DOE/EIA-0218, *Weekly Coal Production*

DOE/EIA-0292, *An Assessment of the Quality of Selected EIA Data Series: Coal And Electric Power Data from 1977 to 1982*

DOE/EIA-0383, *Annual Energy Outlook*

DOE/EIA-0384, *Annual Energy Review*

Form EIA-7A, Coal Production Report

Previous Forms: BOM-6-1401-A, Bituminous Coal and Lignite Production and Mine Operation

Description: Collection Frequency: Annually Form EIA-7A is designed to provide information on current and prospective coal production, capacity, prices, reserves, and labor productivi-

ty. It is also used to investigate the performance of and competition in the coal industry. Data collected include company identification, types of mining operations, recoverable reserves, production quantity and value, productive capacity, employment, and projected production. Respondents are all U.S. coal mining operations that produce 10,000 short tons or more during the report year.

Resulting Publications:

DOE/EIA-0118, *Coal Production*

DOE/EIA-0121, *Quarterly Coal Report*

DOE/EIA-0292, *An Assessment of the Quality of Selected EIA Data Series: Coal And Electric Power Data from 1977 to 1982*

DOE/EIA-0384, *Annual Energy Review*

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0383, *Annual Energy Outlook*

DOE/EIA-0218, *Weekly Coal Production*

Form EIA-14, Refiners' Monthly Cost Report

Previous Forms: FEA-P110-M-1, Refiners' Monthly Cost Allocation Report

Collection Frequency: Monthly

Description: Form EIA-14 is used to provide data on the cost of crude oil purchased by refiners. These data are used for publications and statistical reports. Respondents are refiners.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0202, *Short-Term Energy Outlook*

DOE/EIA-0208, *Weekly Petroleum Status Report*

DOE/EIA-0376, *State Energy Price and Expenditure Report*

DOE/EIA-0380, *Petroleum Marketing Monthly*

DOE/EIA-0384, *Annual Energy Review*

DOE/EIA-0487, *Petroleum Marketing Annual*

Form EIA-20, Weekly Telephone Survey of Coal Burning Utilities (Standby Form)

Previous Forms: None

Collection Frequency: Weekly

Description: Standby Form EIA-20 is designed to track coal stocks, receipts, and consumption

at electric utilities during coal supply disruptions. In conjunction with Forms EIA-1 and EIA-4 data, EIA-20 data are used to inform the public, the industry, and the Government of aggregate coal data. Respondents are coal-consuming electric utilities.

Resulting Publications: Data not published

Form EIA-23, Annual Survey of Domestic Oil and Gas Reserves

Previous Forms: FPC-40, Annual Report of Proved Domestic Reserves

Collection Frequency: Annually

Description: Form EIA-23 is designed to provide national and regional data on the reserves of crude oil, natural gas, and natural gas liquids. These data are used to develop national and regional estimates of proved reserves of domestic crude oil, natural gas, and natural gas liquids, and to facilitate national energy policy decisions. Data are provided on proved reserves and production of crude oil, natural gas (associated-dissolved and non-associated), and lease condensate by State and geographic subdivision. Respondents are well operators who produce at least 400,000 barrels of crude oil, or 2 billion cubic feet of gas, annually. A sample of smaller operators is required to submit brief summary reports.

Resulting Publications:

DOE/EIA-0216, *United States Crude Oil, Natural Gas, and Natural Gas Liquids Reserves*

DOE/EIA-0384, *Annual Energy Review*

DOE/EIA-0534, *U.S. Oil and Gas Reserves by Year of Field Discovery*

Form EIA-23P, Oil and Gas Well Operator List Update Report

Previous Forms: None

Collection Frequency: Annually

Description: Form EIA-23P is used to determine the status, active or inactive, and approximate level of production for domestic oil and gas well operators currently listed by EIA as

respondents to Form EIA-23. These data are then used to update the Form EIA-23 list of well operators. Removal from the list of inactive firms and knowledge of the production level of active operators are necessary to maintain an accurate frame and reduce sampling errors of future Form EIA-23 surveys.

Resulting Publications: Data not published

Form EIA-28, Financial Reporting System

Previous Forms: None

Collection Frequency: Annually

Description: Form EIA-28 is the basis for a financial reporting system as set forth in Section 205(h)(2) of the DOE Organization Act. Data gathered are revenues, profits, funds flow, costs, and investments by line of energy business (separately for foreign and domestic operations). The energy business lines are petroleum, coal, other energy (including uranium), and non-energy. Petroleum is further broken down into production, refining, marketing, international marine, and domestic pipelines. Respondents each account for at least 1 percent of domestic production or reserves of oil, gas, coal, or uranium, or 1 percent of domestic oil production, refining capacity, or petroleum product sales.

Resulting Publications:

DOE/EIA-0206, *Performance Profiles of Major Energy Producers*

DOE/EIA-0384, *Annual Energy Review*

Form EIA-64A, Annual Report of the Origin of Natural Gas Liquids Production

Previous Forms: None

Collection Frequency: Annually

Description: Form EIA-64A is designed to provide data that are used to estimate natural gas plant liquids production and reserves by State and region. Data collected are plant and respondent identification, origin of natural gas received and natural gas plant liquids produced, and gas shrinkage resulting from natural gas plant liquids extracted. Respondents are natural

gas processing plant operators.

Resulting Publications:

DOE/EIA-0131, *Natural Gas Annual*
DOE/EIA-0216, *United States Crude Oil, Natural Gas, and Natural Gas Liquids Reserves*
DOE/EIA-0384, *Annual Energy Review*

Form EIA-176, Annual Report of Natural and Supplemental Gas Supply and Disposition
Previous Forms: BOM-6-1340-A, Supply and Distribution of Natural Gas-Distributors

Description: **Collection Frequency:** Annually
Form EIA-176 is designed to provide data on the consumption of natural gas by major end-use category, demand, and prices by State for various analyses and publications. Data collected include the origin of natural gas supplies and the disposition of natural gas on a State basis. Respondents include natural and synthetic gas producers, processors, distributors, storage operators, and pipeline operators.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*
DOE/EIA-0130, *Natural Gas Monthly*
DOE/EIA-0131, *Natural Gas Annual*
DOE/EIA-0214, *State Energy Data Report*
DOE/EIA-0383, *Annual Energy Outlook*
DOE/EIA-0384, *Annual Energy Review*

Form EIA-182, Domestic Crude Oil First Purchase Report

Previous Forms: ERA-182, Domestic Crude Oil First Purchaser's Report

Collection Frequency: Monthly

Description: Form EIA-182 is designed to provide data on the first marketed price of domestic crude oil streams after production. Federal agencies and market analysts incorporate the data in diverse time-series, models, and cost indices. State-level data are sought for estimating current and proposed tax revenues and crude oil production volumes. Corporate planners and industry consultants use the data to forecast market response. Data are supplied

by all firms that acquire domestic crude oil through a first purchase and assume ownership at or near the lease (location) on which crude oil was produced.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*
DOE/EIA-0109, *Petroleum Supply Monthly*
DOE/EIA-0380, *Petroleum Marketing Monthly*
DOE/EIA-0384, *Annual Energy Review*
DOE/EIA-0487, *Petroleum Marketing Annual*

Form EIA-191, Underground Gas Storage Report
Previous Forms: FEA-G318-M-0, Underground Gas Storage Report

Collection Frequency: Monthly

Description: Data from operators of all underground natural gas storage fields are combined at the State level to help EIA assess the supplies of natural gas in storage fields in regions of the United States and to identify the location of the supplies. Specific data collected are respondent identification, co-owner name (if any), working and base gas in reservoirs, injections, withdrawals, and location and capacity of reservoirs.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*
DOE/EIA-0130, *Natural Gas Monthly*
DOE/EIA-0131, *Natural Gas Annual*
DOE/EIA-0202, *Short-Term Energy Outlook*
DOE/EIA-0383, *Annual Energy Outlook*
DOE/EIA-0384, *Annual Energy Review*
DOE/EIA-0538, *Winter Fuels Report*

Form EIA-191S, Weekly Underground Gas Storage Report (Standby Form)

Previous Forms: None

Collection Frequency: Weekly

Description: Form EIA-191S is designed to fill gaps in the natural gas data collections where monthly data are not sufficient for responses to natural disasters, severe weather, or other catastrophic events. The data would permit EIA to monitor the impact of regional disruptions

Surveys

on a weekly basis when the EIA Administrator determines that conditions or events warrant more frequent data. All companies that operate underground natural gas storage fields in specific geographic areas must provide the information requested.

Resulting Publications: Data not published

Form EIA-254, Semiannual Report on Status of Reactor Construction

Previous Forms: ERDA-HQ-254, Quarterly Progress Report on Status of Reactor Construction

Collection Frequency: Semiannually

Description: Form EIA-254 is designed to provide data on nuclear units planned or under construction by electric utilities, including data on cost, date of first fuel loading, and date the unit is scheduled for commercial operation. Costs for land acquisition and equipment are also gathered. Respondents are all U.S. electric utilities that have ordered nuclear steam supply systems and have not yet completed nuclear facility construction.

Resulting Publications: Data not published

Form EIA-412, Annual Report of Public Electric Utilities

Previous Forms: ERA-412, Annual Report for Municipal Electric Utilities with Annual Revenues; of \$250,000 or More; FPC Form No.1-M, Annual Report for Electric Utilities with Annual Revenues of \$250,000 or more

Collection Frequency: Annually

Description: Form EIA-412 is designed to provide accounting, financial, and operating data from publicly owned electric utilities whose annual sales to ultimate consumers, or sales for resale, are 120,000 megawatt-hours or greater for each of the two previous years. These data are published and used in EIA studies and analyses of the electric power industry. Data collected include balance sheets, income statements, expense data, electric sales and purchases,

generating plant data by type of plants, and transmission line data.

Resulting Publications:

DOE/EIA-0348, *Electric Power Annual*

DOE/EIA-0376, *State Energy Price and Expenditure Report*

DOE/EIA-0437/2, *Financial Statistics of Major U.S. Publicly Owned Electric Utilities*

DOE/EIA-0455, *Electric Plant Cost and Power Production Expenses*

DOE/EIA-0531, *Electric Trade in the United States*

Form EIA-457A/H, Residential Energy Consumption Survey

Previous Forms: EIA-84, National Energy Consumption Interim Survey; EIA-410A, Survey of Residential Fuel Consumption--Fuel Oil Households; EIA-410B, Survey of Residential Fuel Consumption--Rental Agents; EIA-410C, Survey of Residential Fuel Consumption--Utilities

Collection Frequency: Triennially

Description: Forms EIA-457A through G are used to collect comprehensive national and regional data on both the consumption of and expenditures for energy in the residential sector of the economy. Data are used for analyzing and forecasting residential energy consumption. Housing, appliance, and demographic characteristics data are collected via personal interviews with households, and consumption and expenditure billing data are collected from the energy suppliers. End-use intensities are produced for space heating, water heating, air conditioning, refrigerators, and appliances. Rental agents are contacted by telephone to check on fuels used in rented apartments. Previous surveys were conducted in 1978, 1979, 1980, 1981, 1982, 1984, 1987, and 1990. Form EIA-457H is used to collect detailed lighting usage information for a subsample.

Resulting Publications:

DOE/EIA-0314(90), *Housing Characteristics*

DOE/EIA-0321/1(90), *Household Energy Consumption and Expenditure, Part I: National Data*

DOE/EIA-0321/2(90), *Household Energy Consumption and Expenditure 1990 Supplement: Regional Data*

DOE/EIA-0384, *Annual Energy Review*

DOE/EIA-0482, *Residential Energy Consumption Survey: Trends in Consumption and Expenditures 1978 - 1984*

DOE/EIA-0555(93)/2, *User Needs Study for the 1993 Residential Energy Consumption Survey*

Form EIA-627, Annual Quantity and Value of Natural Gas Report

Previous Forms: None

Collection Frequency: Annually

Description: Form EIA-627 provides information on natural gas production, the value of natural gas, and the number of producing gas wells. Monthly data are collected annually on an aggregate basis from State agencies already collecting these data.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0130, *Natural Gas Monthly*

DOE/EIA-0131, *Natural Gas Annual*

DOE/EIA-0384, *Annual Energy Review*

Form EIA-759, Monthly Power Plant Report

Previous Forms: FPC-4, Monthly Power Plant Report

Collection Frequency: Monthly

Description: Form EIA-759 is designed to provide net generation, fuel consumption, and end-of-month fuel stocks for all electric generating plants. Specific data also include prime mover and fuel type. These data are used in EIA publications and forecasting models. Respondents are all U.S. electric utilities engaged in the production of electric power for public use.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0121, *Quarterly Coal Report*

DOE/EIA-0214, *State Energy Data Report*

DOE/EIA-0131, *Natural Gas Annual*

DOE/EIA-0202, *Short-Term Energy Outlook*

DOE/EIA-0226, *Electric Power Monthly*

DOE/EIA-0384, *Annual Energy Review*

DOE/EIA-0348, *Electric Power Annual*

DOE/EIA-0383, *Annual Energy Outlook*

DOE/EIA-0531, *Electric Trade in the United States*

DOE/EIA-0538, *Winter Fuels Report*

Form EIA-767, Steam-Electric Plant Operation and Design Report

Previous Forms: FPC-67, Steam-Electric Plant Air and Water Quality Control Data

Collection Frequency: Annually

Description: Form EIA-767 is designed to provide information on air and water quality from steam-electric power plants with generating capacity of 100 megawatts or greater. A subset of these data are provided from steam-electric power plants with generating capacity between 10 and 100 megawatts. The data collection is jointly sponsored and shared by the Environmental Protection Agency, the Bureau of Economic Analysis (Department of Commerce), DOE's Office of Environmental Analysis, and the Office of Fossil Energy. Data are used by these agencies to evaluate fuel use in rate proceedings; to develop, assess, reform, and enforce regulations under the Clean Air Act, the Federal Water Pollution Act, and the Resource Conservation and Recovery Act of 1976; to assess the impact of pollution abatement and control expenditures on the GNP; and to assess the effect of environmental regulations on the generation of electric power. The Form EIA-767 was cited in the Clean Air Act Amendments of 1990 as the source of data establishing a baseline used to calculate allowances of sulfur dioxide. Data are also used to perform analyses pursuant to the Interagency Acid Precipitation Task Force and are available on tape from the National Technical Information Service.

Resulting Publications:

DOE/EIA-0348, *Electric Power Annual*

Form EIA-782A, Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report

Previous Forms: EIA-460, Petroleum Industry Monthly Report for Product Prices

Collection Frequency: Monthly

Description: Form EIA-782A is designed to provide monthly information on sales prices and volumes of certain petroleum products from a universe of refiners and gas plant operators. This information is published at various aggregation levels and is used by EIA to perform analyses and make projections related to energy supplies, demand, and prices.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0202, *Short-Term Energy Outlook*

DOE/EIA-0208, *Weekly Petroleum Status Report*

DOE/EIA-0376, *State Energy Price and Expenditure Report*

DOE/EIA-0380, *Petroleum Marketing Monthly*

DOE/EIA-0383, *Annual Energy Outlook*

DOE/EIA-0384, *Annual Energy Review*

DOE/EIA-0487, *Petroleum Marketing Annual*

Form EIA-782B, Resellers'/Retailers' Monthly Petroleum Product Sales Report

Previous Forms: EIA-460, Petroleum Industry Monthly Report for Product Prices

Collection Frequency: Monthly

Description: Form EIA-782B is designed to provide monthly State sales volumes and prices for motor gasoline, No. 2 distillate, and residual fuel oil from a sample of distillate fuel oil resellers and retailers, motor gasoline wholesalers, and residual fuel oil resellers and retailers. This information is published at various aggregate levels and is used by EIA to perform analyses and make projections related to energy supplies, demand, and prices.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0202, *Short-Term Energy Outlook*

DOE/EIA-0208, *Weekly Petroleum Status Report*

DOE/EIA-0376, *State Energy Price and Expendi-*

ture Report

DOE/EIA-0380, *Petroleum Marketing Monthly*

DOE/EIA-0383, *Annual Energy Outlook*

DOE/EIA-0384, *Annual Energy Review*

DOE/EIA-0487, *Petroleum Marketing Annual*

Form EIA-782C, Monthly Report of Prime Supplier Sales of Petroleum Products Sold for Local Consumption

Previous Forms: EIA-25, Prime Supplier's Monthly Report

Collection Frequency: Monthly

Description: Form EIA-782C is designed to provide monthly information on prime supplier sales of selected petroleum products into the local markets of ultimate consumption. A firm that produces, imports, or transports product across State boundaries and local marketing areas and sells the product to local distributors, local retailers, or end users must complete Form EIA-782C. Respondents include refiners, gas plant operators, importers, petroleum product resellers, and petroleum product retailers. This information is used by EIA to perform analyses and make projections related to energy supplies and demand.

Resulting Publications:

DOE/EIA-0202, *Short-Term Energy Outlook*

DOE/EIA-0214, *State Energy Data Report*

DOE/EIA-0380, *Petroleum Marketing Monthly*

DOE/EIA-0466, *Profiles of Foreign Direct Investment in U.S. Energy*

DOE/EIA-0487, *Petroleum Marketing Annual*

Form EIA-800, Weekly Refinery Report

Previous Forms: EIA-161, Refinery Report

Collection Frequency: Weekly

Description: Form EIA-800 is designed to provide data on the operations of petroleum refineries and blending plants. Data are collected from a sample of operators of refineries and blending plants. Data include input and stocks of refinery feedstocks and net production and stocks of selected finished petroleum products.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*
DOE/EIA-0109, *Petroleum Supply Monthly*
DOE/EIA-0202, *Short-Term Energy Outlook*
DOE/EIA-0208, *Weekly Petroleum Status Report*
DOE/EIA-0383, *Annual Energy Outlook*
DOE/EIA-0538, *Winter Fuels Report*

Form EIA-801, Weekly Bulk Terminal Report

Previous Forms: EIA-162, Bulk Terminal Report

Collection Frequency: Weekly

Description: Form EIA-801 is designed to provide data on end-of-week stock levels of selected finished petroleum products that are held in custody by the responding operators. Data are collected from a sample of bulk terminal operators on a Petroleum Administration for Defense (PAD) District and sub-PAD District basis. Specific product stock data collected include reformulated, oxygenated and other finished motor gasoline, motor gasoline blending components, naphtha- and kerosene-type jet fuels, distillate fuel oil by sulfur content, residual fuel oil.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*
DOE/EIA-0109, *Petroleum Supply Monthly*
DOE/EIA-0202, *Short-Term Energy Outlook*
DOE/EIA-0208, *Weekly Petroleum Status Report*
DOE/EIA-0383, *Annual Energy Outlook*
DOE/EIA-0538, *Winter Fuels Report*

Form EIA-802, Weekly Product Pipeline Report

Previous Forms: EIA-163, Product Pipeline Stocks Report

Collection Frequency: Weekly

Description: Form EIA-802 is designed to provide data on end-of-week stock levels of selected petroleum products that are held in custody by the reporting pipeline companies. Data are collected from a sample of petroleum product pipeline companies on PAD and sub-PAD District basis. Data collected include stocks of finished leaded and unleaded motor

gasoline, motor gasoline blending components, naphtha- and kerosene-type jet fuels, and distillate fuel oil.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*
DOE/EIA-0109, *Petroleum Supply Monthly*
DOE/EIA-0202, *Short-Term Energy Outlook*
DOE/EIA-0208, *Weekly Petroleum Status Report*
DOE/EIA-0383, *Annual Energy Outlook*
DOE/EIA-0538, *Winter Fuels Report*

Form EIA-803, Weekly Crude Oil Stocks Report

Previous Forms: EIA-164, Crude Oil Stocks Report

Collection Frequency: Weekly

Description: Form EIA-803 is designed to provide data on end-of-week crude oil stocks. Reported data include crude oil stocks by PAD District and stocks of Alaskan crude oil in transit by water. Data are reported by a sample of companies that transport or store 1,000 barrels or more of crude oil. Data are reported on a custody basis. Respondents are gathering and trunk pipeline companies (interstate, intrastate, and intracompany pipelines), crude oil producers, terminal operators, storers of crude oil (except refineries), and transporters of Alaskan crude oil by water.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*
DOE/EIA-0109, *Petroleum Supply Monthly*
DOE/EIA-0202, *Short-Term Energy Outlook*
DOE/EIA-0208, *Weekly Petroleum Status Report*
DOE/EIA-0383, *Annual Energy Outlook*

Form EIA-804, Weekly Imports Report

Previous Forms: EIA-165, Imports Report

Collection Frequency: Weekly

Description: Form EIA-804 is designed to provide data on imports of crude oil and selected petroleum products by PAD District or subPAD District. These data are provided by a sample of importers of record who import petroleum into the 50 States and the District of Columbia.

Surveys

Specific products addressed are crude oil, reformulated, oxygenated, and other finished motor gasoline, motor gasoline blending components, naphtha- and kerosene-type jet fuels, distillate fuel oil by sulfur content, residual fuel oil, liquefied petroleum gases, and other petroleum products. In addition, imports of crude oil by country of origin are collected.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*
DOE/EIA-0109, *Petroleum Supply Monthly*
DOE/EIA-0202, *Short-Term Energy Outlook*
DOE/EIA-0208, *Weekly Petroleum Status Report*
DOE/EIA-0383, *Annual Energy Outlook*
DOE/EIA-0538, *Winter Fuels Report*

Form EIA-807, Propane Telephone Survey

Previous Forms: None

Collection Frequency: Weekly, Monthly

Description: The EIA-807 survey is designed to provide data on production, stocks, and imports of propane during the heating season. Data collected will be used to monitor the supply of propane and to report to Congress and others on propane supplies when requested. Respondents are a sample of refineries, bulk terminals, petroleum product pipelines, petroleum product importers, and natural gas processing plants located in PAD Districts I, II, or III.

Resulting Publications:

DOE/EIA-0538, *Winter Fuels Report*
DOE/EIA-0208, *Weekly Petroleum Status Report*

Form EIA-810, Monthly Refinery Report

Previous Forms: EIA-87, *Refinery Report*; EIA-87A, *Motor Gasoline Producers Report*

Collection Frequency: Monthly

Description: Form EIA-810 is designed to provide information regarding the balance between the supply (beginning stocks, receipts, and production) and disposition (input, shipments, fuel use and losses, and ending stocks) of crude oil and refined products. Data are

provided by all operating and idle refineries and blending plants.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*
DOE/EIA-0109, *Petroleum Supply Monthly*
DOE/EIA-0202, *Short-Term Energy Outlook*
DOE/EIA-0208, *Weekly Petroleum Status Report*
DOE/EIA-0340, *Petroleum Supply Annual*
DOE/EIA-0383, *Annual Energy Outlook*
DOE/EIA-0384, *Annual Energy Review*
DOE/EIA-0538, *Winter Fuels Report*

Form EIA-811, Monthly Bulk Terminal Report

Previous Forms: EIA-88, *Bulk Terminal Stocks Report*; EIA-175A, *Bulk Terminal Stocks Of No. 4 And Residual Fuel Oils*

Collection Frequency: Monthly

Description: Form EIA-811 is designed to provide data on end-of-month stock levels of reformulated, oxygenated, and other finished motor gasoline, motor gasoline blending components, finished aviation gasoline, special naphthas, naphtha-type jet fuel, kerosene-type jet fuel, kerosene, distillate fuel oil by sulfur content, residual fuel oil by sulfur content, lubricants, asphalt and road oil, pentanes plus, liquefied petroleum and refinery gases, miscellaneous products and oxygenates. Data are reported at the State level, including the District of Columbia, and for Puerto Rico and the Virgin Islands on a custody basis by bulk terminal operating companies.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*
DOE/EIA-0109, *Petroleum Supply Monthly*
DOE/EIA-0202, *Short-Term Energy Outlook*
DOE/EIA-0208, *Weekly Petroleum Status Report*
DOE/EIA-0340, *Petroleum Supply Annual*
DOE/EIA-0383, *Annual Energy Outlook*
DOE/EIA-0384, *Annual Energy Review*
DOE/EIA-0538, *Winter Fuels Report*

Form EIA-812, Monthly Product Pipeline Report

Previous Forms: EIA-89, Pipeline Products Report

Collection Frequency: Monthly

Description: Form EIA-812 is designed to provide data on end-of-month stock levels and movements of petroleum products transported by pipeline. Data are reported on a custody basis by all product pipeline companies. Data include stocks of products in pipelines and working tanks, as well as movements of products between PAD Districts.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*
DOE/EIA-0109, *Petroleum Supply Monthly*
DOE/EIA-0202, *Short-Term Energy Outlook*
DOE/EIA-0208, *Weekly Petroleum Status Report*
DOE/EIA-0340, *Petroleum Supply Annual*
DOE/EIA-0383, *Annual Energy Outlook*
DOE/EIA-0384, *Annual Energy Review*
DOE/EIA-0538, *Winter Fuels Report*

Form EIA-813, Monthly Crude Oil Report

Previous Forms: EIA-90, Crude Oil Stocks Report

Collection Frequency: Monthly

Description: Form EIA-813 is designed to provide data on end-of-month stocks of crude oil by PAD District, consumption of crude oil during the month by pipelines and on leases, stocks of Alaskan crude oil in transit by water, and movements of crude oil by pipeline between PAD Districts. Data are collected from all companies which carry or store 1,000 barrels or more of crude oil. Respondents are gathering and trunk pipeline companies (including interstate, intrastate, and intracompany pipelines), crude oil producers, terminal operators and storers of crude oil (except refineries), and companies transporting crude oil by water in the 50 States and the District of Columbia.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0109, *Petroleum Supply Monthly*

DOE/EIA-0202, *Short-Term Energy Outlook*

DOE/EIA-0208, *Weekly Petroleum Status Report*

DOE/EIA-0340, *Petroleum Supply Annual*

DOE/EIA-0383, *Annual Energy Outlook*

DOE/EIA-0384, *Annual Energy Review*

Form EIA-814, Monthly Imports Report

Previous Forms: ERA-60, Monthly Imports Report; FEA-P126-M-0, Domestic Crude Oil Entitlements Program Importers Monthly Report

Collection Frequency: Monthly

Description: Form EIA-814 is designed to provide data on imports of crude oil and petroleum products. Data are filed by each importer of record who imports petroleum into the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands and other U.S. possessions; and from Puerto Rico, the Virgin Islands and U.S. possessions into 50 States and the District of Columbia.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*
DOE/EIA-0109, *Petroleum Supply Monthly*
DOE/EIA-0202, *Short-Term Energy Outlook*
DOE/EIA-0208, *Weekly Petroleum Status Report*
DOE/EIA-0340, *Petroleum Supply Annual*
DOE/EIA-0383, *Annual Energy Outlook*
DOE/EIA-0384, *Annual Energy Review*
DOE/EIA-0538, *Winter Fuels Report*

Form EIA-816, Monthly Natural Gas Liquids Report

Previous Forms: EIA-64, Natural Gas Liquids Operations Report

Collection Frequency: Monthly

Description: Form EIA-816 is designed to provide information regarding the balance between the supply (beginning stocks, receipts, and production) and disposition (input, shipments, fuel use and losses, and ending stocks) of natural gas liquids. The data are used to report aggregate statistics on, and conduct analyses of, the operation of U.S. natural gas

processing plants and fractionators. Data are supplied by operators of facilities designed to extract liquid hydrocarbons from a natural gas stream (natural gas processing plants) or to separate a liquid hydrocarbon stream into its component products (fractionators).

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*
DOE/EIA-0109, *Petroleum Supply Monthly*
DOE/EIA-0131, *Natural Gas Annual*
DOE/EIA-0202, *Short-Term Energy Outlook*
DOE/EIA-0208, *Weekly Petroleum Status Report*
DOE/EIA-0340, *Petroleum Supply Annual*
DOE/EIA-0383, *Annual Energy Outlook*
DOE/EIA-0384, *Annual Energy Review*
DOE/EIA-0538, *Winter Fuels Report*

Form EIA-817, Monthly Tanker and Barge Movement Report

Previous Forms: EIA-170, Tanker and Barge Shipments of Crude Oil and Petroleum Products Between PAD Districts

Collection Frequency: Monthly

Description: Form EIA-817 is designed to provide data on the shipments of crude oil and petroleum products between PAD Districts. The information is used in computing domestic demand for petroleum products by PAD Districts and to forecast short-term petroleum demand. Respondents are all companies that have custody of crude oil or petroleum products transported by tanker or barge between PAD Districts. Also, companies that have custody of crude oil or petroleum products originating from a PAD District and transported to the Panama Canal and companies which have custody of domestically originating crude oil or petroleum products transported from the Panama Canal to a PAD District must report.

Resulting Publications:

DOE/EIA-0109, *Petroleum Supply Monthly*
DOE/EIA-0340, *Petroleum Supply Annual*

Form EIA-818, International Energy Agency Imports/Stocks-at-Sea Report

Previous Forms: EIA-142, International Energy Agency Imports/Stocks-at-Sea Report

Collection Frequency: Monthly

Description: Form EIA-818 is designed to provide data from selected major importers of crude oil, natural gas liquids, and petroleum products. These data aid in determining projected oil imports. During petroleum supply emergencies, the data are used to help determine the re-allocation of petroleum among the International Energy Agency member nations. Specific data are imports of petroleum into the United States, oil in transit, and stocks at sea. Respondents are companies that import crude oil or petroleum into the United States, Puerto Rico, the Virgin Islands, and other U.S. possessions. Also, selected companies having petroleum in transit or stocks-at-sea outside the United States are required to report.

Resulting Publications: Data not published

Form EIA-819A, Annual Oxygenate Capacity Report

Previous Forms: None

Collection Frequency: Annually

Description: Form EIA-819A is used to collect data on current and projected production capacities and annual production and end-of-year stocks of fuel ethanol for all facilities that produce or distill oxygenates. Data are collected for operating and idle production capacity as of the first day of the year and projected production capacity for the first day of the following year. Respondents are operators of all operating and idle facilities that produce or distill oxygenates, and new plants under construction in the United States, Puerto Rico, the Virgin Islands, Guam, and other U.S. possessions.

Resulting Publications:

DOE/EIA-0340, *Petroleum Supply Annual*

Form EIA-819M, Monthly Oxygenate Telephone Report

Previous Forms: EIA-819, Monthly Oxygenate Telephone Survey

Collection Frequency: Monthly

Description: Form EIA-819M is designed to obtain information on oxygenate production, imports, and end-of-month stocks. Data are reported by oxygenate type and PAD District. Respondents are a sample of: operators of facilities that produce oxygenates; operators of petroleum refineries; operators of bulk terminals, bulk stations, blending plants, and other non-refinery facilities that store or blend oxygenates; and importers of oxygenates.

Resulting Publications:

DOE/EIA-0109, *Petroleum Supply Monthly*

DOE/EIA-0208, *Weekly Petroleum Status Report*

Form EIA-820, Annual Refinery Report

Previous Forms: BOM-6-1334-A, Capacity of Petroleum Refineries

Collection Frequency: Annually

Description: Form EIA-820 is used to collect data on current and projected capacities of the facilities of all petroleum refineries and blending plants located in the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam and other U.S. possessions. Current year and projections for the next year are reported for operable atmospheric crude oil distillation capacity, downstream charge capacity, and production capacity. In addition, data include current year working and shell storage capacity of crude oil and petroleum products, prior year's data for fuels consumed at the refineries for all purposes, and refinery receipts of crude oil by method of transportation. Data are used to conduct analyses of the operation of U.S. petroleum refineries and blending plants. Respondents are operators of all operating and idle petroleum refineries (including new refineries under construction), blending plants, shutdown refineries with usable storage

capacity, and refineries shut down during the previous year.

Resulting Publications:

DOE/EIA-0340, *Petroleum Supply Annual*

DOE/EIA-0384, *Annual Energy Review*

Form EIA-821, Annual Fuel Oil and Kerosene Sales Report

Previous Forms: EIA-172, Sales Report of Fuel Oil and Kerosene

Collection Frequency: Annually

Description: Form EIA-821 is designed to provide data on the annual sales of distillate and residual fuel oil and kerosene. The data, which are published by EIA, are used to determine current and projected fuel oil needs on national, regional, and State levels. The survey specifically covers sales of distillate and residual fuel oils and kerosene by end use and State of destination. Respondents are a scientifically selected sample of fuel oil dealers in the 50 States and the District of Columbia. Data on the sales of motor gasoline and propane will be collected for reference year 1994. Thereafter, sales of propane and motor gasoline will be collected every three years.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0214, *State Energy Data Report*

DOE/EIA-0384, *Annual Energy Review*

DOE/EIA-0535, *Fuel Oil and Kerosene Sales*

Form EIA-822A/D, Oxygenate Operations Identification Survey

Previous Forms: None

Collection Frequency: Annually

Description: Form EIA-822A/D provides data on oxygenate producers, blenders, storers, and importers. The information will aid in determining whether such operators are eligible respondents to EIA monthly surveys: EIA-810, 811, 812, and 814.

Resulting Publications: Data not published

Surveys

Form EIA-825, Petroleum Facility Operator Identification Survey

Previous Forms: EIA-747, Petroleum Facility Operator Identification Survey

Collection Frequency: Triennially

Description: Form EIA-825 is designed to obtain information on petroleum supply facilities for use in determining if the facilities should be included in EIA surveys EIA-810, EIA-811, EIA-812, EIA-813, EIA-816, and EIA-817. Information includes stocks, storage capacity, pipeline, tanker and barge transport operations, as well as blending, refining, and natural gas processing activities. Respondents are operators of bulk terminals, pipeline systems, tankers and barges, and petroleum or natural gas processing plants.

Resulting Publications: Data not published

Form EIA-826, Monthly Electric Utility Sales and Revenue Report with State Distributions

Previous Forms: FERC-5, Electric Utility Company Monthly Statement

Collection Frequency: Monthly

Description: Form EIA-826 is designed to collect data on electricity sales and associated revenue, to ultimate consumers by class of service, at the State/electric utility level. Estimates of sales, associated revenue, and average revenue per kilowatthour sold (the ratio of revenue to sales) at the national, Census division, and State level, based on these reported data, are published by the EIA. In addition, at the total company level, selected financial statistics are requested: depreciation and amortization of property, plant, and equipment; allowance for funds used during construction; net income; and gross additions to construction work in progress. These financial statistics are used by the United States Department of Commerce for compiling the Gross National Product statistics.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0226, *Electric Power Monthly*

DOE/EIA-0384, *Annual Energy Review*

Form EIA-846A/C, Manufacturing Energy Consumption Survey

Previous Forms: EIA-846(F), Manufacturing Energy Consumption Survey (Consumption and Related)

Collection Frequency: Triennially

Description: Forms EIA-846A through D are used to collect information on energy consumption, energy usage patterns, and fuel-switching capabilities of the manufacturing sector of the U.S. economy. The information from this survey is used to publish aggregate statistics on the consumption of energy for fuel and nonfuel purposes, fuel-switching capabilities, and certain energy-related issues such as energy prices, on-site electricity generation, and purchases of electricity from nonutilities. Beginning in 1991, the survey also collects information on end users of energy, participation in energy management programs, and penetration of new technology. Respondents are a sample of manufacturing establishments in Standard Industrial Classification categories 20 through 39.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0384, *Annual Energy Review*

DOE/EIA-0512(88), *Manufacturing Energy Consumption Survey: Consumption of Energy 1988*

DOE/EIA-0515(88), *Manufacturing Fuel Switching Capability 1988*

DOE/EIA-0552, *Changes in Energy Intensity in the Manufacturing Sector 1980-1988*

DOE/EIA-0555(92)/2, *Development of the 1991 Manufacturing Energy Consumption Survey*

DOE/EIA-0555(92)/3, *Derived Annual Estimates of Manufacturing Energy Consumption 1974-1988*

Form EIA-851, Domestic Uranium Mining Production Report

Previous Forms: None

Collection Frequency: Monthly

Description: Form EIA-851 is designed to provide data which are needed to monitor the viability of the domestic uranium mining and milling industry pursuant to the Nuclear Regulatory Commission Authorization Act of 1983. This collection replaced production reporting to the Grand Junction Area Office in Colorado. Data collected include beginning and end-of-month inventories, production, and processing of uranium. These data are not published but are analyzed and used as input to annual reports to Congress and the President. Respondents are uranium concentrate producing firms.

Resulting Publications: Data not published

Form EIA-856, Monthly Foreign Crude Oil Acquisition Report

Previous Forms: EP-51, Monthly Foreign Crude Oil Transaction Report

Collection Frequency: Monthly

Description: Form EIA-856 is designed to provide data on costs of foreign crude oil acquired for importation into the United States, its territories and possessions. These data are used as follows: to calculate price indices by the Bureau of Labor Statistics; in analyses of consumption, production, and prices of fuels worldwide; and in modeling and forecasting. Data collected include crude oil transactions, country crude code, crude type, gravity, date of loading/landing, port of destination, vessel, volume purchased, purchase price, other costs, landed cost, number of days credit, and name of vendor. Respondents include all firms reporting previously on Form ERA-51, Transfer Pricing Report, as of June 1982, and all other

firms importing 500,000 barrels of foreign crude oil during the report month.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0202, *Short-Term Energy Outlook*

DOE/EIA-0380, *Petroleum Marketing Monthly*

DOE/EIA-0384, *Annual Energy Review*

DOE/EIA-0487, *Petroleum Marketing Annual*

Form EIA-857, Monthly Report of Natural Gas Purchases and Deliveries to Consumers

Previous Forms: None

Collection Frequency: Monthly

Description: Form EIA-857 is designed to provide volume and cost or revenue data on natural gas delivered to residential, commercial, and industrial consumers. State and regional summaries of these data are published by EIA and used by other branches of Government to make analyses and projections. Respondents are a sample of natural gas companies that deliver to consumers in the United States.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0130, *Natural Gas Monthly*

Form EIA-857S, Weekly Report of Natural Gas Supplies and Deliveries to Consumers (Standby Form)

Previous Forms: None

Collection Frequency: Weekly

Description: Form EIA-857S is designed to fill gaps in the natural gas data collections where monthly data are not sufficient for responses to natural disasters, severe weather, or other catastrophic events. All companies currently responding to the EIA-857 in geographic areas affected would report. The data would permit EIA to monitor the impact of regional disruptions on a weekly basis when the EIA Administrator determines that conditions or events warrant more frequent data.

Resulting Publications: Data not published

Surveys

Form EIA-858, Uranium Industry Annual Survey

Previous Forms: EIA-491A, Survey of United States Uranium Marketing Activity (January; Collection); NE-491A, Survey of Uranium Marketing Activities

Collection Frequency: Annually

Description: Form EIA-858 is a mandatory collection of exploration and development, reserves, ore and concentrate production, marketing, inventories, shipments for enrichment, requirements, and financial information compiled from companies in the uranium industry in the United States. These data are used to monitor the viability of the domestic uranium mining and milling industry pursuant to the Nuclear Regulatory Commission Authorization Act of 1983. In addition, the data are used extensively by the public and private sectors to analyze trends in the uranium industry and to assess the current status of the industry.

Resulting Publications:

DOE/EIA-0477, *Domestic Uranium Mining and Milling Industry, Viability Assessment*

DOE/EIA-0478, *Uranium Industry Annual*

Form EIA-860, Annual Electric Generator Report

Previous Forms: EIA-119A, Annual Projection of System Changes

Collection Frequency: Annually

Description: Form EIA-860 is used to collect data on the status of electric generating plants and associated equipment in operation and those scheduled to be in operation in the United States within 10 years of filing of the report. These data are used to maintain and update the EIA's electric power plant frame data base. Data are collected on power plant sites, and the design data of electric generators. Respondents include each electric utility that operates, or plans to operate, a power plant in the United States within 10 years of the report.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0095, *Inventory of Power Plants in the United States*

DOE/EIA-0202, *Short-Term Energy Outlook*

DOE/EIA-0226, *Electric Power Monthly*

DOE/EIA-0348, *Electric Power Annual*

DOE/EIA-0384, *Annual Energy Review*

Form EIA-861, Annual Electric Utility Report

Previous Forms: FPC-12, Power System Statement

Collection Frequency: Annually

Description: Form EIA-861 is a mandatory collection of data, filed annually by each electric utility in the United States, its territories, and Puerto Rico. The survey collects data on generation, wholesale purchases, and sales and revenue by class of consumer and State. These data are used to maintain and update the EIA's electric utility frame data base. This data base provides information to answer questions from the Executive Branch, Congress, other public agencies, and the general public. Respondents include each electric utility that is a corporation, person, agency, authority, or other legal entity or instrumentality that owns or operates facilities within the United States, its territories, or Puerto Rico for the generation, transmission, distribution, or sale of electric energy primarily for use by the public.

Resulting Publications:

DOE/EIA-0214, *State Energy Data Report*

DOE/EIA-0226, *Electric Power Monthly*

DOE/EIA-0348, *Electric Power Annual*

DOE/EIA-0384, *Annual Energy Review*

DOE/EIA-0437/1, *Financial Statistics of Major Investor-Owned Electric Utilities*

DOE/EIA-0437/2, *Financial Statistics of Major Publicly Owned Electric Utilities*

DOE/EIA-0531, *Electric Trade in the United States*

DOE/EIA-0540, *Electric Sales and Revenue*

Form EIA-863, Petroleum Product Sales Identification Survey

Previous Forms: EIA-764A, Petroleum Product Sales Identification Survey

Collection Frequency: Triennially

Description: Form EIA-863 is designed to provide a comprehensive frame file of No. 2 distillate and residual fuel oil dealers and motor gasoline resellers. In addition, propane volume data will be collected on the 1994 EIA-863 survey form. Information is collected on size, type, and geographic location of these firms. The 21,000 firms surveyed, with their associated volumetric data and tracking information, serve as the sampling frame for Forms EIA-821 (Annual Fuel Oil and Kerosene Sales Report), EIA-782 (Monthly Petroleum Products Sales Report), EIA-877 (Winter Heating Fuels Telephone Survey), EIA-878, (Daily Motor Gasoline Price Survey), and other ad hoc surveys, such as the National Petroleum Council Surveys.

Resulting Publications: Data not published

Form EIA-867, Annual Nonutility Power Producer Report

Previous Forms: None

Collection Frequency: Annually

Description: EIA-867 collects data annually from nonutility power producers who own or plan on installing electric generation equipment with a total capacity of one megawatt or more at an existing or proposed site. Electricity generation, installed capacity, and energy consumption data are collected. These data will be used to augment existing electric utility data and for electric power forecasts and analyses.

Resulting Publications:

DOE/EIA-0348, *Electric Power Annual*

DOE/EIA-0384, *Annual Energy Review*

Form EIA-868, Quarterly Coal Imports by Electric Utilities into the United States

Previous Forms: None

Collection Frequency: Quarterly

Description: Form EIA-868 collects quantity, quality, and cost (transportation, mine price, delivered price) of coal imported by electric utility plants. This information is used to prepare quarterly and annual summaries on coal imports, including data and analysis on prices, sources of exports, transportation methods and costs, and displacement of U.S. coal by imports.

Resulting Publications:

DOE/EIA-0121, *Quarterly Coal Report*

DOE/EIA-0191, *Cost and Quality of Fuels for Electric Utility Plants*

Form EIA-871A/F, Commercial Buildings Energy Consumption Survey

Previous Forms: EIA-788A, Nonresidential Buildings Energy Consumption Survey—Original Building; Form; EIA-788B, Nonresidential Buildings Energy Consumption Survey—Update Building Form; EIA-788C, Nonresidential Buildings Energy Consumption Survey—Energy Supplier Form

Collection Frequency: Triennially

Description: Forms EIA-871A through F are used to collect information for the Commercial Buildings Energy Consumption Survey (CBECS). The survey provides comprehensive national and regional information on the consumption of, and expenditures for, energy in the commercial sector of the economy. Data are used in EIA models and published in statistical and analytical reports. Physical characteristics information for commercial buildings is collected by personal interviews with building owners and managers using Form EIA-871A. Billing and consumption

Surveys

data for the buildings are collected by mail from individual energy suppliers using Forms EIA-871C through F (depending upon the energy source). Supplemental information on construction improvements, maintenance, and repairs is collected for the Bureau of the Census using Forms EIA-871G. This survey was renamed the CBECS in 1989. Previously it was conducted under the name of Nonresidential Buildings Energy Consumption Survey.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0246(89), *Commercial Buildings Characteristics 1989*

DOE/EIA-0318(89), *Commercial Buildings Energy Consumption and Expenditures 1989*

DOE/EIA-0382, *Natural Gas: Use and Expenditures*

DOE/EIA-0383, *Annual Energy Outlook*

DOE/EIA-0441, *Energy Conservation Indicators Annual Report*

DOE/EIA-0555(92)/1, *Energy Consumption Series, Lighting in Commercial Buildings*

DOE/EIA-0555(93)/1, *Assessment of Energy Use in Multibuilding Facilities*

Form EIA-876A/E, Residential Transportation Energy Consumption Survey

Previous Forms: EIA-141, National Survey of Fuel Purchases for Vehicles - Purchase Log, Odometer Reading Cards, and Supplementary Questionnaire

Collection Frequency: Triennially

Description: Forms EIA-876A through D are designed to collect information on the number and types of vehicles per household and for each vehicle: annual mileage; Vehicle Identification Number (VIN); and vehicle characteristics, such as size of engine, transmission type, and fuel type used (including alternative fuels). Fuel consumption, expenditures, and fuel efficiency are estimated using Environmental Protection Agency, Bureau of Labor Statistics, and Lundberg Survey Inc. data. Data are collected in a

telephone survey and are used in EIA publications. Note: Residential Transportation Energy Consumption Survey was dropped from the publication title for the 1988 survey.

Resulting Publications:

DOE/EIA-0464(91), *Household Vehicles Energy Consumption 1991*

DOE/EIA-0035, *Monthly Energy Review*

Form EIA-877, Winter Heating Fuels Telephone Survey

Previous Forms: None

Collection Frequency: Other

Description: Form EIA-877 is used to collect data on residential prices of No. 2 heating oil and propane. These data are used to monitor No. 2 heating oil and propane during the heating season (Oct 1 - March 31) and to report to the Congress and others. Respondents are selected retailers of heating oil and propane in PAD Districts I and II.

Resulting Publications:

DOE/EIA-0538, *Winter Fuels Report*

Form EIA-878, Motor Gasoline Price Survey

Previous Forms: None

Collection Frequency: Other

Description: The EIA-878 collects information on the retail price of unleaded regular motor gasoline. Data are used by EIA in monitoring and analyzing price impacts of new legislative requirements. Respondents are companies that own retail motor gasoline stations.

Resulting Publications: Data not published

Form EIA-882T, Generic Clearance for Questionnaire Testing, Evaluation, and Research

Previous Forms: None

Collection Frequency: On occasion

Description: EIA-882T will be used to conduct pretest/pilot surveys (personal visit or face-to-face interviews, telephone interviews, mail questionnaires), focus groups, and cognitive interviews. Results will be used to modify

questionnaires to improve the quality of EIA's data. Respondents will vary based on the tests being conducted.

Resulting Publications: Data not published

Form EP-883, Energy Policy Act Futures and Options Study

Previous Forms: None

Collection Frequency: Nonrecurring

Description: EP-883 will collect information on the management of fuel price risk reduction programs in the public and semi-public organizations. Data will be used to prepare a report to Congress as required by Section 3014 of the Energy Policy Act. Respondents are organizations that have implemented, or considered implementing, futures and options-based price risk reduction programs.

Resulting Publications: Data not published

Form FERC-1, Annual Report of Major Electric Utilities, Licensees and Others Previous Forms:

FPC-1, Annual Report for Electric Utilities, Licensees, and Others (Class A and Class B)

Collection Frequency: Annually

Description: The Federal Energy Regulatory Commission (FERC) Form 1 is designed to gather financial data used for formal investigation of electric rates, rate levels, and financial audits. Specific data are collected on corporate information, balance sheet; income statement; retained earnings; taxes; depreciation, amortization, and depletion; electric operating revenues; electric maintenance expenses; and generating plant statistics. Survey respondents are electric utilities and licensees that had sales or transmission services that in each of the last three consecutive years exceeded any one or more of the following: (1) 1 million megawatthours of total annual sales; (2) 100 megawatthours of annual sales for resale; (3) 500 megawatthours

of power exchanges delivered; or (4) 500 megawatthours of annual wheeling for others (deliveries plus losses).

Resulting Publications:

DOE/EIA-0214, *State Energy Data Report*

DOE/EIA-0348, *Electric Power Annual*

DOE/EIA-0376, *State Energy Price and Expenditure Report*

DOE/EIA-0437/1, *Financial Statistics of Major U.S. Investor-Owned Electric Utilities*

DOE/EIA-0531, *Electric Trade in the United States*

Form FERC-2, Annual Report of Major Natural Gas Companies

Previous Forms: FPC-2, Annual Report of Natural Gas Companies (Class A and Class B)

Collection Frequency: Annually

Description: Form FERC-2 data are used by the Federal Energy Regulatory Commission for gas pipeline review and rate-setting; by the EIA for statistical purposes and publications; by State regulatory commissions for reporting requirements; and by the Economic Regulatory Administration in programs related to the Natural Gas Act. Specific data collected include depreciation, amortization and depletion, income statements and retained earnings, materials and supplies, salary and wage distribution, construction work in progress, operating revenues, and operation and maintenance expenses. Respondents are major natural gas companies, as defined in the Natural Gas Act, whose combined gas sold for resale and gas transported or stored for a fee exceeds 50 million Mcf (thousand cubic feet at 14.73 pounds per square inch absolute at 60 degrees Fahrenheit) in each of the three previous calendar years.

Resulting Publications:

DOE/EIA-0145, *Statistics of Interstate Natural Gas Pipeline Companies*

DOE/EIA-0449, *A Study of Contracts Between Interstate Pipelines and Their Customers*

Form FERC-11, Natural Gas Pipeline Company Monthly Statement

Previous Forms: FPC-11, Natural Gas Pipeline Company Monthly Statement

Collection Frequency: Monthly

Description: Form FERC 11 is designed to collect data on revenues, expenses, and gas volume of jurisdictional respondents for regulatory purposes. Specific data include end-of-month sales of natural gas to customers, income, operation and maintenance expenses, rates, and gas supplies and production. Respondents are companies whose combined gas sales for resale and whose gas transported or stored for a fee are in excess of 50 million Mcf (thousand cubic feet). The data provide an indication of the current status of pipeline activities and are used to measure the financial status of the regulated pipelines as a group.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0130, *Natural Gas Monthly*

DOE/EIA-0440, *Recent Market Activities of Major Interstate Pipeline Companies*

DOE/EIA-0448, *Drilling and Production Under Title 1 of the NGPA*

Form FERC-423, Monthly Report of Cost and Quality of Fuels for Electric Plants

Previous Forms: FPC-423, Monthly Report of Cost and Quality of Fuels for Electric Plants

Collection Frequency: Monthly

Description: FERC 423 is designed to provide data for the Department of Energy, Federal Energy Regulatory Commission, the Environmental Protection Agency, General Accounting Office, the Department of Commerce, the Federal Reserve Board, the Council of Economic Advisors, the Department of Labor, and Congress. These data are used in economic studies to determine the justification for

increasing electric rates, environmental studies, fuel emergencies, and policy decisions. Specific data include respondent identification, type of purchase (contract, spot, firm, interruptible), expiration date of contract, fuel type, coal origin data, including type of mine, Bureau of Mine (BOM) district, and State and county of origin. Supplier (mine, broker, refinery, pipeline) data include quantity of fuel received, quality of fuel (as received including Btu, sulfur, and ash content), and delivered cost of fuel. Respondents are electric generating plants with a steam-electric and combined cycle nameplate capacity of 50 megawatts or more.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0121, *Quarterly Coal Report*

DOE/EIA-0130, *Natural Gas Monthly*

DOE/EIA-0131, *Natural Gas Annual*

DOE/EIA-0191, *Cost and Quality of Fuels for Electric Utility Plants*

DOE/EIA-0214, *State Energy Data Report*

DOE/EIA-0226, *Electric Power Monthly*

DOE/EIA-0348, *Electric Power Annual*

DOE/EIA-0376, *State Energy Price and Expenditure Report*

DOE/EIA-0384, *Annual Energy Review*

Form FERC-542-PGA, Purchased Gas Adjustment (PGA)

Previous Forms: None

Collection Frequency: Semiannually, Other

Description: Form FERC-542-PGA is filed with FERC to support the purchased gas adjustment as the primary source of specific data on natural gas purchases by the Natural Gas Policy Act (NGPA) category. In addition, information is provided regarding the company's projected purchases, volumes, sources of supply, and the effective rate and costs of this gas during a forthcoming effective period.

Resulting Publications: Data not published

Form FPC-14, Annual Report for Importers and Exporters of Natural Gas

Previous Forms: None

Collection Frequency: Annually

Description: Form FPC-14 is designed to provide data used to help monitor and regulate natural gas imports into, and exports from, the United States and for inclusion in EIA publications. Specific monthly data collected annually include transporter, U.S. point of entry, foreign buyer or seller, docket number, and volume and dollar amount of natural gas exports and imports. Respondents are natural gas companies importing or exporting natural gas under Section 3 of the Natural Gas Act.

Resulting Publications:

DOE/EIA-0035, *Monthly Energy Review*

DOE/EIA-0130, *Natural Gas Monthly*

DOE/EIA-0202, *Short-Term Energy Outlook*

DOE/EIA-0383, *Annual Energy Outlook*

DOE/EIA-0384, *Annual Energy Review*

Form NWPA-830R-G, Standard Contract for Disposal of Spent Nuclear Fuel and/or High Level Radioactive Waste-Quarterly Report--Standard Remittance Advice-Annex A

Previous Forms: None

Collection Frequency: Quarterly

Description: Form NWPA-830R-G is a standard Remittance Advice (RA) for payment of fees to

the Department of Energy by electric utilities that own nuclear power reactors and other owners of spent nuclear fuel or high level radioactive waste. Data include identification, gross and net electricity generation, total energy adjustment factor calculation for nuclear electricity generated and sold, and fee calculation for electricity generated and sold.

Resulting Publications: Data not published

Form RW-859, Nuclear Fuel Data

Previous Forms: None

Collection Frequency: Annually

Description: Form RW-859 is used by DOE to collect nuclear fuel data on every fuel assembly irradiated in commercial nuclear reactors operating in the United States, as well as current spent nuclear fuel inventories, discharges, and storage capacities of those reactors. These data are considered in the design and operation of the equipment facilities that will be used by DOE for the future acceptance, transportation, and disposal of all spent fuel. Respondents are commercial utilities that operate nuclear power plants and from all other owners of commercial spent nuclear fuel.

Resulting Publications: SR/CNEAF/92-01, *Spent Nuclear Fuel Discharges from U.S. Reactors*

DOE/EIA-0436, *World Nuclear Capacity and Fuel Cycle Requirements 1993*

Appendix B

Analytic Models of the Energy Information

Appendix B

Analytic Models of the Energy Information

This Appendix contains abstracts for 51 computer models operated by the Energy Information Administration (EIA) in 1993. There are fourteen EIA and two proprietary models associated with the National Energy Modeling System (NEMS). These models were used for the first time for EIA's *Annual Energy Outlook* 1994. The Integrated Future Forecasting System (IFFS) consists of twelve models and the DRI proprietary model. The IFFS was used for the *Annual Energy Outlook* through 1993.

The abstracts are arranged in alphabetical order for NEMS, IFFS, and other models used by EIA. Each listing contains the model's title, acronym, and brief description of the model's uses and the types of information it produces. Additional information about EIA's models is available in the *Directory of Energy Information Administration Model Abstracts* (DOE/EIA-0293).

Models of the National Energy Modeling System

National Energy Modeling System (NEMS)
The National Energy Modeling System (NEMS) is a computer-based, energy-economy simulation and analysis system that projects the production, conversion, consumption, and prices of energy products in future time period. NEMS is used by the Energy Information Administration (EIA), U.S. Department of Energy, for preparing forecasts of future energy markets and the impacts on those markets of government policies and other important influences or developments.

These forecasts are published annually in the *Annual Energy Outlook* and as EIA Service Reports in response to Congressional and other requests for special studies.

Coal Market Module (CMM)

The Coal Market Module (CMM) represents the mining, transportation, and pricing of coal, subject to the end-use demand for coal differentiated by physical characteristics such as heat and sulfur content and rank. The CMM also incorporates U.S. coal exports as part of the worldwide markets for coal trade. Coal supply is projected on a cost minimizing basis constrained by existing contracts. The expansion of existing coal mining capacity is related to the expected domestic and international demand for coal. Twenty-eight different coal types are modeled each differentiated with respect to thermal grade, sulfur content and underground or surface mining. The domestic production and distribution of coal is forecast in terms of 16 supply regions and 23 demand regions.

Commercial Demand Module (CDM)

Abstract: The Commercial Demand Module (CDM) forecasts the consumption of commercial sector fuels and electricity by building types and nonbuilding uses of energy and by category of end-use, subject to delivered prices of energy, the availability of renewable sources of energy, and macroeconomic variables representing gross national product, employment, interest rates, and floorspace construction.

Data Resources, Inc. Model of the U.S. Economy (DRI)

Abstract: The DRI Model of the U.S. Economy represents national economic production and income corresponding to the National Income and Product Accounts published by the Department of Commerce. These forecasts of national activity extend 25 years and serve as the basis for EIA macroeconomic forecasts. EIA adjusts the DRI forecasts through the use of the Macroeconomic Activity Module so that the energy variables included in the macroeconomic model correspond to EIA energy price forecasts.

Electricity Market Module (EMM-CON)

Abstract: The Electricity Market Module represents the generation, transmission, and pricing of electricity, subject to the delivered prices for coal, petroleum products, natural gas, and synthetic fuels, the costs of generation by centralized renewables, macroeconomic variables for costs of capital and domestic investment, and electricity load shapes and demand. The submodules consist of capacity planning (ECP), fuel dispatching (EFD), utility finance and electricity pricing (EFP), and load and demand side management (DSM) in conjunction with the demand models. In addition, non-utility supply and electricity trade are represented in the EFD and ECP. Nonutility generation from industrial cogenerators and industrial facilities serving primarily their own needs are represented in the industrial demand module. All other nonutility generation is represented in the Electricity Market Module. The supply of electricity is accounted for in thirteen supply regions, distributed for consumption to the nine Census Divisions.

Industrial Demand Module (IDM)

Abstract: The Industrial Demand Module (IDM) forecasts the consumption of fuels and electricity for heat and power and for feedstocks and raw materials at a process or end-use level for

the energy intensive industries, including the direct use of renewable energy, subject to delivered prices of energy and macroeconomic variables representing the value of output for each industry. Included in this module is the industrial cogeneration of electricity that is either used in the industrial sector or sold to electric utilities.

Integrating Module (INT)

Abstract: The NEMS System Integration Module controls the entire NEMS process as it iterates to determine a general market equilibrium across all of the NEMS modules. It has the following functions: manages the NEMS global data files; executes all or any of the user-selected modules in an iterative convergence algorithm; checks for convergence, while reporting variables that remain out of convergence; implements price relaxation between iterations, to accelerate convergence; and updates expected values of the key NEMS variables.

International Energy Module (IEM)

Abstract: The International Energy Module (IEM) calculates the average price of imported crude oil and provides supply curves for five grades of crude oil for import into the United States. In addition, it calculates the change in the world oil price in response to shifts in U.S. supplies and demands; provides petroleum product supply curves with a representation of foreign product supply levels and associated costs for imports of petroleum products into the United States; calculates shifts in supply curves for petroleum product imports as demand for U.S. product imports, the world oil price, and economic conditions vary; and provides supply curves for U.S. imports of the oxygenates methyl tertiary butyl ether (MTBE) and methanol.

Macroeconomic Activity Module (MAM)

Abstract: The Macroeconomic Activity Module (MAM) provides forecasts of economic variables

to the energy modules within NEMS and forecasts the impacts on the aggregate economy of changes in energy market conditions. The MAM Module consists of two submodules and a subroutine that are run in sequence; the National and Interindustry Submodules, and the Regional Subroutine. The National Submodule provides forecasts at the national level of a wide range of economic concepts. In particular, it provides driver variables used by other parts of NEMS, including interest rates, final demands for goods and services, and disposable income. The Interindustry Submodule in NEMS calculates the industrial output needed to satisfy the final demands from the National Submodule. The levels of industrial output are used by the industrial and transportation energy demand modules in NEMS to calculate energy consumption in these sectors. Finally, the NEMS energy modules are regionally disaggregated, so the Regional Subroutine of the Macroeconomic Activity Module takes national variable values from the National and Interindustry Submodules and transforms them into the appropriate regional values.

Natural Gas Transmission and Distribution Module (NGTDM)

Abstract: The Natural Gas Transmission and Distribution Module (NGTDM) represents the network of pipelines and storage facilities that link suppliers (including importers) and consumers of natural gas. In conjunction with other NEMS modules the NGTDM determines the market clearing natural gas end-use supply quantities and prices (including border prices). The network representation is in terms of twelve intra-U.S. and nine border transshipment nodes.

Oil and Gas Supply Module (OGSM)

Abstract: The Oil and Gas Supply Module (OGSM) consists of a series of process submodules that project the availability of domestic

crude oil production and dry natural gas wellhead production from onshore, offshore, and Alaskan reservoirs; imported pipeline quality gas from Mexico and Canada; and imported liquefied natural gas. The crude oil produced by the Oil and Gas Supply Module is transported to refineries, which are simulated within the Petroleum Market Module (PMM), for conversion and blending into refined petroleum products. The driving assumption of the module is that domestic oil and gas exploration and development is undertaken if the present discounted value of the recovered resources at least covers the present value of taxes and the cost of capital, exploration, development and production, subject to a budget constraint. Alternatively, international gas trade is determined in part by scenario dependent, noneconomic factors.

Petroleum Market Module (PMM)

Abstract: The Petroleum Market Module represents the pricing of petroleum products, crude oil and product import activity in conjunction with the international module, and domestic refinery operations; subject to the demand for petroleum products, the prices for raw material inputs and imported petroleum products, the costs of investment, and the domestic production of crude oil and natural gas liquids.

Renewable Fuels Module (RFM)

Abstract: The Renewable Fuels Module (RFM) consists of several submodules that represent the various renewable energy forms. Since most renewables (i.e., wind, solar, geothermal) are used to generate electricity, the interaction with the EMM and its various submodules is important for modeling grid-connected renewable-electric applications. However, many renewables are especially well suited for "dispersed" applications or generation at the point of end-use. In the current version of the RFM, only grid-connected applications are

Models

modeled endogenously; all dispersed data are input exogenously. Biomass can also be used to produce liquid fuels such as ethyl alcohol (ethanol). Therefore, a primary NEMS interaction is with the Petroleum Market Module (PMM), that determines refinery demand for ethanol as a gasoline blending submodule, subject to prices provided by the RFM.

Residential Demand Module (RSDM)

Abstract: The NEMS Residential Demand Module is an integrated dynamic modeling system that projects residential energy demand by service, fuel, and Census Division. The model approach is based on accounting principles and considers important issues related to consumer behavior. Housing and equipment stocks are tracked over the forecast period for seven major services. The major services in the model are space heating, space cooling, water heating, cooking, clothes drying, refrigeration, and freezers.

Transportation Demand Module (TRAN)

Abstract: The Transportation Demand Module (TRAN) forecasts the consumption of transportation sector fuels by transportation mode, including the use of renewables and synthetic fuels, alternative fuels, subject to delivered prices of energy fuels and macroeconomic variables including disposable personal income, gross domestic product, level of imports and exports, industrial output, new car and light truck sales, and population.

"WORLD" Model (WORLD)

Abstract: The World Model is a linear programming model that simulates the operation of the world regional petroleum industry based on user-specified assumptions regarding the time horizon and scenario of interest. The World Model simulates regional effects. Insights at the level of individual countries or refinery type

can be obtained, but only where the model has been appropriately disaggregated.

Models of the Intermediate Future Forecasting System

Intermediate Future Forecasting System (IFFS)

Abstract: IFFS represents U.S. energy supply, distribution, and consumption, by fuel supply and consumption sector given an assumption of the world crude oil price and a macroeconomic projection of economic growth. A detailed representation of utility and nonutility electricity generation and capacity expansion (EMM) provides the demand for oil, coal, natural gas, renewable, and nuclear generation, and the prices of electricity. An econometric representation of refinery pricing (OMM) provides oil product prices. A coal supply and transportation model (CSTM) provides the delivered price of coal. The Gas Analysis Modeling System/Production of Onshore Lower 48 Oil and Gas Model (GAMS/PROLOG) computes the production of domestic oil and gas and the wellhead and end-use prices of natural gas. IFFS solves for the market equilibrium for each fuel by balancing supply and demand to produce an energy balance in each forecast year. The model currently forecasts to the year 2010. The IFFS was used for the *Annual Energy Outlook* through 1993.

Building Energy End-Use Model (BEEM)

Abstract: BEEM is designed to forecast energy consumption in commercial buildings in the United States on an annual basis through the year 2010. The level of detail in BEEM includes three major fuels (electricity, natural gas, and distillate fuel oil) and five minor fuels (residual fuel oil, liquefied petroleum gas, coal, motor gasoline, and kerosene). These fuels are modeled at the four Census region levels.

Coal Supply and Transportation Model (CSTM)

Abstract: CSTM is a freight network equilibrium model adapted to forecast U.S. coal supply and distribution patterns at a moderately disaggregated level of detail. The problem solved by the CSTM is to meet a set of fixed demands for different coal types in different economic sectors and regions by producing from supplies of different coal types in different supply regions and by shipping these supplies across a transportation network.

Data Resources, Inc. Model of the U.S. Economy (DRI)

Abstract: The DRI Model of the U.S. Economy represents national economic production and income corresponding to the National Income and Product Accounts published by the Department of Commerce. These forecasts of national activity extend 25 years and serve as the basis for EIA macroeconomic forecasts. EIA adjust the DRI forecasts through the use of the Macroeconomic Activity Module so that the energy variables included in the macroeconomic model correspond to EIA energy price forecasts.

Electricity Market Model (EMM)

Abstract: EMM is used by EIA as an analytical system for projecting the future state of the electricity market, as a major component of IFPS. This representation of the electricity market accounts for the economic factors of supply and demand, the economic competition of fuels, and Government policies and regulations that deviate from purely economic behavior.

Gas Analysis Modeling System (GAMS)

Abstract: GAMS covers all aspects of the natural gas market from producers, through pipeline companies and distributors, to the consumer. GAMS encompasses the production of natural gas, imports of gas, natural gas

contract pricing and take-or-pay provisions for production purchases; pricing by pipeline companies and distributors; projected demand for each sector; and transmission and distribution of natural gas. Forecasts are generated through the year 2010. The model is used to forecast a supply and demand balance of gas markets and to analyze the natural gas industry.

Industrial Model (IM)

Abstract: IM is used to forecast annual industrial sector energy consumption through the year 2010. Most of the equations are econometrically based and are logically organized into sectors consisting of manufacturing heat and power, nonmanufacturing heat and power, and feedstocks (raw materials), and 'other' fuels.

Mini-Macroeconomic Personal Computer Model (PCMAC)

Abstract: PCMAC forecasts 37 macroeconomic variables and 11 industrial outputs. Variables include, among others, real GNP, the GNP deflator, real disposable income, the unemployment rate, housing starts, industrial output (at an 11-sector disaggregation), the interest rate on corporate bonds, and the mortgage rate. PCMAC name retained although model has been moved to EIA mainframe.

National Utility Financial Statement Model (NUFS)

Abstract: NUFS is a regulatory accounting model that projects electricity prices. The model first solves for revenue requirements by building up a rate base, calculating a return on the rate base, and adding the allowed expenses. Next, electric revenues (prices) are calculated based on assumptions regarding regulatory lag. With revenues determined, the model solves for internal cash flow and analyzes the need for external financing to meet necessary capital expenditures. Given these results, the model finally builds up the financial statements and

Models

calculates financial ratios. NUFPS is normally used in conjunction with the National Coal Model or the Intermediate Future Forecasting System. Inputs to NUFPS include forecast capacity expansion plans, operating costs, regulatory environment, and financial data. The outputs include forecasts of income statements, balance sheets, sources and uses of funds, revenue requirements, average electricity prices, and other financial ratios.

Nonutility Generation Supply Model (NUGS)

Abstract: The NUGS model is an analytic construct that provides a forecast of nonutility electricity supply including power supplied from cogeneration, independent and affiliated power production, and small power production. The forecast is based on supply potential input and a simulation of a PURPA bidding system to allow selection of projects. The NUGS is designed to allow an assessment of potential nonutility electric supply to the power grid at a number of levels.

Oil Market Module (OMM)

Abstract: OMM is a component of the IFFS that represents the domestic refining and pricing of petroleum products. The OMM uses econometric and accounting methods to model domestic crude oil refining and petroleum product distribution. In addition to projecting product prices, the model assures a material balance for domestic petroleum and provides estimates for the quantities of net product imports and crude inputs to U.S. refineries.

Production of Onshore Lower 48 Oil and Gas Model (PROLOG)

Abstract: PROLOG forecasts oil and natural gas production activities for six onshore regions of the lower 48 States on an annual basis. The primary activities are exploratory and developmental drilling. Forecast values include the reserve additions from exploratory drilling, as

well as production from all flowing wells. The PROLOG model employs econometric equations to determine exploratory drilling levels and a linear programming framework to determine the optimal developmental drilling levels that maximize the present value of profits stemming from the drilling projects.

Residential Energy End-Use Demand Model (REEM)

Abstract: REEM forecasts energy use by type of fuel annually through the year 2010. It is an end-use structural model, with emphasis on fuel-using technologies and efficiencies. The model forecasts fuel use by type and vintage of house, by service demand and on a regional basis for four Census regions. It is sensitive to the major demographic and economic determinants of residential sector energy use.

Transportation Energy Demand Model (TED)

Abstract: TED is designed to project transportation energy demand at the national and Census region level, by fuel and by year to 2010. TED provides the transportation demand forecasts used in the IFFS modeling system. The model consists of four distinct segments: personal highway travel, freight travel, aviation travel, and other transportation. These segments consist of data estimates and assumptions necessary to execute various specific forecasting equations of the model.

Other Models

Distillate Market Model (DMM)

Abstract: The DMM performs a short-term (6 to 9 month) forecast of demand and retail price for total distillate fuel oil in the national U.S. market. The model also calculates the end of month stock level. The model is used to analyze market behavior or shocks and to determine their effect on product price, demand, and stock level.

International Coal Trade Model (ICTM)

Abstract: ICTM projects coal trade flows from 20 coal-exporting regions of the world to 9 demand regions for 3 types of coal: metallurgical, low-sulfur steam, and high-sulfur steam. The model consists of supply, demand, trade and transportation constraint components, the latter representing alternate routes of passage (Panama Canal, Suez Canal, direct ocean-going) and ship size (30,000 to 250,000 deadweight tons). The major coal producing countries (United States, Australia, South Africa, Canada, and Poland) are represented, as well as countries that could become major coal exporters (Colombia, Venezuela, and China).

International Nuclear Model - Personal Computer (PCINM)

Abstract: The International Nuclear Model - Personal Computer (INM-PC) is a deterministic model used by the Energy Information Administration (EIA) to project domestic and international nuclear energy requirements. The EIA uses the INM-PC to project aggregate spent fuel discharges, fuel cycle requirements, on-line and year-end capacities, and electricity generation for domestic and foreign nuclear reactors on an annual basis, using a simple accounting technique. INM-PC can be used to produce projections for any country in the world for any specified time period. Currently eight (8) different country groups are being projected through the year 2010. To produce the forecasts, EIA develops a set of operational assumptions for capacity factors, full power days, reactor size, and reload quantities. These assumptions are derived statistically from historical operating data and from utilities' projected fuel management schemes and are incorporated into fuel management plans. Estimates of nuclear fuel cycle trends are determined by surveying utilities, fuel vendors, and other industry experts.

Levelized Nuclear Fuel Cycle Cost Model (LNFCC-PC)

Abstract: LNFCC-PC computes an electric utility's levelized nuclear fuel cost. The code computes quantities of fuel cycle services and levelized direct costs, which include the carrying charges accounting for the time value of money. All fuel-cycle services from natural uranium purchased through waste disposal are covered.

Low Income Household Energy Assistance Program (LIHEAP)

Abstract: LIHEAP is a set of State-level regression equations used to project State residential energy prices for the current year and one future year, based on national-level residential price projections produced for the Energy Information Administration's (EIA) *Short-Term Energy Outlook*. LIHEAP produces 51 separate sets of projections of residential prices (1 for each State and 1 for the District of Columbia), including prices for electricity, natural gas, heating oil, liquefied petroleum gas (LPG-propane), kerosene and coal. Less than 51 projections are available where historical information for a State is nonexistent or unavailable. The State price projections from LIHEAP are published annually in the EIA service report, *State Energy Price Projections for the Residential Sector*.

Market Penetration Model for Ground Water Heat Pump Systems (MPGWHP-PC)

Abstract: MPGWHP-PC for ground water heat pump systems was developed to project the potential of these systems to displace primary energy from the present up to the year 2030. The model provides projections in 5-year increments for 4 aggregated groups of the 10 DOE regions.

Market Penetration Model for Residential Rooftop Photovoltaic Systems (MPRESPV-PC)

Abstract: MPRESPV-PC for residential rooftop photovoltaic systems was developed to project

Models

the potential of these systems to displace primary energy from the present up to the year 2030. The model provides projections in 5-year increments for 4 aggregated groups of the 10 DOE regions.

Market Penetration Model for Active and Passive Solar Technologies (MPSOLAR-PC)

Abstract: MPSOLAR-PC for active and passive solar technologies was developed to project the potential of these systems to displace primary energy from the present up to the year 2030. The model provides projections in 5-year increments for nine solar technologies: Residential and Commercial Active Solar Water Heating; Residential and Commercial Active Solar Combined Space and Water Heating Systems; Residential and Commercial Passive Solar Space Heating; Residential and Commercial Active Solar Space Cooling Systems; and Commercial Daylighting.

Motor Gasoline Market Model (MGMM)

Abstract: The MGMM performs a short-term (6 to 9 month) forecast of demand and price in the U.S. motor gasoline market. The model also calculates the end of month stock level. The model is used to analyze certain market behavior assumptions or market shocks and to determine their effect on market price, demand and stocks.

National Coal Model (NCM)

Abstract: NCM projects coal production by State; coal transportation flows; and fuel consumption by electric utilities, based on specified levels of electricity consumption, existing and planned generating capacity, the economics of electricity generation, and non-utility demand for coal. The NCM is a highly disaggregated coal supply and utility model. Coal demands in each of 44 regions are met via a transportation network from existing and new

mines in 31 supply regions. Flue gas desulfurization technology is internally represented and both sulfur dioxide and other emissions are reported.

Oil Market Simulation Model (OMS-PC)

Abstract: OMS-PC projects future world oil prices and world oil supplies and demands by region (the United States, Canada, Japan, and the Organization for Economic Cooperation and Development (OECD)-Europe, the Organization of Petroleum Exporting Countries (OPEC), developing countries, and net Communist trade) on an annual basis through the year 2010. The OMS-PC model is used as an adjunct to the World Energy Projection System (WEPS-PC).

Petroleum Financial Analysis System (PET-FAS-PC)

Abstract: PETFAS-PC is designed to utilize *Annual Energy Outlook* (AEO) model results for oil and gas prices, domestic drilling levels and drilling cost relationships. It also uses information from the AEO on oil and gas reserves and production to provide forecasts of investment and profits for the U.S. oil and gas production industry. Detailed income statement, capital account, balance sheet, and tax information is provided for two main industry categories—major energy companies' domestic oil and gas segments and domestic independent producers.

Propane Market Model (PMM)

Abstract: The PMM performs a short-term (6 to 9 month) forecast of demand and price for consumer grade propane in the national U.S. market. The model also calculates the end of month stock level. It can also be used to produce short-term demand forecasts for certain Petroleum Administration for Defense (PAD) districts. The model is used to analyze market behavior or shocks and to determine their effect on product price, demand, and stock level.

Refinery Evaluation Modeling System (REMS)

Abstract: REMS consists of two models. The regional Refinery Yield Model (RYM) produces a detailed representation of refinery processes and product production. The Oil Refining and Distribution Model (ORAD) simulates the industry's interregional producing, refining, and distribution network throughout the United States. RYM can run over 130 different foreign and domestic crude types, which are represented as linear combinations of 37 principal crudes, as defined by their assays. RYM refineries produce over 35 petroleum products using 21 detailed refinery process units. ORAD represents an aggregated bundle of domestic and foreign crudes available from the RYM, an aggregated bundle of petroleum products, and transportation modes and links for crude oil and petroleum products among regions.

Refinery Yield Model Spreadsheet System (RYMSS-PC)

Abstract: RYMSS-PC simulates the operations of a refinery or group of refineries within the United States, including the processing of crude oils and other raw materials, as well as the processing of these raw materials into finished petroleum products. Refinery product yields and net margins are generated which can be used in comparative and sensitivity analyses, using RYMSS-PC.

Resource Allocation and Mine Costing Model (RAMC)

Abstract: RAMC produces the quantity-price relationships in coal supply for 30 coal types (further distinguished between surface and deep mines) and 32 producing regions based on the 1991 EIA Demonstrated Reserve Base, engineering estimates of mining costs for various surface and underground mines, and region-specific and coal-type-specific cost elements. This model serves as a major component of the Intermediate Future Forecasting System, the National Coal

Model, the International Coal Trade Model, and the Coal Supply and Transportation Model.

Revenue Requirements Modeling System (RRMS)

Abstract: The RRMS is designed to estimate the impacts of various regulatory and economic policy variables on the revenue requirements of individual electric utilities. The model assesses the impact of changes in construction work in progress (CWIP), in rate base policies, capital structures, costs of capital, and demand on total estimated revenue requirements.

Short-Term Coal Analysis System (SCOAL)

Abstract: SCOAL projects domestic coal production, imports, consumption, and exports six to eight quarters into the future, based on assumed trajectories of coal prices relative to prices of other fuels, electric generation, industry activity, and weather variables. All markets are defined at the national level except bituminous coal and lignite production, which are defined at the State level.

Short-Term Hydroelectric Generation Model (STHGM)

Abstract: STHGM produces a short-term (18 to 27 month) forecast of national net hydroelectric generation in the United States of using an autoregressive integrated moving average (ARIMA) time series model with precipitation as an explanatory variable. National net hydroelectric generation data and national precipitation data for 1970 through 1992 are used as input to the model. This model continues to be developed and will eventually provide regional forecasts of net hydroelectric generation.

Short-Term Integrated Forecasting System (STIFS)

Abstract: STIFS is the system used to generate the forecasts of energy supply, demand and prices that are published in the *Short-Term Energy*

Models

Outlook. It consists of six interconnected submodels: refined petroleum products demand; refined petroleum products supply; electricity supply and demand; natural gas supply and demand; coal demand; petroleum and other energy prices.

Short-Term Nuclear Annual Power Production Simulation (SNAPPS)

Abstract: SNAPPS forecasts the short-term monthly and annual electric power generation by U.S. commercial nuclear power plants. SNAPPS is a relatively simple, straightforward accounting model programmed in FORTRAN. The model consists of codes that provides accounting for each nuclear reactor's generation for the projection period.

Uranium Market Model (UMM-PC)

Abstract: UMM-PC projects prices, production, imports, inventory, capital expenditures, and employment in the uranium mining and milling industry. The model considers every major production center and utility on a worldwide basis (with centrally planned economies considered in a limited way).

Wellhead Gas Productive Capacity Model (GASCAP) **Abstract:** GASCAP estimates the historical wellhead productive capacity of natural gas for the Lower 48 States and projects the productive capacity for 2 years. The Short-Term Energy Outlook (STEO) output for low, base and high cases is used to estimate the number of active rigs and oil and gas well completions. The projected oil production is used to estimate the oil-well gas production (which is assumed to be producing at capacity) using a constant gas-oil ratio. The gas demand is also taken from STEO. The difference between demand and oil-well gas production is assumed to be the gas-well gas demand and the production as long as capacity exceeds demand.

World Energy Projection System (WEPS-PC)

Abstract: WEPS-PC is an integrated set of microcomputer-based spreadsheets containing data compilations, assumption specifications, descriptive analysis procedures, and projection models. WEPS-PC provides projections of total world primary energy consumption disaggregated by 10 individual countries and 10 country groupings; projections of energy consumption by primary energy type and by economic sector for selected countries; projections of natural gas production; and projections concerning world oil supplies for use in the Oil Market Simulation Model (OMS). For both historical series and projection series, WEPS-PC provides analytical computations of percentages of energy consumption attributable to each primary energy source, total energy consumption per dollar of gross domestic product (GDP), and an energy/GDP index. WEPS-PC projections and analyses are published annually in the *International Energy Outlook (IEO)* and are used in various internal EIA studies.

World Integrated Nuclear Evaluation System (WINES-PC)

Abstract: The World Integrated Nuclear Evaluation System (WINES-PC) is an aggregate demand-based partial equilibrium model used by the Energy Information Administration (EIA) to project long-term domestic and international nuclear energy requirements. WINES-PC follows a top-down approach in which economic growth rates, delivered energy demand growth rates, and electricity demand are projected successively to ultimately forecast total nuclear generation and nuclear demand capacity. WINES-PC could potentially be used to produce forecasts for any country or region in the world. Presently, WINES-PC is being used to generate long-term forecasts for the United States and for all countries with commercial nuclear programs in the world, excluding countries located in centrally planned economic areas. Projection

for the United States are developed for the period from 2010 through 2030, and for other countries for other countries for the period starting in 2000 or 2005 (depending on the country) through 2010. WINES-PC serves as a flexible tool with which to assist the U.S. Department of Energy (DOE) program offices and other Government agencies in their analyses of long-term nuclear energy demand and supply, and to support cooperative efforts between the United States and the Nuclear Energy Agency (NEA) of the Organization for Economic Cooperation and Development

(OECD), the International Energy Agency (IEA), and the International Atomic Energy Agency (IAEA). WINES-PC is used to develop long-term projections of nuclear capacity and generation, which are provided to the Office of Civilian Radioactive Waste Management (OCRWM) of DOE for use in estimating nuclear waste fund revenues, and to aid in planning the disposal of nuclear waste. In addition, the projections support other reports published annually by EIA such as *Domestic Uranium Mining and Milling Industry: Viability Assessment*, and *World Nuclear Capacity and Fuel Cycle Requirements*.

Appendix C

EIA Publications and Products Available on Diskette

Appendix C

Publications of the Energy Information Administration

During 1993, the Energy Information Administration published nearly 300 issues of 80 individual titles, from weekly, monthly, and annual periodicals to one-time reports, including statistical and data reports, directories, and studies containing data analyses and projections. Statistical and data reports provide historical information on production, consumption, prices, and resource availability of conventional and alternate energy sources; directories serve as guides to finding energy information or to making subject-specialist contacts; analyses look in-depth at specific economic and technical energy subjects or make projections of future energy demand and supply.

This appendix contains charts of active EIA periodicals and 1993 one-time reports, organized by energy source family. It also provides an annotated listing of these publications, arranged alphabetically by title. (Some publications contained in the annotated list may not be found on the chart because they have been discontinued.) Service Reports and reprints of feature articles (listed in the appendix) are available upon request from EIA's National Energy Information Center. Publication entry includes: the full title, report number, reference date for annual and one-time reports released in 1993, and information on availability and ordering. Also included is an alphabetical listing of 1993 EIA products available on diskette, along with a brief synopsis and price of each. Synopses of

all publications are available in the *EIA Publications Directory*.

Generally, single complimentary copies of EIA publications are available to staff members of Federal libraries, EIA survey respondents, public and academic libraries, Congress or Congressional committees, press, State or local governments, Department of Energy (DOE) employees or DOE contractors, and the Executive Branch. Selected publications are available to the general public free of charge, such as all Service Reports, the *Annual Report to Congress*, *EIA Publications Directory*, *EIA New Releases*, *Directory of Energy Data Collection Forms*, *Energy Information Directory*, and "Information Sheets," as well as feature articles extracted from various periodicals.

The National Technical Information Service (NTIS) also sells EIA publications in hard copy and microfiche form, and models and data bases on diskette and magnetic tape. Call NTIS for an order number and price.

If Government Printing Office (GPO) ordering information is listed, you may order the item from GPO. Prices of EIA publications and diskettes sold by the GPO are subject to change without notice.

Following are the addresses and telephone numbers of the organizations from which EIA publications and diskettes are available.

Publications

All telephone orders should be directed to:

U.S. Government Printing Office
McPherson Square Bookstore
1510 H Street, N.W.
Washington, DC 20005
(202) 653-2050
FAX (202) 376-5055
9 a.m. to 4:30 p.m., eastern time, M-F

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402
(202) 783-3238
FAX (202) 512-2233 (24 hours a day)
8 a.m. to 4 p.m., eastern time, M-F

All mail orders should be directed to:

U.S. Government Printing Office
P.O. Box 371954
Pittsburgh, PA 15250-7954

or call

GPO
(202) 653-2050 (Publications)
(202) 512-1530 (Diskettes)

NTIS
Document Sales
5285 Port Royal Road
Springfield, VA 22161
(703) 487-4650

Complimentary subscriptions and single issues are available to certain groups of subscribers, such as public and academic libraries, Federal, State, local and foreign governments, EIA survey respondents, and the media. For further information and for answers to questions on energy statistics, please contact EIA's National Energy Information Center. Address, telephone numbers, and hours are as follows:

National Energy Information Center, EI-231
Energy Information Administration
Forrestal Building, Room 1F-048
Washington, DC 20585
(202) 586-8800
TTY for people who are deaf or hard of hearing: (202) 586-1181
9 a.m. to 5 p.m., eastern time, M-F

EIA Publications Released for Printing January 1 through December 31, 1993

Daily/Weekly/Monthly

Electric Power Monthly

DOE/EIA-0226

GPO Subscription: 761-002-00000-7

Domestic: \$87.00 Foreign: \$108.75

Single Issue:

Domestic: \$13.00 Foreign: \$16.25

International Petroleum Statistics Report

DOE/EIA-0520

GPO Subscription: 761-018-00000-1

Domestic: \$47.00 Foreign: \$58.75

Single Issue:

Domestic: \$4.25 Foreign: \$5.31

Monthly Energy Review

DOE/EIA-0035

GPO Subscription: 761-007-00000-9

Domestic: \$77.00 Foreign: \$96.25

Single Issue:

Domestic: \$10.00 Foreign: \$12.50

Natural Gas Monthly

DOE/EIA-0130

GPO Subscription: 761-008-00000-5

Domestic: \$85.00 Foreign: \$106.25

Single Issue:

Domestic: \$10.00 Foreign: \$12.50

Petroleum Marketing Monthly

DOE/EIA-0380

GPO Subscription: 761-010-00000-0

Domestic: \$87.00 Foreign: \$108.75

Single Issue:

Domestic: \$12.00 Foreign: \$15.00

Petroleum Supply Monthly

DOE/EIA-0109

GPO Subscription: 761-001-00000-6

Domestic: \$78.00 Foreign: \$97.50

Single Issue:

Domestic: \$11.00 Foreign: \$13.75

Weekly Coal Production

DOE/EIA-0218

GPO Subscription: 761-014-00000-5

Domestic: \$77.00 Foreign: \$96.25

Single Issues:

Domestic: \$1.75 Foreign: \$2.19

Weekly Petroleum Status Report

DOE/EIA-0208

GPO Subscription: 761-015-00000-1

Domestic: \$51.00 Foreign: \$63.75

Single Issue:

Domestic: \$2.75 Foreign: \$3.44

Winter Fuels Report (Seasonal)

DOE/EIA-0538

Free from NEIC

Monthly

Bimonthly

EIA New Releases

DOE/EIA-0204

Free from NEIC

Quarterly

Quarterly Coal Report

DOE/EIA-0121

GPO Subscription: 761-012-00000-2

Domestic: \$28.00 Foreign: \$35.00

Publications

Single Issue:

Domestic: \$10.00 Foreign: \$12.50

Short-Term Energy Outlook: Quarterly Projections

DOE/EIA-0202

GPO Subscription: 761-013-00000-9

Domestic: \$16.00 Foreign: \$20.00

Single Issue:

Domestic: \$4.50 Foreign: \$5.63

U.S. Energy Industry Financial Developments

DOE/EIA-0543

GPO Subscription: 761-022-00000-3

Domestic: \$8.00 Foreign: \$10.00

Single Issue:

Domestic: \$2.25 Foreign: \$2.81

Annual

Annual Energy Outlook 1993

DOE/EIA-0383(93)

December 1993

GPO Stock No. 061-003-00784-8

Domestic: \$9.00 Foreign: \$11.25

Annual Energy Review 1992

DOE/EIA-0384(92)

June 1993

GPO Stock No. 061-003-00810-1

Domestic: \$23.00 Foreign: \$28.75

Annual Report to Congress 1992

DOE/EIA-0173(92)

March 1993

Free from NEIC

Assumptions for the Annual Energy Outlook 1993

DOE/EIA-0527(93)

January 1993

GPO Stock No. 061-003-00789-9

Domestic: \$6.50 Foreign: \$8.13

Coal Production 1992

DOE/EIA-0118(92)

December 1993

GPO Stock No. 061-003-00828-3

Domestic: \$7.50 Foreign: \$9.38

*Cost and Quality of Fuels for Electric Utility Plants
1992*

DOE/EIA-0191(92)

August 1993

GPO Stock No. 061-003-00812-7

Domestic: \$11.00 Foreign: \$13.75

Directory of Energy Data Collection Forms

DOE/EIA-0249(92)

January 1993

Free from NEIC

Directory of Energy Data Collection Forms

DOE/EIA-0249(93)

December 1993

Free from NEIC

*Directory of Energy Information Administration
Models 1993*

DOE/EIA-0293(93)

June 1993

Free from NEIC

*Domestic Uranium Mining and Milling Industry:
1992 Viability Assessment*

DOE/EIA-0477(92)

December 1993

GPO Stock No. 061-003-00834-8

Domestic: Foreign:

EIA Publications Directory 1992

DOE/EIA-0149(92)

June 1993

Free from NEIC

Electric Power Annual 1991
DOE/EIA-0348(91)
March 1993
GPO Stock No. 061-003-00794-5
Domestic: \$11.00 Foreign: \$13.75

Electric Sales and Revenue 1991
DOE/EIA-0540(91)
April 1993
GPO Stock No. 061-003-00804-6
Domestic: \$14.00 Foreign: \$17.50

Energy Facts 1992
DOE/EIA-0469(92)
November 1993
GPO Stock No. 061-003-00829-1
Domestic: Foreign:

Energy Information Sheets
DOE/EIA-0578(91)
December 1993
Free from NEIC

Financial Statistics of Major U.S. Investor-Owned Electric Utilities 1992
DOE/EIA-0437(92)/1
December 1993
GPO Stock No. 061-003-00790-2
Domestic: \$37.00 Foreign: \$46.25

Financial Statistics of Selected Publicly-Owned Electric Utilities 1992
DOE/EIA-0437(92)/2
April 1993
GPO Stock No. 061-003-00745-7
Domestic: \$19.00 Foreign: \$23.75

Fuel Oil and Kerosene Sales 1992
DOE/EIA-0535(92)
November 1993
GPO Stock No. 061-003-00827-5
Domestic: \$4.50 Foreign: \$5.63

International Energy Outlook 1993
DOE/EIA-0484(93)
May 1993
GPO Stock No. 061-003-00805-4
Domestic: \$3.75 Foreign: \$4.69

Inventory of Power Plants in the United States 1992
DOE/EIA-0095(92)
November 1993
GPO Stock No. 061-003-00825-9
Domestic: \$25.00 Foreign: \$31.25

Natural Gas Annual 1992, Volume 1
DOE/EIA-0131(92)/1
December 1993
GPO Stock No. 061-003-00831-1
Domestic: Foreign:

Natural Gas Annual 1992, Volume 2
DOE/EIA-0131(92)/2
December 1993
GPO Stock No. 061-003-00832-1
Domestic: Foreign:

Natural Gas Annual 1991 Supplement: Company Profiles
DOE/EIA-0131(91)
February 1993
GPO Stock No. 061-003-00791-1
Domestic: \$15.00 Foreign: \$18.75

Performance Profiles of Major Energy Producers 1991
DOE/EIA-0206(91)
December 1993
GPO Stock No. 061-003-00788-1
Domestic: \$8.50 Foreign: \$10.63

Petroleum Marketing Annual 1992
DOE/EIA-0487(92)
August 1993
GPO Stock No. 061-003-00813-5
Domestic: \$25.00 Foreign: \$31.25

Publications

Petroleum Supply Annual 1992, Volume 1
DOE/EIA-0340(92)/1
June 1993
GPO Stock No. 061-003-00809-7
Domestic: \$12.00 Foreign: \$15.00

Petroleum Supply Annual 1992, Volume 2
DOE/EIA-0340(92)/2
June 1993
GPO Stock No. 061-003-00808-9
Domestic: \$31.00 Foreign: \$38.75

Profiles of Foreign Direct Investment in U.S. Energy
1991
DOE/EIA-0466(91)
April 1993
GPO Stock No. 061-003-00801-1
Domestic: \$3.25 Foreign: \$4.06

Short-Term Energy Outlook Annual Supplement
1993
DOE/EIA-0202(93)
August 1993
GPO Stock No. 061-003-00815-1
Domestic: \$5.00 Foreign: \$6.25

Solar Collector Manufacturing Activities 1992
DOE/EIA-0174(92)
November 1993
GPO Stock No. 061-003-00830-5
Domestic: \$5.00 Foreign: \$6.25

State Energy Data Report, Consumption Estimates
1960-1991
DOE/EIA-0214(91)
June 1993
GPO Stock No. 061-003-00806-2
Domestic: \$30.00 Foreign: \$37.50

State Energy Price and Expenditure Report 1991
DOE/EIA-0376(91)
September 1993
GPO Stock No. 061-003-00818-6
Domestic: \$18.00 Foreign: \$22.50

Statistics of Interstate Natural Gas Pipeline Companies 1991
DOE/EIA-0145(91)
January 1993
GPO Stock No. 061-003-00787-2
Domestic: \$14.00 Foreign: \$17.50

Supplement to the Annual Energy Outlook 1993
DOE/EIA-0554(93)
March 1993
GPO Stock No. 061-003-00793-7
Domestic: \$17.00 Foreign: \$21.25

U.S. Crude Oil, Natural Gas, and Natural Gas
Liquids Reserves 1992 Annual Report
DOE/EIA-0216(92)
November 1993
GPO Stock No. 061-003-00822-4
Domestic: \$11.00 Foreign: \$13.75

Uranium Industry Annual 1992
DOE/EIA-0478(92)
November 1993
GPO Stock No. 061-003-00826-7
Domestic: \$9.00 Foreign: \$11.25

Uranium Purchases Report 1992
DOE/EIA-0570(92)
August 1993
GPO Stock No. 061-003-00816-0
Domestic: \$1.50 Foreign: \$1.88

World Nuclear Capacity and Fuel Cycle Requirements 1993

DOE/EIA-0436(93)

December 1993

GPO Stock No. 061-003-00833-0

Domestic: \$8.50 Foreign: \$10.63

Biennial, Triennial, and Other

Household Energy Consumption and Expenditures 1990 (Triennial)

DOE/EIA-0321(90)

February 1993

GPO Stock No. 061-003-00795-3

Domestic: \$22.00 Foreign: \$27.50

Household Energy Consumption and Expenditures 1990 Supplement: Regional

DOE/EIA-0321(90-S)

February 1993

GPO Stock No. 061-003-00796-1

Domestic: \$21.00 Foreign: \$26.25

Household Vehicles Energy Consumption 1991 (Triennial)

DOE/EIA-0464(91)

December 1993

GPO Stock No. 061-003-00

Domestic: \$14.00 Foreign: \$

Documentation

GASCAP Wellhead Gas Productive Capacity Model Documentation

DOE/EIA-M052

June 1993

Free from NEIC

Motor Gasoline Market, Model Documentation Report

DOE/EIA-M054

September 1993

Free from NEIC

NEMS Integrating Module Documentation Report

DOE/EIA-M057

December 1993

Free from NEIC

Short-Term Hydroelectric Generation Model

DOE/EIA-M053

August 1993

Free from NEIC

Short-Term Integrated Forecasting System 1993 Model Documentation Report

DOE/EIA-M041(93)

June 1993

Free from NEIC

One-Time Publications

Assessment of Energy Use in Multibuilding Facilities (of the Energy Consumption Series)

DOE/EIA-0555(93)/1

August 1993

GPO Stock No. 061-003-00817-8

Domestic: \$7.50 Foreign: \$9.37

Changing Structure of the Electric Power Industry 1970-1991

DOE/EIA-0562

March 1993

GPO Stock No. 061-003-00798-8

Domestic: \$6.50 Foreign: \$8.13

Changing Structure of the U.S. Coal Industry: An Update

DOE/EIA-0513(93)

July 1993

GPO Stock No. 061-003-00573-0

Domestic: \$3.00 Foreign: \$3.75

Drilling Sideways -- A Review of Horizontal Well Technology and Its Domestic Application

DOE/EIA-TR-0565

GPO Stock No. 061-003-00803-8

April 1993

Publications

Free from NEIC

Emissions of Greenhouse Gases in the United States 1985-1990

DOE/EIA-0573

October 1993

GPO Stock No. 061-003-00821-6

Domestic: \$7.00 Foreign: \$8.75

Energy Policy Act Transportation Rate Study Availability of Data and Studies

DOE/EIA-0571

October 1993

Domestic: \$5.00 Foreign: \$6.25

Largest U.S. Oil and Gas Fields

DOE/EIA-TR-0567

August 1993

GPO Stock No. 061-003-00814-3

Free from NEIC

Proceedings of the National Energy Modeling System Conference

DOE/EIA-0566

June 1993

Free from NEIC

Public Utility Holding Company Act of 1935-1992

DOE/EIA-0563

January 1993

Free from NEIC

Renewable Resource in the U.S. Electricity Supply

DOE/EIA-0561

March 1993

GPO Stock No. 061-003-00797-0

Domestic: \$5.00 Foreign: \$6.25

U.S. Coal Reserves: An Update by Heat and Sulfur Content

DOE/EIA-0529(92)

February 1993

GPO Stock No. 061-003-00792-9

Domestic: \$6.00 Foreign: \$7.50

U.S. Petroleum Industry, The: Past as Prologue 1970-1992

DOE/EIA-0572

October 1993

GPO Stock No. 061-003-00824-1

Domestic: \$6.00 Foreign: \$7.50

Study for the 1993 Residential Energy Consumption Survey (of the Energy Consumption Series)

DOE/EIA-0555(93/2)

September 1993

GPO Stock No. 061-003-00819-4

Domestic: \$13.00 Foreign: \$16.25

Service Reports

Spent Nuclear Fuel Discharges from U.S. Reactors 1991

DOE/EIA-SR/CNEAF/93-01

March 1993

Free from NEIC

State Energy Price Projections for the Residential Sector, 1993-1994

DOE/EIA-SR/EMEU/93-01

November 1993

Free from NEIC

Special Articles

There are four categories of special articles, or features, published by EIA. "Articles," which cover a wide range of energy-related subjects in depth; "Highlights," which summarize the most important information presented in the subject EIA report; "Energy Previews," which provide brief overviews of EIA preliminary energy data on a given topic; and "EIA Data News" items, which present information on recent changes in the scope, design, methodology, and findings of EIA's energy surveys and databases. Listed below chronologically are the 38 special articles published in 1993.

"Energy Preview: Residential Transportation Energy Consumption Survey, Preliminary Estimates, 1991"

(Monthly Energy Review, January 1993)

"EIA Data News: Natural Gas Transported for the Account of Others"

(Monthly Energy Review, February 1993)

"Improvements in Nuclear Power Plant Capacity Factors"

(Electric Power Monthly, February 1993)

"Midwest Propane Markets, 1992-1993, A Mid-Season Assessment"

(Winter Fuels Report, February 1993)

"Highlights: Natural Gas 1992: Issues and Trends"

(Natural Gas Monthly, March 1993)

"Natural Gas Productive Capacity"

(Natural Gas Monthly, March 1993)

"Revisions to Monthly Natural Gas Data"

(Natural Gas Monthly, April 1993)

"Summer 1993 Motor Gasoline Outlook"

(Petroleum Supply Monthly, April 1993; and Petroleum Marketing Monthly, May 1993)

"Changes to Form EIA-782C, 'Monthly Report of Petroleum Products Sold Into States for Consumption'"

(Petroleum Marketing Monthly, May 1993)

"Comparisons of Independent Statistics on Petroleum Supply"

(Petroleum Supply Monthly, May 1993)

"U.S. Petroleum Developments: 1992"

(Petroleum Supply Annual 1992, Volume 1, May 1993)

"Drilling Sideways"

(Petroleum Supply Monthly, June 1993)

"The Economics of the Clean Air Act Amendments of 1990: Review of the 1992-1993 Oxygenated Motor Gasoline Season"

(Petroleum Supply Monthly, July 1993; and Petroleum Marketing Monthly, August 1993)

"Highlights: Federal Energy Subsidies: Direct and Indirect Interventions in Energy Markets"

(Monthly Energy Review, July 1993)

"A Comparison of Selected EIA-782 Data With Other Data Sources"

(Petroleum Marketing Monthly, August 1993)

"Accuracy of Petroleum Supply Data"

(Petroleum Supply Monthly, August 1993)

"Demand, Supply, and Price Outlook for Low-Sulfur Diesel Fuel"

(Monthly Energy Review, August 1993)

"Highlights: Household Energy Consumption and Expenditures 1990"

(Monthly Energy Review, August 1993)

"Natural Gas in Transition"

(Short-Term Energy Outlook, Third Quarter, August 1993)

"Strategies for Compliance With Phase I of the Clean Air Act Amendments of 1990"

(Short-Term Energy Outlook, Third Quarter, August 1993)

"U.S. Natural Gas Imports and Exports - 1992"

(Natural Gas Monthly, August 1993)

"Will the World Need Iraqi Oil Anytime Soon?"

(Short-Term Energy Outlook, Third Quarter, August 1993)

Publications

"Energy Preview: Manufacturing Energy Consumption Survey, Preliminary Estimates, 1991"

(*Monthly Energy Review*, September 1993)

"Highlights: Natural Gas 1992: Issues and Trends"

(*Monthly Energy Review*, September 1993)

"Decommissioning of U.S. Conventional Uranium Production Centers"

(*Uranium Industry Annual*, October 1993)

"Distillate Fuel Outlook for Winter 1993-1994"

(*Winter Fuels Report*, October 15, 1993)

"The Expanding Role of Underground Storage"

(*Natural Gas Monthly*, October 1993)

"Federal and Indian Coal Lands: A Growing Source of Energy and Revenue"

(*Coal Production 1992*, October 1993)

"Highlights: International Energy Outlook 1993"

(*Monthly Energy Review*, October 1993)

"Municipal Solid Waste in the U.S. Energy Supply"

(*Electric Power Monthly*, October 1993)

"U.S. Production of Natural Gas from Tight Reservoirs"

(*Natural Gas Monthly*, October 1993)

"Highlights: The Changing Structure of the U.S. Coal Industry: An Update"

(*Monthly Energy Review*, November 1993)

"Electric Utility Demand-Side Management and Regulatory Effects"

(*Electric Power Monthly*, November 1993)

"Propane Outlook for Winter 1993-1994"

(*Petroleum Marketing Monthly*, November 1993)

"Highlights: Assessment of Energy Use in Multibuilding Facilities"

(*Monthly Energy Review*, December 1993)

"Highlights: Emissions of Greenhouse Gases in the United States 1985-1990"

(*Monthly Energy Review*, December 1993)

"Low Sulfur Diesel: Requirements and Impacts"

(*Petroleum Marketing Monthly*, December 1993)

"Sales of Fuel Oil and Kerosene in 1992"

(*Petroleum Marketing Monthly*, December 1993)

Energy Information Administration Products Available on Diskette

Unless otherwise stated, the following products are available from both GPO and NTIS:

Annual Energy Review This data file presents a comprehensive annual summary of U.S. energy statistics. Values are shown for most data series from 1949 forward. Annual production, consumption, import, export, stock, and price data are shown for the primary energy sources: coal, electricity, natural gas, nuclear energy, and petroleum. Consumption and end-user price data are also presented by energy source for the principal consuming sectors. Data for energy consumption indicators, selected financial indicators, energy resources, renewable energy, and international energy (for selected countries) are also included. Most of the data from the *Annual Energy Review* are presented, including Btu conversion factors.

Most data are national aggregates. Selected State specific and regional data are also included. Frequency of update is annual. Time unit of data is yearly.

Commercial Buildings Energy Consumption Survey 1989 Contains data collected in the 1989 Commercial Buildings Energy Consumption Survey (CBECS). The data files contain information concerning commercial building characteristics and annualized energy consumption and expenditures. Energy sources annualized are electricity, natural gas, fuel oil, propane, district steam, district hot water, and district chilled water. Also included in the survey data files are 1989 temperature variables. The file contains data from 5,786 sampled buildings drawn from the 50 States and the District of Columbia. The smallest unit of analysis is the building; the finest geographic level of detail is Census division.

The documentation contains file layouts, details on data masking procedures, survey estimates and weights, and variance estimation.

Data are specific to Census Division. Frequency of update is triennial. Time unit of data is yearly.

Field Size Distributions for U.S. Oil and Gas Provinces For each of the U.S. oil and gas producing geologic provinces or regionalized aggregates thereof, presents the numbers of oil fields and nonassociated (NA) gas fields according to the size of the largest known field in the province. Also presents province summary statistics for ultimate recovery, cumulative production, and proved reserves as of December 31, 1989, and the year of initial field discovery and the peak discovery decade, all by field type. Data are specific to geologic provinces. Time unit of data is 1989. This is a one-time study.

Fuel Oil and Kerosene Sales Annual petroleum marketing data are available on this diskette which contains statistics from the *Fuel Oil and Kerosene Sales 1992* report. Included are annual sales data on volumes of kerosene, distillate fuel oil, and residual fuel oil by State. Annual historical data at the national level are provided in summary tables. Data are not company-specific. Frequency of update is annual.

Historical Monthly Energy Review Data Base This special edition of the Monthly Energy Review Data Base contains production, consumption, import, export, stock, and price data for the primary energy sources - coal, electricity, natural gas, nuclear, and petroleum - from January 1973 through December 1988.

The petroleum data are further disaggregated to show supply and disposition of crude oil, motor gasoline, distillate fuel oil, residual fuel oil, jet fuel, liquefied petroleum gases, propane and propylene, and other petroleum products. Data are also presented by energy source for the principal consuming sectors: residential, commercial, industrial, transportation, and electric utilities.

Data on domestic oil and gas resource development activities are included, as well as petroleum production, consumption, stocks, and nuclear generation for selected foreign countries. Special series showing energy consumption per dollar of gross domestic product, U.S. dependence on petroleum net imports, and cost of fuels to end users in constant dollars that appear in the monthly release are not included in this monthly time-series issue.

Data are mostly national aggregates, with some State specific data on petroleum product prices. Time units of data are monthly.

International Nuclear Model (INM) This model simulates the commercial nuclear power industry with emphasis on the nuclear fuel cycle. The model projects nuclear fuel cycle requirements (including uranium and enrichment services, as well as spent fuel discharges) and electricity generation associated with a specific reactor deployment schedule.

Levelized Nuclear Fuel Cycle Cost (LNFCC) This model computes an electric utility's levelized nuclear fuel costs (mills per kilowatt-hour). The code computes quantities of fuel cycle services and levelized direct costs which include the carrying charges accounting for the time value of money. All purchased fuel-cycle services from natural uranium through waste disposal are covered.

Low Income Household Energy Assistance Program (LIHEAP) Model of State-Level Residential Energy Prices LIHEAP is used to replicate projections presented in the EIA service report, *State Energy Price Projections for the Residential Sector, 1991-1992*. The model is comprised of mainframe and PC applications. When executed, LIHEAP produces 3-year State residential price forecasts of coal, electricity, distillate fuel oil, liquefied petroleum gas, kerosene, and natural gas.

Market Penetration Models (MPM) This model projects the potential of ground water heat pump systems, active and passive solar technologies, and residential rooftop photovoltaic systems to displace primary energy from the present to the year 2030. For the three systems, the model provides projections in 5-year increments for 4 aggregated groups of the 10 Department of Energy regions.

Monthly Electric Utility Sales and Revenue Report With State Distributions Data on retail electricity sales (megawatthours) and associated revenue (thousand dollars) are reported. The Form EIA-826 is designed to facilitate the estimation of monthly retail electricity sales and associated revenue at the national, Census division, and State level, by class of consumer. These estimates, in turn, can be used to calculate average revenue per kilowatthour (the ratio of revenue to sales) and estimates of sales, revenue, and average revenue per kilowatthour coefficients of variation.

Data included are the amount of electricity sold and the revenue derived therefrom, by State, by month. Each issue contains data for the current year from January to the current month. Data are utility/State specific. Frequency of update is monthly.

Monthly Energy Review Data Base The Monthly Energy Review Data Base is a comprehensive monthly summary containing production, consumption, import, export, stock, and price data for the primary energy sources: coal, electricity, natural gas, nuclear, and petroleum. The petroleum data are further disaggregated to show supply and disposition of crude oil, motor gasoline, distillate fuel oil, residual fuel oil, jet fuel, liquefied petroleum gases, propane and propylene, and other petroleum products. Data are also presented by energy source for the principal consuming sectors: residential, commercial, industrial, transportation, and electric utilities. Data on domestic oil and gas resource development activities are included, as well as petroleum production, consumption, stocks, and nuclear generation for selected foreign countries. Annual values are shown for

most data series from 1973 forward while monthly values are shown for the current and 2 preceding years. Special series showing energy consumption per dollar of gross domestic product, U.S. dependence on petroleum net imports, and cost of fuels to end users in constant dollars are shown quarterly for the current year and 2 preceding years, with annual values from 1973 forward.

Data are mostly national aggregates, with some at Census division level and some State specific. Frequency of update is monthly. Most time units of data are monthly and annual.

Monthly Power Plant Report Specific ownership code, prime mover code, fuel code, company code, plant name, current capacity, fuel name, old capacity, effective date - month/year, status, multi-State code, generation, consumption, stocks, electric plant code, and NERC code for electric power plants are included. The source for the data is the Form EIA-759. Data are utility and plant specific. Frequency of update is monthly. Time unit of data is monthly.

Nonresidential Buildings Energy Consumption Survey 1986 Contains data collected in the 1986 Nonresidential Buildings Energy Consumption Survey (NBECS). The data file contains information concerning commercial building characteristics and annualized energy consumption and expenditures. Energy sources annualized are electricity, natural gas, fuel oil, propane, district steam, district hot water, and district chilled water. Also included in the survey data files are 1986 temperature variables. The file contains data from 6,072 sampled buildings drawn from the 50 States and the District of Columbia. The smallest unit of analysis is the building; the finest geographic level of detail is Census division.

Oak Ridge Uranium Market Model (ORUMM) The model projects prices, production, imports, inventory, capital expenditures, and employment in the uranium mining and milling industry. The model considers every major production center and utility on a worldwide basis (with Centrally Planned Economies considered in a limited way).

Oil and Gas Reserves by Year of Field Discovery Provides distributions, by year of field discovery, of U.S. oil and gas proved reserves, production, total discovered oil and gas (ultimate recovery), and number of fields with oil and gas. Includes similar distributions by State and State subdivision. Data years are 1977 through 1988 inclusive. By-year-of-discovery estimates are grouped in 5-year increments for State and State subdivisions, and individual years for national data. This is a one-time release.

Available from GPO.

Oil Market Simulation Model (OMS) OMS projects future world oil prices and world crude oil supplies and demands by region and country for the United States, Canada, Japan, and OECD-Europe, OPEC, developing countries, and net Communist trade on an annual basis through the year 2010. The model estimates the effects of price change on oil supply and demand and computes an oil price path over time that allows supply and demand to remain in balance within the market economies as a whole.

Performance Profiles of Major Energy Producers The data contained on the 20 tables are extracted from the EIA's Financial Reporting System (FRS) database. The FRS data base is constructed from ownership-based data reported to the EIA on the EIA-28 annual survey form by 23 major, integrated energy companies. At a consolidated company level, the data are validated against

Publications

company annual reports (to their stockholders) and company filings to the securities and exchange commission. The 20 tables are from Appendix B of the EIA annual report, *Performance Profiles of Major Energy Producers*.

The tables are selected, multi-year presentations which basically reflect the survey form. Descriptive table titles are contained in the documentation file.

In summary, the tables contain consolidated company financial and operating data designed to reflect trends in company profitability, resource development patterns, and information about the manufacture and supply of refined products.

Residential Energy Consumption Survey, (RECS) 1990 - Consumption and Expenditures Tables The tables on this diskette were taken from the reports, *Housing Characteristics 1990; Household Energy Consumption and Expenditures 1990; and Household Energy Consumption and Expenditures 1990 Supplement: Regional*.

The reports provide information on the use of energy in residential housing units in the United States. The data were collected on the 1990 Residential Energy Consumption Survey (REC), Forms EIA-457A through G. The Energy Information Administration (EIA) conducts this national sample survey of residential housing units and their energy suppliers on a triennial basis. The 1990 RECS is the eighth in a series conducted since 1978 by EIA. Over 5,000 households were surveyed, providing information on their housing units, housing characteristics, energy consumption and expenditures, stock of energy-consuming appliances and energy-related behavior. The information provided represents the characteristics and energy consumption of 94 million households nationwide. This is the first time that tabular

data, taken directly from the "Detailed Tables" of the report, have been made available on electronic media. Users may want to review the tables along with the text of the two reports mentioned above.

Residential Energy Consumption Survey (RECS) 1990 - Consumption and Expenditures Household Level Data The data were taken from the reports, *Housing Characteristics 1990; Household Energy Consumption and Expenditures 1990; and Household Energy Consumption and Expenditures 1990 Supplement: Regional*.

This public use microdata file provides information on the use of energy in residential housing units in the United States. The data were collected on the 1990 Residential Energy Consumption Survey (RECS), Forms EIA-457A through G. The Energy Information Administration (EIA) conducts this national sample survey of residential housing units and their energy suppliers on a triennial basis. The 1990 RECS is the eighth in a series conducted since 1978 by EIA. Over 5,000 households were surveyed, providing information on their housing units, housing characteristics, energy consumption and expenditures, stock of energy-consuming appliances and energy-related behavior. The information provided represents the characteristics and energy consumption of 94 million households nationwide.

Residential Transportation Energy Consumption Survey 1991 Contains data from the 1988 *Residential Transportation Energy consumption Survey (RTECS)*. This is the second time that data collected on the Residential Transportation Energy Consumption Survey (RTECS) are available on microcomputer readable diskettes. The RTECS was designed by the Energy Information Administration (EIA) to provide information on the use of energy in residential vehicles in the United States and the District

of Columbia. Included are data about: the number and type of vehicles in the residential sector, the characteristics of those vehicles, the total annual Vehicle Miles Traveled (VMT), the per household and per vehicle VMT, the vehicle fuel consumption and expenditures, and the vehicle fuel efficiencies.

State Energy Data System The State Energy Data System (SEDS) contains data from the publication *State Energy Data Report Consumption Estimates*. Data are estimated energy consumption by energy source, by energy consuming sector, by State, by year, in both physical units and Btu. The records are written in the same order as the data are presented in SEDS statistical tables. The SEDS diskettes can be used with most popular spreadsheet software. The procedure for importing the data into Lotus 1-2-3 is included in the documentation.

The State data are grouped by Census region with one region per 5¼" high density (1.2 Mb) diskette except for Region 3, which is on two diskettes. In addition to the States in the Census region, each diskette contains data for the United States and diskette documentation. Data are State specific. Frequency of update is annual. Time unit of data is yearly.

State Energy Price and Expenditure Data System The State Energy Price and Expenditure Data System (SEPEDS) contains data from the publication *State Energy Price and Expenditure Report (SEPER)*. The State data are grouped with one Census region per diskette. In addition to the States in the region, each diskette contains data for the United States and data documentation. Data are presented at the State level for energy prices and energy expenditures by specific energy source and energy consuming sector. The records are written in the same order as the data are presented in the *SEPER* statistical tables.

The SEPEDS diskettes can be used with the most popular spreadsheet software. The procedure for importing the data into Lotus 1-2-3 is included in the documentation. Data are State specific. Frequency of update is annual. Time unit of data is yearly.

Wellhead Gas Productive Capacity (GASCAP) GASCAP estimates the historical wellhead productive capacity of natural gas for the lower 48 States and projects the productive capacity for 2 years. The *Short-Term Energy Outlook (STEO)* output for low, base, and high case is used to estimate the number of active rigs and oil and gas completions. The projected oil production is used to estimate the oil-well gas production (which is assumed to produce at capacity) using a constant gas-oil ratio. The gas demand is also taken from the *STEO*. The difference between demand and oil-well gas production is assumed to be gas-well demand and the production as long as capacity exceeds demand.

World Energy Projection System (WEPS) The World Energy Projection System (WEPS) is an integrated set of Lotus spreadsheets containing data compilations, assumption specifications, descriptive analysis procedures, and projection models. WEPS provides projections to the year 2010 of total world primary energy consumption by major energy source disaggregated by 10 individual countries and 10 country groupings; related carbon emissions; total energy consumption per dollar of gross domestic product (GDP); and oil balances for historically planned economies. WEPS projections and analyses are published annually in the *International Energy Outlook*.

World Integrated Nuclear Evaluation System (WINES) WINES is used to project domestic and foreign nuclear energy requirements into the long-term (through 2030 and 2010, respec-

Publications

tively). WINES, an aggregate demand-based partial equilibrium model, projects nuclear generation and capacity in a broad context of national economic activity, labor force popula

tion and productivity, energy demand measured at end uses, price and income effects, and electricity production.

Appendix D

Major Laws Affecting EIA, 1974-1993

Year	Law	Impact on EIA
1974	Federal Energy Administration (FEA) Act P.L. 93-275, 15 USC 761	Created the FEA and mandated it to "collect, assemble, evaluate, and analyze energy information;" provide energy information and projections to the Federal Government, State Governments, and the public; and provide Congress with an annual report summarizing these activities. It also provided FEA with data collection enforcement authority for data gathered from energy producing and consuming firms.
1974	Energy Supply and Environmental Coordination Act P.L. 93-319, 15 USC 796	Provided additional authority for collecting energy information. The definition that was given "energy information" has been included in all subsequent energy information legislation.
1975	Energy Policy and Conservation Act P.L. 94-163, 42 USC 6274	Provided for exchange of information for the international energy program.
1976	Energy Conservation and Production Act P.L. 94-385, 15 USC 790	Established within the FEA the Office of Energy Information and Analysis (which later became the Energy Information Administration (EIA)). This office was to (1) operate a National Energy Information System, (2) possess expertise in energy analysis and forecasting, (3) be subject to performance audits by a Professional Audit Review Team, (4) coordinate energy information activities with other Federal agencies, (5) "promptly provide upon request any energy information. . . to any duly established committee of Congress," and (6) produce an annual report to Congress.
1977	Department of Energy (DOE) Organization Act P.L. 95-91, 42 USC 7135	Established EIA as the single Government authority for energy information. Gave EIA independence from the rest of the DOE with respect to data collection, and from the whole of Government with respect to the content of EIA reports. Incorporated all the mandates of the Office of Energy Information and Analysis. Established the Financial Reporting System, an annual survey that gathers and reports detailed energy industry financial data. Established an annual requirement to conduct a complete and independent analysis of actual U.S. oil and gas reserves.
1978	Powerplant and Industrial Fuel Use Act P.L. 95-620, 42 USC 8301	Required a comprehensive annual summary on coal reserves.
1982	Energy Emergency Preparedness Act P.L. 97-229, 42 USC 6245	Required EIA to maintain State-level petroleum marketing data similar to those published in September 1981.
1983	Nuclear Regulatory Commission Authorization Act P.L. 97-415, 42 USC 2210	Required a one-time review by the President on the status of the domestic uranium mining and milling industry. Required an annual DOE report on the viability of this industry, using criteria for assessment given in this act. EIA gathers information for this report.
1985	Energy Policy and Conservation Act Amendments of 1985 P.L. 99-58, 42 USC 6201	Required EIA to conduct a comprehensive analysis of the U.S. coal import market and to issue quarterly reports on the status of coal imports.
1986	Omnibus Budget Reconciliation Act P.L. 99-509, 42 USC 7135	Required EIA to conduct a survey of energy consumption in the of 1986 manufacturing industries in the United States on a triennial basis and EIA's participation in a one-time DOE study of domestic crude oil production and petroleum refining capacity and the effects of imports thereon.
1987	Powerplant and Industrial Fuel Use Act of 1978 Amendment, P.L. 100-42, 42 USC 8312	Repealed section of Powerplant and Industrial Fuel Act, P.L. 95-620, which required an annual summary on coal reserves.
1992	Energy Policy Act of 1992	Required EIA to expand energy consumption surveys; collect data and perform analyses of alternative fuels and alternatively-fueled vehicles; compile an inventory of greenhouse gas emissions; establish data base and prepare study on transportation rates and distribution patterns of coal, oil, and natural gas; collect data on renewable energy sources in electricity production; compile data on foreign purchases and imports of uranium; and support the DOE in the study of industrial energy use targets.

DATE

FILMED

7 / 8 / 94

END

+

[REDACTED]