THE MAXIMA CORPORATION

MASTER

Review of the Coal
and
Electric Sections in the
Monthly Energy Review
and
An Overall Review of
Office of Energy Data
Operations Publications

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Operations Publications**

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**Prepared by
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Executive Summary

This "Review of the Coal and Electric Sections of the Monthly Energy Review and an Overall Review of OEDO Publications" is comprised of two sections. The first, "Review of Coal and Electric Power Data in the Monthly Energy Review" consists of a detailed analysis of content and data presentation issues. The major findings of this section are summarized below:

- The coal and electric power data in the Monthly Energy Review (MER) represent the major functions of the respective industries.
- Coal data by rank are inconsistently presented in the MER.
- Coal value or coal cost and quality data are not adequately represented in the MER.
- The presentation of two or more units of measurement on the same table in MER may invite incorrect comparisons unless properly separated (e.g. - double line separation).
- To improve the timeliness of the data in the MER, the increased use of estimated, preliminary, and/or projected data should be considered.
- The table and graphic formats used in the MER present the data clearly and concisely.

The second section of the report, "An Overall Review of OEDO Publications," contains the results of an analysis of data presentation in forty-six coal, gas, electric, oil and consolidated publications.

A summary of our findings and recommendations is listed below:

- Where practical, a scope of publication section and executive summary should be included in OEDO publications.
- Table formats, including titles and endnotes should be uniform.
- More detailed guidelines for titling should be established by the Energy Information Administration (EIA).
- A more detailed set of standards for footnotes, notes and source notes should be established by EIA.

In the following pages of this report, we will provide examples of our findings, and expand on the rationale behind each recommendation.

Introduction

This report consists of two independent sections. The first of these, "Review of the Coal and Electric Sections in the Monthly Energy Review," consists of five parts:

- Purpose of the Monthly Energy Review (MER)
- Comparison of Coal and Electric Power Data in the Monthly Energy Review and other OEDO Publications
- Coverage
- Timeliness
- Data Presentation

The second section, "Overall Review of Office of Energy Data Operations (OEDO) Publications," summarizes a review of data presentation in forty-six gas, coal, electric, oil and consolidated publications, and includes general recommendations and options for improvements within the publications.

Purpose of the Monthly Energy Review

The Monthly Energy Review (MER) is a summary energy publication containing data on the major components of the energy industry including:

- Petroleum
- Natural Gas
- Coal
- Electric Power
- Nuclear Energy

The MER is received by an audience with wider and more general energy concerns than the audiences of more detailed OEDO statistical publications which MAXIMA has studied in the past. The content of these more specialized publications is more strongly influenced by the user population and subject matter to be presented.

In the case of the MER, the wider range of interests and users of the publication encourages debate on the content and format for data presentation. For each data element in the MER and each method of presentation, arguments can be made for alternatives that emphasize different aspects of energy or tailor the presentation for a specific use.

Therefore, prior to beginning the discussion of some of these alternatives as they relate to coal and electric power data in the MER, a statement should be made concerning the purpose of the MER as it is viewed by the authors. For the purposes of this review, the intent of the MER is seen as to provide readers with a timely, accurate status report on major forms of energy in the United States and, to a lesser extent, the world. Given this goal, the data within the MER as well as their presentation must satisfy the following general requirements:

- The MER should include summary data on the major components of energy including those listed above.
- The data within the MER should be presented in a manner that shows

relationships and allows comparisons to be made across energy components such as resources, production, consumption and disposition. Sufficient historical data should be published to allow the reader to trace the effects of policy, domestic politics and geopolitical events.

In our discussion of the presentation of coal and electric power data in the MER, we will point out possible options regarding format and content. These comments are based on our review of other EIA publications, on our knowledge of Energy Information Administration (EIA) and Government Printing Office (GPO) guidelines and our familiarity with statistical publications and publication standards as well as with the data being presented. During our review of the MER, we have become aware that the enormous process of regularly assembling the document from information gathered by various methods from numerous sources precludes making significant adjustments to the publication without a major investment of scarce resources. Therefore, the options discussed in sections of this document must be considered along with the constraints and limitations that currently exist. This report intends to highlight possible options for improving the MER without attempting to set priorities for its alteration.

Coal and Electric Power Data in Monthly and Quarterly OEDO Publications

In this section we present the results of our examination of the periodic OEDO publications which include data on coal and electric power. The purpose of this section is to compare the content of the MER with the information published in other OEDO publications.

As discussed in the previous section, the MER spans the entire spectrum of energy information and serves a broader range of information users than the more specific publications. By compiling the information contained in this section, we hope to provide the reader with an overview of the coal and electric power data (available through monthly and quarterly OEDO publications) to enable the reader to compare the content of the more specific publications with what has been selected for inclusion in the MER.

Family Tree of Publications

Exhibits 1 A & B depict the groups of OEDO publications that contain data on coal and electric power. Exhibit 1A, OEDO Coal Statistics- Family of Publications, shows the relationship between coal data publications and the MER. The exhibit also shows the EIA surveys which provide input into the various publications.

Arrows between publications indicate the situation where data from one publication are repeated in another publication. However, the data may be summarized, expanded on or may appear in a different format than in the publication where it originated. The publications shown on Exhibit 1A include:

- Monthly Energy Review
- Coke and Coal Chemicals
- Coal Distribution
- Weekly Coal Production

Exhibit 1A
OEDO Coal Statistic Family of Publications

Exhibit 1B
OEDO Electric Statistics Family of Publications

As shown on Exhibit 1 A, the MER contains information which is also available in the Weekly Coal Production, the Coke and Coal Chemicals Quarterly, and the Coal Distribution Quarterly. The variations between content and level of detail of the data presented in these publications and what is presented in the MER will be shown later in this section.

Exhibit 1B, OEDO Electric Power Statistics Family of Publications, shows the relationship between monthly, quarterly and annual electric power data publications and the MER. Again, the EIA surveys which provide data for each publication are shown.

The publications depicted in Exhibit 1 B include:

- Monthly Energy Review
- Cost and Quality of Fuels for Electric Utility Plants (Monthly)
- Sales, Revenues and Income of Electric Utilities
- Electric Power Monthly

The exhibit shows that the MER contains data which are also published in the Cost and Quality of Fuels for Electric Utility Plants and the Electric Power Monthly. Additional details on the content and format of the data presented in these publications and in the MER will be provided later in this section.

Coal and Electric Power Data in the MER

The MER contains summary data on various aspects of the coal and electric power industries. Coal data are included in five of the MER's nine parts while electric power or electric utility data are included in seven. Exhibit 2 contains a detailed abstract of these data in a data element grid. For the most part, the content of the grid is self evident. Column 1 refers to a reference letter, a through cc. Each reference letter represents one section of the MER which contains data on the coal industry and on the electric power industry. Column 2 shows the page number or numbers of where the referenced data tables are located in the March, 1981 MER. The descriptive information on function, energy source, etc., provides details on the content of each of the referenced sections of the MER. Although the page references are taken from the March 1981 issue of the MER, they should be relatively compatible with most recent issues (see Exhibit 2).

Exhibit 2. Coal and Electric Power Data Elements in the MER

Legend: M = Million
B = Billion
K = Thousand

Ft³ = cubic feet
Mcf = McFadden

S/T - Short Tons

Ref.	MLR Page #	Subject Publication	Function	Energy Sources	Industry Sector	Geographic Aggregation	Reported Period	Historic Data	Units	Data Source	Frame Coverage	Source Periodicity	Time Lag
a.	1	<u>MER</u> (March, 1981 Issue) Coal References	Production Consumption Net Imports	Coal		U.S. Total	Month Yr to Date	Current Prev.	10 ¹⁵ Btu Daily Rate				
b.	4		Production	Coal		U.S. Total	Year Month	'73-'78 Current 23 Prev.	10 ¹⁵ Btu	Data Else- where in Publication			
c.	5		Consumption	Coal		U.S. Total	Year Month	'73-'78 Current 23 Prev.	10 ¹⁵ Btu	Data Else- where in Publication			
d.	6		Imports	Coal		U.S. Total	Year Month	'73-'78 Current 23 Prev.	10 ¹⁵ Btu	Data Else- where in Publication			
e.	19		Consumption	Coal	Res/Comm Industrial Transport. Elec. Utilities	U.S. Total	Month	Current	10 ¹⁵ Btu	Weekly Coal Report			
f.	21 22,23 24,25		Consumption	Coal	Res/Comm Industrial Transport. Elec. Utilities	U.S. Total	Year Month	'73-'78 Current 23 Prev.	10 ¹⁵ Btu	Weekly Coal Report			

Exhibit 2. continued

Ref.	MER Page #	Subject Publication	Function	Energy Sources	Industry Sector	Geographic Aggregation	Reported Period	Historic Data	Units	Data Source	Frame Coverage	Source Periodicity	Time Lag
g.	56		Production Consumption Imports Exports Stocks	Coal	Consumer	U.S. Total	Year Month	'73-'78 Current 23 Prev.	K/ST	HCP EIA-3,5,FPC4 IM 145 EM 522 EIA3,5,FPC4	100 % 96/100/100% 100% 100% 96/100/100%	- Q/Q/M Monthly Monthly Q/Q/M	- 90/90/50 60 60 90/90/45
h.	58		Consumption	Coal	Elec. Utilities Coke Plants Other Indus/Trans Res/Comm	U. S. Total	Year Month	'73-'78 Current 23 Prev.	K/ST K/ST	FPC 4 EIA - 5 EIA-3 EIA-6	100% 100% 95% 96%	Monthly Quarterly Quarterly Quarterly	50 90 90 90
i.	59		Stocks	Coal	Elec. Utilities Coke Plants Other Indus.	U.S. Total	Year Month	'73-'78 Current 23 Prev.	K/ST	FPC 4 EIA - 5 EIA - 3	100% 100% 95%	Monthly Quarterly Quarterly	50 90 90
j.	62		Elec. Generation	Coal	Elec. Utilities	U.S. Total	Year Month	'73-'78 Current 23 Prev.	M/kWh	FPC 4	100%	Monthly	50
k.	64		Fuel Consumption	Anthracite Bituminous Lignite	Elec. Utilities	U.S. Total	Year Month	'73-'78 Current 23 Prev.	K/ST	FPC 4	100%	Monthly	50
l.	66		Stocks	Anthracite Bituminous Lignite	Elec. Utilities	U.S. Total	Year Month	'73-'78 Current 23 Prev.	K/ST	FPC 4	100%	Monthly	50
m.	87		Cost	Coal	Elec. Utilities	U.S. Total	Year Month	'73-'78 Current 23 Prev.	¢/MBtu	FPC 423	100%	Monthly	65
n.	4	Elec. Utilities References	Production of Energy	Coal Crude Oil NGPL, Gas Hydro, Nuclear Other		U.S. Total	Year Month	'73-'78 Current 23 Prev.	10 ¹⁵ Btu	Data Else- where in Publication			
o.	6		Consumption of Energy	Coal, Nat. Gas, Hydro, Petroleum Nuclear Coal Coke, Other		U.S. Total	Year Month	'73-'78 Current 23 Prev.	10 ¹⁵ Btu	Data Else- where in Publication			

Exhibit 2. continued

Ref.	MER Page #	Subject Publication	Function	Energy Sources	Industry Sector	Geographic Aggregation	Reported Period	Historic Data	Units	Data Source	Frame Coverage	Source Periodicity	Time Lag
p.	8		Net Imports	Electricity		U.S. Total	Year Month	'73-'78 current 23 Prev.	10 ¹⁵ Btu	Data Else- where In Publication			
q.	16		Costs	Electricity	Residential	U.S. Total	Year Quarter	'73-'79 1st- 4th '80	c/kWh \$/MBtu	FERC 5	100%	Monthly	50
r.	19		Sales Losses	Electricity Electricity		U.S. Total	Month	Current	10 ¹⁵ Btu	FERC 5	100%	Monthly	50
r.			Consumption	Energy	Res/Comm Industrial Transportation	U.S. Total	Year Month	'73-'78 '79-'80	10 ¹⁵ Btu				
s.	22		Sales Losses	Electricity Electricity	Res/Comm Industrial Transportation	U.S. Total	Year Month	'73-'78 '79-'80	10 ¹⁵ Btu	FERC 5	100%	Monthly	50
t.	58-59		Consumption Stocks	Coal Coal	Elec. Utilities	U.S. Total	Year Month	'73-'78 '79-'80	K/ST	FPC 4	100%	Monthly	50
u.	62		Production Elec. Production by Source of Energy	Coal,Petro Nat'l Gas, Nuclear, Hydro,Other	Elec. Utilities	U.S. Total	Year Month	'73-'78 '79-'80	M/kWh	FPC 4	100%	Monthly	50
v.	63		Sales	Electricity	Residential Commercial Industrial Other	U.S. Total	Year Month	'73-'78 '79-'80	M/kWh	FERC 5	100%	Monthly	50
w.	64		Consumption	Anthracite Bituminous Lignite Petroleum Petro Coke Natural Gas	Elec. Utilities	U.S. Total	Year Month	'73-'78 '79-'80	K/ST K/BBls K/ST M/ft ³	FPC 4	100%	Monthly	50
x.	66		Stocks	Anthracite Bituminous Lignite Petroleum Petro Coke	Elec. Utilities	U.S. Total	Year Month	'73-'78 '79-'80	K/ST K/BBls K/ST	FPC 4	100%	Monthly	50

Exhibit 2. continued

Ref.	MER Page #	Subject Publication	Function	Energy Sources	Industry Sector	Geographic Aggregation	Reported Period	Historic Data	Units	Data Source	Frame Coverage	Source Periodicity	Time Lag
y.	70	Elec. Utilities (Continued)	Lic. Reactor Generation Dep. Cap. Cap. Factor	Nuclear		U.S. Total	Year Month	'73-'78 Current 23 Prev.	# M/kWh % M/kWh Net %	FPC (Form NRC NUREG 0020)	100%	Monthly	50
			Status -Licensed -Permits .Granted .Pending Reactors on Order "An- nounced total Total Capacity	Nuclear		U.S. Total	Year Month	'73-'78 Jan. '78 Dec. '80	#	NRC NUREG 0380 *and from various sources			
z.	71		Status -Licensed -Permits .Granted .Pending Reactors on Order. An- nounced, Total, Total Capacity	Nuclear		U.S. Total	Year Month	'73-'78 Current 23 Prev.	#	NRC NUREG 0380 *and from various sources			
aa.	86		Price	Natural Gas	Electric Plants	U.S. Total	Year	'73-'78	¢K/ft ³	FPC 423	100%	Monthly	50
bb.	87		Price	Coal Oil Natural gas	Electric Utilities	U.S. Total	Month	Current 23 Prev.	¢/MBtu	FPC 423	100%	Monthly Monthly	50 50
cc.	87		Price	Retail Elec.	Residential Commercial Industrial Other	U.S. Total	Year Month	'73-'78 Current 23 Prev.	¢kWh	FERC 5	100%	Monthly	50
ddd.	94-95		Generation	Nuclear		Non-Communist Countries	Year Month	'73-'78 Current 23 Prev.	B/kWh	Nucleonics Week			

Coal and Electric Power Data Elements in Related OEDO Publications

Exhibit 3, Coal and Electric Power Data Elements in OEDO Publications, represents an abstract of the coal and electric power data contained in OEDO publications. The format for Exhibit 3 is the same as that used in Exhibit 2 except reference numbers (1-57) are used in place of letters to represent sections or tables of the various publications which contain coal and electric power data.

That exhibit is followed by Exhibit 4, Cross Reference of MER Coal and Electric Data with Data in Other Publications. This table shows the relationship between MER published figures and data published elsewhere by OEDO. The March, 1981 page number location and grid reference letter taken from Exhibit 2 are matched with corresponding reference numbers from Exhibit 3 to demonstrate the relationship between the publications. In some cases, no source for matching MER content was found. For example, although both the MER and the Weekly Coal Production (WCP) contain electric utility coal stocks data, the MER contains data on stocks of lignite, where the WCP displays an aggregate bituminous and lignite figure. In these instances, a notation is included or in the case of figures being repeated in another section of the MER, a second MER reference letter is listed.

Exhibit 3. Coal and Electric Power Data Elements in OEDO Publications

Legend: M = Million
B = Billion
K = Thousand

Ft³ = cubic feet
Mcf = McFadden

S/T = Short Tons

Ref. #	Ref. Pg.	Subject Publication	Function	Energy Sources	Industry Sector	Geographic Aggregation	Reported Period	Historic Data	Units	Data Source	Frame Coverage	Source Periodicity	Time Lag
1	4-18	ELEC. UTILITIES Electric Power Monthly (Issue Dated December 1980)	Net Generation	Hydroelec. Coal (inc. Petro Coke) Oil Gas Nuclear Other Total		U.S. Total Census Region & State NERC Region	Month	Current Last Year Prev.	Gigawatt Hours	FPC Form 4	100%	Monthly	50
2	21-26		Net Energy for load	Receipts Deliveries Forecast		U.S. Total NERC Region	Month	Current Year Prev.	Gigawatt Hours	ERA 119H	96%	Monthly	
3	28-36		Peak Load-Net Capability			U.S. Total NERC Region	Month	Current		ERA 119H	96%	Monthly	
4	38-48		Consumption	Coal Oil Gas		U.S. Total Census Region & State NERC Region	Month	Current Last Year Previous	K/ST K/Bbl B/ft ³	FPC Form 4	100%	Monthly	50
5	50-60		Stocks	Coal Oil		U.S. Total Census Region & State NERC Region	Month Days Supply	Current Last Year Prev.	M/ST H/B	FPC Form 4	100%	Monthly	50
6	71-94		Fuel Deliveries	Bituminous Subbituminous Lignite Light Oil Heavy Oil Natural Gas Other Gases		U.S. Total Census Region & State NERC Region	Month	Current	K/T K/Bbl M/ft ³	FPC Form 423	100% of fossil fueled plants generating more than 25 MW Annually	Monthly	50

Exhibit 3. continued

Ref. #	Ref. Pg.	Subject Publication	Function	Energy Sources	Industry Sector	Geographic Aggregation	Reported Period	Historic Data	Units	Data Source	Frame Coverage	Source Periodicity	Time Lag
7	96-105		Fuel Costs	Contract Coal Spot Coal Strip and Auger Coal Underground Coal Contract Heavy Oil Spot Heavy Oil Contract Light Oil Spot Light Oil Firm Gas Interruptible Gas		U.S. Avg. Census Region and State	Month	Current	K/Tons $\epsilon 10^6$ Btu \$/Ton K/BBL $\epsilon 10^6$ Btu \$/BBL K/MCF $\epsilon 10^6$ Btu \$/Mcf	FPC Form 423	100% of fossil fueled plants generating more than 25 MW Annually	Monthly	50
8	110		Electricity Prices		Residential Commercial Industrial	41 cities	Month	Current Previous		EIA 101	Sample	Monthly	
9	1	Sales, Revenue and Income of Electric Utilities (Sept. 1980)	Sales to Users Number of Consumers Revenues		Residential Commercial Industrial Other	U.S. Total	Month	Current Previous 12 mos.	K/kWh K M/\$	FERC Form 5	Selected Class A Utilities 75%	Monthly	50
10	2		Monthly Sales		Residential Commercial Industrial Other	U.S. Total State	Month	Current Previous	M/kWh	FERC Form 5	100%	Monthly	50

Exhibit 3. continued

Ref. #	Ref. Pg.	Subject Publication	Function	Energy Sources	Industry Sector	Geographic Aggregation	Reported Period	Historic Data	Units	Data Source	Frame Coverage	Source Periodicity	Time Lag
11	12,13	Cost and Quality of Fuels for Electric Utility Plant Issue dated Nov. 1980	Coal deliveries and delivered prices by Sulfur content at Steam Elec. Plants	Coal - less <.5% sulf. .51%-1% " 1.01%-1.5% " 1.51%-2.0% " 2.01%-3.0% " 3.01%-more		U.S. Total Census Region and State	Month	Current	K/tons ¢/10 ⁶ Btu \$ per Ton	FPC Form 423	100% of fossil fuel ed plants generating more than 25MW annually	Monthly	50
12	10		Coal Deliveries Quantity	Anthracite Bituminous Subbituminous Lignite		U.S. Total Census Region and State	Month	Current	K/Tons				
13	11		Avg. Delivered Prices of Coal	Contract Coal Spot Coal Strip & Auger Coal Underground Coal		U.S. Total Census Region and State	Month	Current	K/Tons ¢/10 ⁶ Btu \$/Ton				
14	14,15		Basic Coal Statistics Quantity purchased Heating value Sulfur content Avg. Price M/Btu Est. Coal Bill	Coal		Census Region	Month	Current Previous 11 mos.	K/tons B/Btu % ¢/M/Btu \$ 1000				
15	16		Fuel Oil Deliveries	F.O. #'s 2,4,5,6 Crude Oil Kerosene		U.S. Total Census and State	Monthly & Current		K/Bbl				
16	17		Avg. Delivery Price	Spot #6 Contract 6 F.O. #'s 2,4,5 Crude, Kerosene			Month		K/Bbl ¢/10 ⁶ Btu \$/Bbl ¢/10 ⁶ Btu \$/Bbl				

Exhibit 3. continued

Ref. #	Ref. Pg.	Subject Publication	Function	Energy Sources	Industry Sector	Geographic Aggregation	Reported Period	Historic Data	Units	Data Source	Frame Coverage	Source Periodicity	Time Lag
17	18,19		Fuel Oil	Oil Sulfur Content 0.3%; .31-.5%; .51-1%; 1.01-2%; 2.01-3.0%; more		U.S. Total Census Region & State	Month	current	K/Bbl. \$/Btu \$/Bbl	↓	↓	↓	↓
18	20		Basic Fuel Oil Stats. -Quant. Purchased -Heating value -Avg. Sulfur content -Avg. Price -Total Bill			Census Region	Month	Current Previous 11 mos.	K/Bbl. B/Btu ¢ \$/E-Btu \$1000				
19	22		Gas Deliveries	Nat. Gas LNG SNG Other		U.S. Total Census Region & State	Month	Current	K/Mcf				
20	23		Avg. Delivered Price	Interruptible Gas Firm Gas Off Peak Gas		U.S. Total Census Region & State	Month	Current	K/Mcf \$/10 ³ Btu \$/Mcf				
21	24,25		Basic Gas Statistics -Quant. Purchased -Firm Interruptible -Heating value -Avg. Price -Est. Gas Bills			Census Region	Month	Current Previous 11 mos.	K/Mcf K/Mcf K/Mcf \$/10 ³ Btu \$/B-Btu \$1000				
22	26,27		Primary Energy Purchase Data	Coal Oil Gas		Census Region & State	Month	Current Previous 12 mos.	B/Etu \$/10 ⁶ Btu				
23		Cost and Quality of Fuels Annual Issue dated June 1980	Basically duplicates Monthly Sec Ref. #'s 10-21				Annual			↓	↓	↓	↓

Exhibit 3. continued

Ref. #	Ref. Pg.	Subject Publication	Function	Energy Sources	Industry Sector	Geographic Aggregation	Reported Period	Historic Data	Units	Data Source	Frame Coverage	Source Periodicity	Time Lag
24	1	COAL PUBLICA- TIONS Weekly Coal Production March 20, 1981	Production	Bituminous Lignite (combined) Anthracite		U.S. Total	Week	Current Yr. to-date All of prev. year	M/ST	Am. Assoc. of Rail	Est. 100%	Weekly	
25	2,3 footnote 1	Issue dated March 20, 1981	Production	Bituminous Lignite (Combined) Anthracite		By state (Anthracite in Pa. only)	Week	Current Previous Year	S/T	Am. Assoc. of Rail	Est. 100%	Weekly	
26	4	Issue dated March 20, 1981	Production	Bituminous Lignite (Combined)		U.S. Total & State	Month	Jan - Dec 1980	S/T	EIA 6 State	96%	Quarterly	90
27	4	Issue dated March 13, 1981	Monthly Vessel Loadings	Bituminous		Selected Ports	Month	Month Previous	S/T	State			
28	5	Issue dated March 13, 1981	Stocks	Bituminous	Elec. Utility Coke Plant Other Industrial	U.S. Total	Month	Yr. Prev. Month Prev. Yr. Prev. % Change	K/ST	FPC 4 EIA 5 EIA 3	100% 100% 95%	Monthly Monthly Quarterly	50 50 90
29	5	Issue dated March 13, 1981	Consump- tion	Bituminous Lignite (Combined)	Elec. Utility Coke Plant Other Industri- al Res./com.	U.S. Total	Month	Month Prev. Yr. Prev. % Change 1980 1979	K/ST	FPC 4 EIA 5 EI 3 EIA 6	100% 100% 95% 96%	Monthly Monthly Quarterly Quarterly	50 50 90 90
30	6	Issue dated March 13, 1981	Consump- tion	Bituminous Lignite (Combined)	Elec. Utility Coke Plant Other Industrial Res./Com	U.S. Total	Month Quarter	Jan-Dec 1980	K/ST				
31	6	Issue dated March 13, 1981	Stocks	Bituminous Lignite (Combined)	Elec. Utility Coke Plant Other Industrial	U.S. Total	Month	Jan-Dec 1980	K/ST				
32	7 footnote 2	Issue dated March 13, 1981	Consump- tion	Anthracite	Elec. Utility Coke Plant Other Industrial	U.S. Total	Month Quarter	Jan-Dec 1980	K/ST				
33	7	Issue dated March 13, 1981	Stocks	Anthracite	Elec. Utility Coke Plants Other Industria	U.S. Total	Month	Jan-Dec 1980	K/ST				
34	4	Issue dated March 13, 1981	Production By type of Mine	Bituminous and Lignite (Combined)		U.S. Total State	Year	1980	K/ST	EIA 6 State	96%	Quarterly	90

Exhibit 3. continuec

Ref. #	Ref. Pg.	Subject Publication	Function	Energy Sources	Industry Sector	Geographic Aggregation	Reported Period	Historic Data	Units	Data Source	Frame Coverage	Source Periodicity	Time Lag
35	5	Weekly Coal Production (con't) Issue dated March 6, 1981	Production Value	Bituminous Lignite (Combined)	Industrial Prod. & Dist.	U.S. Total	Year	1976-1980	K/ST	EIA 7	100%	Annual	270
			Consumption						K/\$	EIA 7	100%	Annual	270
			Stocks						K/ST	See Reference Number 29			
			Exports						K/ST	EM 522 IM 145	100% 100%	Monthly Monthly	60 60
			Imports						K/ST				
			Price Indicators						K/ST				
			-Coking Coal						\$/Ton	EIA 5	100%	Monthly	90
			-Rail Freight						\$/Ton	ICC			
			-Value FOB						\$/Ton	EIA 7	100%	Annual	270
			Mining Method						K/ST	EIA 7	100%	Annual	270
36	6	Issue of March 6, 1981	Exports Quantity Export Value	Bituminous		Destination Country	Month	Current Yr-to-date	S/T	EM 522	100%	Monthly	60
									\$	EM 522	100%	Monthly	60
37	7	Issue of March 6, 1981	Exports	Low Volatile & Meta. Other Lignite Anthracite Coke Briquets		Destination Country	Month	Current	S/T	EM 522	100%	Monthly	60
38	8	Issue of March 6, 1981	Exports	Bituminous -Meta. -Steam		Destination Country	Year	1980 vs 1979	S/T	EM 522	100%	Monthly	60
39	9	Issue of March 6, 1981	Exports	Bituminous	Port of Exit	Destination Country	Year	Jan-Dec 1980	S/T	EM 522	100%	Monthly	60
40	10	Issue of March 6, 1981	Exports	Bituminous -Low Volat -Other Anthracite Lignite Coke Briquets		U.S. Total	Month	Jan-Dec 1980	S/T	EM 522	100%	Monthly	60
41	11	Issue of March 6, 1981	Exports	Anthracite		Destination Country	Month Year	Current Prev. Yr.	S/T	EM 522	100%	Monthly	60
42	12	Weekly Coal Production (con't) Issue dated March 6, 1981	Imports Quantity Imports Value	Bituminous Coal Coal N.E.C.		Country of Origin	Month Yr-to-date	Current Prev. Yr.	S/T	IM 145	100%	Monthly	
									\$	IM 145	100%	Monthly	

Exhibit 3. continued

Ref. #	Ref. Pg	Subject Publication	Function	Energy Sources	Industry Sector	Geographic Aggregation	Reported Period	Historic Data	Units	Data Source	Frame Coverage	Source Periodicity	Time Lag
43	12	Issue of March 6, 1981	Imports	Bituminous Other Coal Coke Briquets		Country of Origin	Month	Current	S/T	IM 145	100%	Monthly	60
44	13	Issue of March 6, 1981	Imports	Bituminous Other Coal Coke Briquets		U.S. Total	Month	Jan-Dec 1980	S/T	IM 145	100%	Monthly	60
45	5	Coal Distribution (Issue dated Oct. 1980)	Production & Purchases Dist. Stock Chg. Begin Stock End Stocks	All Coal	Producers and Distribution	U.S. Total Mining Distr	Quarter	Yr-to-date	K/ST	EIA 6	96%	Quarterly	90
46	8		Shipments by coal prod. area	All Coal	Electric Util. Coke Plants Other	Domestic Foreign	Yr-to-date	Yr-to-date	K/ST	EIA 6	96%	Quarterly	90
47	8		Shipments by coal prod. area	All Coal	Rail Water Truck Other	Domestic Foreign	Yr-to-date	Yr-to-date	K/ST	EIA 6	96%	Quarterly	90
48	9		Shipments by coal prod. area	All Coal	Elec. Util. Coke Plants Other Ind. Res /Commercial Transportation Unknown	Domestic Canada Foreign	Yr-to-date	Yr-to-date	K/ST	EIA 6	96%	Quarterly	90
49	11		Shipments	All Coal	Elec. Util. Coke Plants Other Ind. Res /Comm	U.S. Total Census Region and State	Yr-to-date	Yr-to-date	K/ST	EIA 6	96%	Quarterly	90
50	12		Shipments	All Coal	Rail, Water, River, Gt Lakes Truck, Other	U.S. Total Census Region and State	Yr-to-date	Yr-to-date	K/ST	EIA 6	96%	Quarterly	90
51	13		Shipments by Transportation	All Coal	Elec. Util. Coke Plants Other Ind. Res /Comm Transportation Unknown	Producing Distribution	Yr-to-date	Yr-to-date	K/ST	EIA 6	96%	Quarterly	90
52	14-51		Shipments by coal prod. dist & transp.	All Coal	Elec. Util. Coke Plants Other Ind. Res /Comm Unknown	Census Region and State	Yr-to-date	Yr-to-date	K/ST	EIA 6			
53	57-65		Shipments	All Coal	Elec. Util. Coke Plants Other Ind	U.S. Total Census Region & State	Year	1978, 1979 1980	K/ST				

Exhibit 3. continued

Ref. #	Ref. Pg.	Subject Publication	Function	Energy Sources	Industry Sector	Geographic Aggregation	Reported Period	Historic Data	Units	Data Source	Frame Coverage	Source Periodicity	Time Lag
54	2 Footnote 3	Coke and Coal Chemicals Issue dated July 1980 (Coal chemical not included as they were dropped from form)	Production	Coke		State	Month	Current Prev. Year Yr-to-date 1979-1980	K/ST	EIA 5	100%	Monthly	90
			Production	Coke	By Plant Type		Month	"	K/ST	EIA 5	100%	Monthly	90
55	2		Avg Daily Production	Coke	By Plant Type		Month	"	K/ST	EIA 5	100%	Monthly	90
56	4		Stocks	Coke	By Plant Type		Month	"	K/ST	EIA 5	100%	Monthly	90
57	4		Stocks	Anthracite Bituminous	By Plant Type		Month	"	K/ST	EIA 5	100%	Monthly	90
58	5		Exports	Coke		Destination Country	Month	"	K/ST	EIA 5	100%	Monthly	90
59	6		Imports	Coke		Origin of Country	Month	"	K/ST	EIA 5	100%	Monthly	90

Exhibit 4. CROSS-REFERENCE OF MER COAL AND ELECTRIC DATA
WITH DATA IN OTHER PUBLICATIONS

March MER Page #	Grid Ref.	Subject	OEDO Publications Grid Ref.#(s)
		COAL DATA	
1	a.	Prod., Cons. Imports	g.(MER)
4	b.	Production	g.(MER)
5	c.	Consumption	g.(MER)
6	d.	Imports	g.(MER)
19	e.	Consumption	30, 32
21-25	f.	Consumption	30, 32
56	g.	Production	No published source
		Consumption	30, 32
		Imports	43, 44
		Exports	40
		Stocks	31, 33
58	h.	Consumption	30, 32
59	i.	Stocks	31, 33
62	j.	Generation	1
64	k.	Consumption	No published source
66	l.	Stocks	No published source
87	m.	Cost	13
		ELECTRIC UTILITY DATA	
4	n.	Energy Production	
6	o.	Consumption	
8	p.	Electrical Imports	
16	q.	Electricity Prices	10
19	r.	Sales	10
		Losses	No published source
22	s.	Sales	10
		Losses	No published source
58/59	t.	Consumption	4, 30, 32
		Stocks	5, 31, 33
62	u.	Generation	1
63	v.	Sales	10
64	w.	Consumption	No published source
66	x.	Stocks	No published source
70,71,94	y,z,aa	Nuclear Data	No published source
87	hh	Price	13, 16, 20
87	cc	Retail Prices	10
94,95	dd	Nuclear Generation	

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Coal and Electric Power Data Coverage in the *MER*

This section of the report consists of a discussion of issues concerning the MER's coverage of coal and electric power data. Coal and electric power data are discussed separately. The comments in this section are based on reviews of the MER, previous research into related OEDO publications such as Weekly Coal Production and the Electric Power Monthly, and analyses and recommendations contained in two previous MAXIMA reports on the Electric Power Monthly and a new quarterly coal publication, the Quarterly Coal Review.

Coal Data

This discussion of coal data coverage in OEDO publications is divided into two parts. The first consists of a comparison of the subject matter covered in the Monthly Energy Review (MER) with the subject matter covered in other OEDO publications. The second part of this discussion focuses on the content and method of presentation in the MER. In this part of the discussion we present options for presenting the subject matter already included in the MER and discuss the pros and cons of various alternatives.

Comparison of Coal Data in the MER with Coal Data in Other OEDO Coal Publications

The Office of Energy Data Operations (OEDO) collects monthly and quarterly data on a number of coal industry functions (production, consumption, stocks, etc.). These data are published in five OEDO "subject specific" publications:

- Weekly Coal Production
- Cost and Quality of Fuels for Electric Utilities
- Quarterly Coke Report
- Electric Power Monthly
- Coal Distribution Quarterly

A comparison of coal industry function data between the MER and the specific publications will indicate whether gaps exist in the MER's coverage of coal data. Where gaps are identified, we will discuss the rationale behind the decision not to include these data in the MER.

The five OEDO "subject-specific" publications which contain data on the coal industry are discussed below.

Weekly Coal Production (WCP). The Weekly Coal Production (WCP) publication presents summary information on various coal industry functions. It contains weekly data on coal production, and at regular intervals (monthly) contains the following additional coal data:

- Consumption (domestic) by consumer category
- Stocks at consumers (domestic)
- Imports
- Exports

Coal Distribution (CD). Coal Distribution (CD) emphasizes coal shipment and destination data. It cross-references four variables:

- State of Destination
- Consumer Category (domestic)
- Producing District
- Method of Transportation

The CD also contains data on:

- Shipments of Coal to Other Countries.
- Producer and Distributor
- Stocks
- Production

Quarterly Coke Report (QCR). The publication of coke plant data is currently under review. The last issue of the Coke and Coal Chemicals Monthly was December 1980 and the new coke publication, Quarterly Coal Report will not be available until later this year. However, the coke plant survey (EIA-5) collects data on coal receipts, domestic consumption (carbonization), stocks and prices.

Cost and Quality of Fuels for Electric Power Plants (CQF). The CQF contains data on coal receipts at electric plants:

- Price of Receipts
 - By type of contract
 - By type of mining method
 - By sulfur content
- Coal Receipts by Rank

The Electric Power Monthly (EPM). The Electric Power Monthly also contains coal data on:

- Domestic Coal Consumption
- Coal Receipts (Deliveries)
- Coal Price

Between these five publications OEDO publishes monthly or quarterly data on the following coal industry subject areas:

- Production
- Producer and Distributor Stocks
- Imports
- Exports
- Shipments
- Consumer Receipts (Quantity)
- Consumer Receipts (Cost)
- Domestic Consumption
- Domestic Consumer Stocks

Of these nine types of coal industry data, the MER to varying degrees, contains data on six:

- Production
- Imports
- Exports
- Domestic Consumption
- Domestic Consumer Stocks
- Consumer Receipts (Cost)

The three areas that are not addressed in the MER are shipments, consumer receipts (quantity) and producer and distributor stocks.

Coal Data Not Included in the MER

In the next few paragraphs we discuss the relative merits of including additional coal data in the MER. Each of the three areas of coal data which are covered by other OEDO publications but which are not included in the MER are addressed.

Domestic Shipments/Domestic Receipts(Quantity). Domestic shipments and receipts data forms the nexus between coal production and consumption. Including domestic shipments and consumer receipts data in the MER would provide readers with more comprehensive coal data. However, there are several issues which arise concerning whether these data are appropriate for a publication like the MER.

In general, the MER concentrates on four aspects of domestic energy activity - production, consumption, stocks and price. Therefore, shipment and receipt data may exceed the scope of data required in a summary publication.

Shipments data, as well as receipts data from two of the three consumer categories (coke plants and other industrials) are reported on a quarterly basis. To include these data in a monthly publication would add more data cells which would frequently need to be labeled "Not Available" (N/A) due to the periodicity of the data. Due to these issues, any decision concerning shipment and receipt data should be carefully considered.

Coal Stocks at Producers and Distributors. Currently, the MER only contains industrial consumer coal stocks data. Coal Distribution (CD) contains data on coal stocks at producers and distributors shipping over 50 thousand tons annually. According to CD, these producer and distributor stocks represent the second largest amount of stocks next to electric utilities.

Stocks by consuming sector for the periods ending March and June 1980 are (in thousand short tons):

	Producers & Distributors	Electric Utilities	Coke Plants	Other Industrials
March	40,577	157,625	9,317	9,695
June	44,935	178,959	9,913	10,332

Two factors should be considered when discussing the use of these data in the MER:

- The definition of producer stocks is unclear since the survey form that collects stocks is Form EIA-6 where production and distribution data are interwoven; thus producer stocks cannot be isolated.
- Producer and distributor stocks are reported quarterly on Form EIA-6, which means that their addition to the MER would result in columns requiring the notation "N/A " for a portion of the year due to reporting delays.

Coal Data in the MER

This part of the report concentrates on three issues:

- Coal Rank Data
- Coal Cost and Quality Data
- Production, Export, and Import Data

Coal Rank. Ranking is one of a number of methods available for categorizing coal quality and suitability. Coal rank is determined by the percentage of fixed carbon and heat content to volatile matter and moisture. In descending order of heat content, the ranks of coal are:

- Bituminous (13,500 Btu/pound)
- Anthracite (13,000 Btu/pound)
- Subbituminous (9,500 Btu/pound)
- Lignite (7,000 Btu/pound)

The Office of Energy Data Operations (OEDO) collects coal rank data on a periodic basis from three consuming sectors:

- Electric Utilities (FPC 423)
- Coke Plants (EIA-5)
- Other Industrials (EIA-3)

The OEDO Coal Production Report (EIA-7) and Coal Distribution Report (EIA-6) do not require data on coal to be reported by rank. Consequently, OEDO coal and electric power publications rarely present coal data by rank. As shown in Exhibit 5, comprehensive coal rank data are currently published only in Cost and Quality of Fuels for Electric Power Plants (CQF). However, it should be noted that the CQF contains more detailed data on coal by sulfur content than coal by rank.

Coal data are included in five of the MER's nine parts:

- Executive Summary
- Consumption
- Coal;
- Electric Utilities
- Price

Coal data are displayed by rank in one section: Electric Utilities. There are advantages and disadvantages to the presentation of coal rank data in this one chapter. The advantages are:

- Coal rank is an indicator of the quality of coal required and used at electric utilities.
- Electric utilities are the major consumers of coal (80%).
- Coal rank data provide MER users with more comprehensive coal data.

Exhibit 5: Coal Data in OEDO Publications

	Production	Consumption	Imports	Exports	Shipments	Fuel Receipts	Stocks	Price
Weekly Coal Production ^{1/}	A, B/L	A, B/L	B	A, B/L			A, B/L	
Coal Distribution Quarterly	C				C		C	
Electric Power Monthly		C				B,S, L		C
Cost and Quality of Fuels for Electric Power Plants						A,B,S,L		C
Proposed QCR	C	C	C	C	C	A,B,S,L	C	A,B,S,L
Coal and Coke Report		A,B					A,B	
Monthly Energy Review Electric Utility Section		A,B/SB L					A,B/SB L	
All Other Sections	C	C	C	C			C	C

LEGEND:

- A = Anthracite
- B = Bituminous
- SB = Subbituminous
- L = Lignite
- B/SB = Subbituminous and Bituminous data are combined under the heading Bituminous.
- B/L = Bituminous, subbituminous and lignite data combined in one figure.
- C = Anthracite, Subbituminous, Bituminous, and lignite data combined in one figure.

^{1/} According to the publication, these data will be combined this year.

The disadvantages are:

- Display of coal data by rank in the electric utility section is inconsistent with the presentation of coal data as aggregate coal figures in the remainder of the publication (including the coal section).
- The MER is a summary publication and detailed coal rank data may detract from the presentation of "summary" coal data.
- The MER contains more detailed electric utility consumption and stocks data than relevant subject-specific publications such as Weekly Coal Production (WCP) and the Electric Power Monthly. The WCP currently presents some consumption and stocks by rank, but will begin showing these data as aggregate coal figures sometime this year.

There are three options available that address these disadvantages.

Option 1: Eliminate Coal Rank Data

Under this option anthracite, bituminous and lignite stocks at electric utilities and consumption data would be combined into one "coal" number.

Advantages of Option 1.

- Coal data will be uniformly displayed throughout the MER.
- The MER will more closely follow the format of current OEDO coal and electric publications.

Disadvantages of Option 1.

- The MER will contain no coal quality data (rank being a major quality classification of coal).

Option 2: Expand Coal Rank Data in the Coal Section.

Under this option, electric utility stocks and consumption data will continue to be presented by coal rank. In addition, the data in the coal chapter will be expanded to include rank data.

Consumption and Stocks by Rank

Imports and Exports by Rank

Exports

	Anthracite	Bituminous	Lignite	Total
1950	10.0	25.0	15.0	50.0
1955	12.0	28.0	18.0	58.0
1960	15.0	30.0	20.0	65.0
1965	18.0	32.0	22.0	72.0
1970	20.0	35.0	25.0	80.0
1975	22.0	38.0	28.0	88.0
1980	25.0	40.0	30.0	95.0
1985	28.0	42.0	32.0	102.0
1990	30.0	45.0	35.0	110.0
1995	32.0	48.0	38.0	118.0
2000	35.0	50.0	40.0	125.0
2005	38.0	52.0	42.0	132.0
2010	40.0	55.0	45.0	140.0
2015	42.0	58.0	48.0	148.0
2020	45.0	60.0	50.0	155.0
2025	48.0	62.0	52.0	162.0
2030	50.0	65.0	55.0	170.0
2035	52.0	68.0	58.0	178.0
2040	55.0	70.0	60.0	185.0
2045	58.0	72.0	62.0	192.0
2050	60.0	75.0	65.0	200.0
2055	62.0	78.0	68.0	208.0
2060	65.0	80.0	70.0	215.0
2065	68.0	82.0	72.0	222.0
2070	70.0	85.0	75.0	230.0
2075	72.0	88.0	78.0	238.0
2080	75.0	90.0	80.0	245.0
2085	78.0	92.0	82.0	252.0
2090	80.0	95.0	85.0	260.0
2095	82.0	98.0	88.0	268.0
2100	85.0	100.0	90.0	275.0

Thousand short tons

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Exhibit 7. Imports and Exports by Rank Table

Consumption by Rank

Other
Industrial

Thousand short tons

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32

Stocks by Rank

· Other
Industrial

Thousand short tons

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Advantage of Option 2.

- Consistent presentation of coal rank data between the coal and electric utility chapters.
- More comprehensive coal quality data.

Disadvantages of Option 2.

- The MER will contain the most detailed coal data of any OEDO publication.
- Two of the three consuming sectors report data on a quarterly basis.
- Increased number of pages required..

Option 3. Expand coal data in the price section.

Coal cost data in the MER is limited to one column in the table "Cost of Fossil Fuels delivered to Steam - Electric Utility Plants. (Cents per million BTU)." As previously discussed, ranking is a method of categorizing coal quality and suitability, and has definite effect on price. Therefore the price section is a logical place to present more detailed coal rank data. There are two alternative presentations that can be used:

- Alternative A. Expanded Cost and Quality Data for Fossil Fuels at Electric Utilities.
- Alternative A
 - One page w/7 columns:

Coal Cost by Rank
Fuel Oil Cost
Natural Gas Cost

(See Exhibit 10)
 - One page w/5 columns:

Average Retail Electricity Prices

 - Note: These two tables will replace the "Electricity Price" table currently in the MER.

Fossil Fuels - Electric Utilities

Gas

Natural
Gas

Cents per million Btu

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. A vertical line runs down the left side, creating a margin. The paper appears to be from a notebook or a standard sheet of stationery. There are some minor dark specks scattered across the surface, likely due to dust or scanning artifacts.

Exhibit 10. Price of Fossil Fuels at Electric Utilities Table

- Alternative B. Coal cost and value table
 - One page w/9 columns:

(See Exhibit 11)	Import value by rank
	Export value by rank
	Receipts value by rank
	at all consumers.
 - Note: This table would augment the existing "Electricity Price" table and will be especially useful if detailed coal rank data are displayed in the coal section. Coal rank data are available from electric utilities, coke plants and the other industrial sector.

Advantages of Option 3.

- More detailed cost and quality data.

Disadvantages of Option 3.

- The MER will include more detailed coal rank data than any OEDO coal or electric publication.
- Increased size of the MER.

Summary

Of the three options, the first, elimination of coal rank data in the electric utility chapter seems the most appropriate for the MER. The trend in current OEDO coal and electric power publications has been to integrate all ranks of coal into one set of coal figures. It is inconsistent for the summary MER to contain more detailed data than specific coal and electric power publications such as the EPM and the CQF.

Cost and quality Data

A number of factors influence the value or price of coal at consumers.

Some of these are:

- Coal Rank
- Sulfur Content
- Coking Properties
- Type of Purchase
- Type of Mine

MAXIMA has conducted two surveys among coal data users, including an extensive requirements study among users of coal production data conducted for Oak Ridge National Laboratory and a limited survey of users of OEDO coal publications. Coal cost and and quality data were frequently cited as being of primary importance to users. OEDO collects value data from producers annually (Form EIA-7A) and from three consuming sectors on a monthly (Electric Utilities (Form FPC-423) and/or quarterly (coke plants and other industrial) basis. Electric utilities report extensive data on coal value and purchases, including:

- District of origin
- Type of mine
- Type of purchase
- Coal rank
- Average BTU of coal per pound
- Sulfur Content
- Ash Content
- Cost in cents per million BTU

Coke plants and other industrial surveys are less comprehensive in that they only include coal cost data by rank and type of purchase. In the monthly publication, Cost and Quality of Fuels at Electric Power Plants, the of coal is displayed by state and is broken down by:

- Sulfur content
- Type of purchase
- Mining method

The quantity, cents per million BTU and dollars per ton, are presented for each of the three types of data.

The Electric Power Monthly contains coal price data broken down by:

- Type of mining method.
- Type of contract

No monthly or quarterly data are published on the price or value of coal at coke plants or for the other industrial sector.

The Monthly Energy Review includes coal cost data in the table "Cost of Fossil Fuels Delivered to Steam Electric Power Plants." Given the MER's intention to provide summary data on the major components of energy - and users of the publication, may be appropriate to increase the amount of coal cost and/or quality data presented in the MER. The data currently depicted may be adequate for the average reader:

- The table contains summary data on prices at the largest coal consuming sector. Electric utilities consume 80 percent of domestically produced coal.
- The cost of coal at electric utilities has a large impact on the prices of electricity. Over 50 percent of the electrical power generated at utilities is through the use of coal as a fuel source.
- The display of fuel costs and electricity costs on the same page shows their inter-relationships.

However, coal price data may not be sufficiently covered:

- Twenty percent of coal consumers, including coke plants are not represented.
- Without data on coal quality, especially sulfur content, it is difficult to assess the impact of environmental regulation or deregulation on the price of coal.

- An average coal price ignores rank, sulfur content, type of purchase, and other factors influencing prices.

There are a number of options that are available that address these disadvantages.

Option 1: Increase amount of Electric Utility Fuel Quality Data.

This option was discussed in the previous section on coal rank data. However, cost of coal by rank is not published by OEDO. Data are published in the EPM and CQF on the cost of coal by:

- Sulfur content
- Type of mine
- Type of purchase.

Each of the above factors has an impact on the price of coal and electricity. This option requires that a new page be added to the price section, Coal Cost and Quality, containing ten columns (See Exhibit 12):

- Cost of Coal by Mine Method
 - Underground
 - Strip and Auger
- Cost of Coal by Type of Purchase
 - Spot
 - Contract
- Cost of Coal by Sulfur Content
 - 0.5% or less
 - More than 0.5% up to 1.0%
 - More than 1.0% up to 1.5%
 - More than 1.5% up to 2.0%
 - More than 2.0% up to 3.0%
 - Average

Coal - Electric Utilities

Delivered Price
by Sulfur Content

0.5%	0.5%	1.1%	1.6%	2.1%	More than
or less	to 1.0%	to 1.5%	to 2%	to 3%	3.1%

Dollars per short ton

41

There are two units of measure that can be used:

- Cents per million Btu
- Dollars per ton

To use both would increase the space required for the table to two pages. The use of dollars per ton will make the table more compatible with the coal data in coal and electric utility sections.

The advantages of more detailed electric utility coal cost and quality data are:

- Eighty percent of the U.S. coal consumption is represented;
- Data augment those in the table "Cost of Fossil Fuels Delivered to Steam-Electric Plants" and show the relationships between cost and quality of coal, average national cost of coal and electricity prices; and
- All cost and quality coal data are published in the CQF.

However, a coal cost and quality page may not be appropriate for the MER:

- The data may be too detailed for inclusion in the MER;
- National coal prices ignore variations in price caused by location of the consumer and may not be useful; and
- Increased coal cost data will require an extra page be added to the MER.

Option 2: Increase Consumers Category Coverage.

A second option for coal cost data is to include a page in the price section that contains data on the price of coal at industrial consumers (electric utilities, other industrials, coke plants) by type of contract and type of mine. The data can be included as either an addition or alternative to the expanded electric utility cost and quality data discussed under Option 1.

A page containing purchase and mining data by consumer category will require six columns (See Exhibit 13):

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of eighty percent of domestic coal consumption is presented and the data are currently published.

Import, Export, and Production Data

The first page of the Coal section of the MER presents data on five coal industry functions:

- Production
- Consumption
- Imports
- Exports
- Stocks

The chapter also includes two additional tables:

- Consumption by Consumer Category
- Stocks by Industrial Consumer Category.

The coal chapter in the MER effectively summarizes data published in other OEDO coal publications, notably Weekly Coal Production. However, there are two areas where more detailed data may be of importance to users of the MER:

- Coal Production
- Coal Imports/Exports

As discussed previously, OEDO does not collect, on a monthly or quarterly basis, comprehensive production data, such as production by rank, state, type of mine and number of miners employed.

The WCP includes three types of data on imports and exports:

- Type of Coal
- Country of Destination/Origin
- Value

It also includes the Port of Exit for coal exports.

The WCP lists six types of coal exports and four types of coal imports:

● <u>Imports</u>	● <u>Exports</u>
- Bituminous Coal	- Low Volatile and Metallurgical
- Other	- Other
- Coke	- Lignite
- Briquets	- Anthracite
	- Coke
	- Briquets

The January 30th issue listed 38 countries of destination and fourteen countries of origin. Price data are available on imports and exports. The WCP lists six major Ports of Exit for coal exports. Based on the data published in the WCP, an import/export page could be put in the MER. One reason for including such a page is the quantity and value of coal exports.

In 1980, bituminous coal exports accounted for 1.5 percent of the value of total U.S. exports (3,328 million dollars¹ vs. a U.S. total of 216,436 million dollars²) and 41 percent of energy exports (compared to a U.S. total of 7,982 million dollars³). In 1980, coal exports increased 41 percent over 1979.⁴ Coal imports were relatively small in value in 1980, being only thirty million dollars (down twenty one million dollars from 1979⁵).

¹ Weekly Coal Production, March 6, 1981, p. 6

² MER, March 1981, p. 10

³ MER, March 1981, p. 10

⁴ MER, March 1981, p.1

⁵ Weekly Coal Production, March 6, 1981, p.12

Coal export and import quantity and value data may be too detailed for inclusion in the MER. A coal net import quantity is presented in two tables in the executive summary and import and export figures are displayed in the coal section's summary page.

If more detailed coal import and export data are included in the MER, there are a number of possible data elements that can be displayed.

Option 1. Exports and Imports by Destination/Origin

Under this option, the destination or origin of coal exports and imports will be displayed on one page. One problem with this option is the number of importing/exporting countries - 52 in all. There are two alternative forms of display:

- Imports and Exports by Continent (10 columns, 12 with totals); or
- Imports and Exports by selected countries.

Either of these displays will provide more import/export data than the MER now includes. However, data contained on either of these tables may be too general to provide an accurate overview of import or export markets.

Option 2. Imports and Exports by Rank.

This option was discussed in the coal rank section of this report. Imports and exports by rank are published in the Weekly Coal Production. However, the MER currently contains rank data only in the electric utility section.

Summary

The options presented in this section of the report will increase the MER's coverage of imports and exports. However, the topic may not be of sufficient concern to the majority of the MER's readers to be included.

A second issue is whether enough data can be displayed to provide an accurate overview in one or two pages. Readers requiring specific coal import/export data can refer to the Weekly Coal Production.

The MER does not contain value data on coal imports and exports. Coal import and export values could be included in a half page table in the price section.

Electric Power

This part of the report consists of a discussion of issues concerning the electric power data in the Monthly Energy Review (MER). These issues include:

- Electric Utility Data Coverage in the MER and Other OEDO Publications
- Electric Power Data Issues

Electric Utility Data Coverage in the Monthly Energy Review (MER) and Other OEDO Publications

The Monthly Energy Review (MER) references three reporting forms for the majority of its domestic electric power data:

- FPC Form 4, "Monthly Power Plant Report," which accounts for 100 percent of total electric utility generation;
- FPC 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants," which accounts for 95 percent of total electric utility fossil fuel deliveries; and
- FERC 5, "Electric Utility Monthly Statement," which accounts for 75 percent of total electric utility generation.

The FPC Form 4 is used to collect data on net electrical generation, fuel consumption, stocks and installed capacity. The FPC 423 covers fuel price and quality data and the FERC 5 is used to collect data on electric utility sales and revenues.

The data from these forms appear in three other OEDO monthly publications:

- The Electric Power Monthly;
- Cost and Quality of Fuels for Electric Plants; and
- Sales, Revenue and Income of Electric Utilities.

Of the three publications, the Electric Power Monthly includes the widest range of electric utility generation data. Its chapters include:

- Net Generation (FPC Form 4)
- Net Energy for Load (ERA 119M)
- Peak Load and Net Capability (ERA 119M)
- Fuel Consumption (FPC Form 4)
- Fuel Stocks (FPC Form 4)
- Fuel Deliveries (FPC 423)
- Price of Fuel Deliveries (FPC 423)
- Prices of Retail Electricity (EIA 101)

Cost and Quality of Fuels for Electric Power Plants (CQF) is a single source publication containing extensive cost and quality data (rank, sulfur content, type of purchase) collected on the FPC 423.

Sales, Revenue and Income of Electric Utilities (SRI) is another single source publication and displays data from the FERC 5. The SRI contains two tables. Table 1 contains revenue and sales data from selected class A privately owned utilities which represent approximately seventy-five percent of total electric utility generation. Table 2 consists of sales data to ultimate consumers which, based on the FERC 5 and other data, have been adjusted to represent one hundred percent of total electric utility sales. For more comprehensive data on these publications see Section 2 of this report.

The types of data in these publications fall into three general categories. These are:

1. Fuel to Generate Electricity
 - Fuel Receipts (Quantity)
 - Fuel Receipts (Quality)

- Fuel Receipts (Prices)
- Fuel Consumption
- Fuel Stocks
- 2. Generation
 - Net Energy for Load
 - Peak Load - Net Capability
 - Net Generation
- 3. Electricity Sales/Consumption
 - Sales to Ultimate Consumers
 - Electric Utility Revenues
 - Retail Electricity Prices in Selected Cities.

Of these thirteen data types, the MER includes:

- 1. Fuels to Generate Electricity
 - Fuel Receipt Prices
 - Fuel Consumption
 - Fuel Stocks
- 2. Generation
 - Net Generation
- 3. Electricity Sales/Consumption
 - Sales to Consumers

In addition to the data types it shares with other electric utilities, the MER includes:

- Electricity Import and Export data
- Power Plant Status Data
- Nuclear Generation by Non-Communist Countries
- Average Retail Electricity Prices by Consumer Category.

Although the degree of coverage varies, the MER includes some data on five of the thirteen data types included in the EPM, CQF, and SRI. The six data types that are not included are:

- Fuel Receipts (Quantity)
- Fuel Receipts (Quality)
- Net Energy for Load

- Peak Load - Net Capacity
- Electric Utility Revenues
- Retail Electricity Prices in Selected Cities.

Although the MER does not contain the retail prices in selected cities, it includes a national average for electricity prices by consumer category, which provides essentially the same overview of the data.

The following paragraphs contain a discussion of the relative merits of including additional electric power data in the MER.

Electric Utility Revenues. Although the MER does not contain a table displaying electric utility revenues, a general figure can be computed using the data from the Electricity Sales (million kilowatt hours) table, in the Electric Utility chapter and the data in the Average Retail Electricity Prices (cents per kilowatt hour) table in the Prices section.

Net Energy for Load. The Electric Power Monthly contains a chapter entitled "Net Energy For Load" and defines the term as "net generation by a system's own plants plus energy receipts minus energy deliveries." Electric utilities sell power to each other in order to meet increased electrical demands by consumers. With the possible exception of discrepancies caused by small energy transactions between domestic utilities and those in Canada and Mexico, an aggregate national net energy for load figure should be close to the statistics published for Net Generation currently in the MER. For example:

	Net Energy for Load (Gigawatt hours)	Net Generation
May 1980	175,733	173,091
November 1980	178,552	175,989

(Another possible reason for the inconsistency between numbers may be the difference in coverage between the Net Generation reporting form (FPC 4, 100 percent of total generation) and that of the Net Energy for Load form (12E-2, estimated 96 percent of total generation.))

Given the similarity of coverage between the two types of data, it is questionable whether the inclusion of net energy for load data in the MER will be of value to its users.

Peak Load - Net Capability. The Peak Load - Net Capability chapter of the MER contains a wide range of electric utility data, including

- System Net Capability
 - Running and Quick Start
 - Available/Not Needed
 - Scheduled Maintenance
 - Fuel Forced Outage
 - Other Unavailable
- Capability and Peak Load Data
 - Installed Capacity
 - System Net Capability
 - Demand on Generation
 - Demand on Receipts
 - Demand on Deliveries
 - Peak Load.

A system's net capability is the amount of power a utility can generate at the time of peak load or period of heaviest electricity demand during a month. Installed capacity is the amount of electrical power a utility generator can produce, as specified by the manufacturer. On a national basis, installed capacity changes only when new powerplants or generators are added. Net capability varies monthly due to maintenance requirements.

These data are useful for a greater understanding of electric utilities and their activities. However, data of this specificity may exceed the scope of the MER and confuse readers without requisite background knowledge.

Fuel Receipts (Quality). One of the options discussed in the coal section of this report was to include a coal cost and quality table including data on sulfur content and other factors affecting the price of coal at utilities. This table had three purposes:

- To display cost and quality data on coal to electric power plants
- To provide a general indication of marketplace prices for coal based on data from the largest consumer of coal
- To provide data on quality factors influencing the average prices shown in electric utility fuel price table.

The MER price section now contains a table, Average No. 6 Residual Fuel Oil Prices, which presents the average and wholesale cost of No. 6 oil by sulfur content. The majority of oil consumed by electric utilities is F.O. No. 6 (28.5 million barrels vs. a total of 29.5 million barrels in November 1980¹). This table may be sufficient to generally represent cost and quality factors affecting oil receipts prices at electric power plants.

Sulfur content is not a factor in the price of natural gas. In addition, the MER contains data on prices of natural gas at the well head, delivered to electric utilities and for residential heating.

If a coal cost and quality page is added to the MER, the current petroleum and gas tables should provide a general indication of the inter-relationships between the quality of fuels, their cost at electric utilities and the prices of retail electricity.

Fuel Receipts (Quantity). The MER's electric utility chapter contains two types of fuel data: consumption and stocks. Consumption of coal, petroleum, petroleum coke and gas is displayed in the table, Primary Energy Consumed to Produce Electricity. Stocks data are displayed in "End of Month Coal and Petroleum Stocks." The inclusion of receipts data in the MER would be helpful to readers trying to "balance" fuel inputs and outputs at electric utilities. However, the purpose of the MER is to provide summary data on

¹ Cost and Quality of Fuels for Electric Utility Plants, November 1980, p. 16

energy and fuel sources. The most important aspects of fuel at electric utilities are consumption, stocks and price. The price of fuel receipts is covered in the price section. The advantages of adding receipts data are small and may not be consistent with the general purpose of the MER.

Summary

The review of the MER's coverage of electric utility data in comparison to the EPM, CQF, and SRI indicates that the electric utility data not included in the MER, but in these other publications, can either be constructed, based on the data currently published (Utility Revenues) or are too detailed and outside of the scope of the MER's purpose (Fuel Receipts).

Electric Power Data Issues

This part of the report consists of a discussion of issues concerning electric power data included in the MER:

- Net Electricity Production vs. Electricity Sales
- Display of Fuel Consumption Data
- Presentation of Nuclear Power Data.

Electricity Production vs. Electricity Sales. The first two tables of the electric utility section are:

- Net Electricity Production by Primary Energy Source
- Electricity Sales.

The data on the first table are taken from the FPC Form 4, which has 100 percent coverage of electric utility generation. The data on the second table, Electricity Sales, are taken from Table 2 of the monthly publication, Sales Revenue and Income of Electric Utilities, which is based on the FERC 5 Electric Utility Monthly Statement (75 percent coverage), other data from other sources (8 percent), and adjusted to an estimated 100 percent coverage of total electric utility sales.

To the average reader, there appears to be an inconsistency between the data in the electricity production table and those in the electricity sales. The data from the totals columns in the two tables are:

1980	Net Electricity Production	Electricity Sales	Percent Difference
January	200,027	179,660	9.0
February	188,708	178,658	9.5
March	187,542	174,368	9.3
April	168,562	161,703	9.6
May	175,733	154,851	8.8
June	189,430	164,872	8.7
July	216,160	185,882	8.6
August	215,435	196,205	9.1
September	191,483	190,139	9.9
October	178,541	170,078	9.5
November	178,552	162,174	9.1
December	195,420	175,607	9.0
TOTAL	2,285,593	2,094,197	9.2

As virtually no electrical energy is stored, the nine percent difference appears to be unaccountable. If this is due to natural phenomena (line transmission losses), data coverage problems between the two forms, or for other reasons, a footnote or explanatory note explaining the differences in data would be helpful to the reader.

Display of Fuel Consumption Data. The third and fourth tables of the Electric Utilities section of the MER concentrate on utility petroleum coal and gas consumption of stocks. The two tables are accompanied by five graphs. Data on the three energy forms are displayed in the tables and graphs in their own units of measurement:

- Coal and Petroleum Coke in short tons
- Petroleum in barrels
- Gas in cubic feet.

The units of measurement used in the stocks and consumption tables and graphs of the electric utilities section are clearly marked. In addition, the display of all stocks and consumption data in two tables and five graphs makes the data easy to reference and makes this an economical format. The Electric Power Monthly takes a similar approach in graphing coal, oil and gas consumption for the NERC regions. However, there are two reasons why

an alternative format for the display of fuel consumption and stocks data may be worth considering:

- The use of three units of measurement in one table, or series of graphs on one page, may invite incorrect comparisons and diminish the clarity of relationships between data. For example, in December of 1980, utilities consumed approximately 600 million short tons of coal and 3 billion cubic feet of natural gas. However, as a fuel source, coal generated three times the amount of electricity that gas did.
- The current display is inconsistent with the overall tabular and graphic formats throughout the rest of the MER that generally use one unit of measurement per table.

There are a number of options available to eliminate the probability of faulty comparisons and make these tables and graphs more consistent with the overall format of the MER.

Option 1. Cosmetic Changes

The first and simplest option for changing the table format is the use of vertical lines between columns having different units of measurement (See Exhibit 15). The advantages of this approach are that it is relatively easy to implement and indicates that the data in the columns are different. Unfortunately, the use of vertical lines in eight and seven column tables will produce visual clutter, which is inconsistent with the MER's usually clear tabular presentation. Under this option, the graphic format would remain unchanged.

Option 2. Fuel Sources Pages

The second option requires extensive changes to the current format. Under this option, the data from the stocks and consumption tables would be displayed by fuel source rather than by function. The tables and graphs in this series are:

Electric Utilities

Primary Energy Consumed to Produce Electricity

		Coal				Petroleum			Natural Gas
		Anthracite	Bituminous	Lignite	Total	Steam	Gas Turb./ Int. Comb.	Coke	
		Thousand short tons				Thousand barrels		Thousand short tons	Million cubic feet
1973	TOTAL	1,443	376,975	10,794	389,212	513,190	47,058	507	3,660,172
1974	TOTAL	1,498	378,643	11,670	391,811	483,146	53,128	625	3,443,428
1975	TOTAL	1,480	388,523	15,960	405,962	467,221	38,907	70	3,157,669
1976	TOTAL	1,350	425,205	21,817	448,371	514,077	41,843	68	3,080,868
1977	TOTAL	1,425	451,051	24,650	477,126	574,869	48,837	98	3,191,200
1978	TOTAL	1,064	448,763	31,407	481,235	588,319	47,520	398	3,188,363
1979	January	89	43,791	3,021	46,902	62,226	6,244	33	228,479
	February	75	39,010	2,806	41,891	51,655	4,959	32	226,896
	March	65	38,865	2,852	41,781	36,371	1,072	22	260,351
	April	66	36,362	2,551	38,979	33,800	1,682	15	260,974
	May	106	38,669	2,757	41,532	35,285	2,053	23	277,318
	June	103	40,882	3,023	44,008	39,258	2,314	25	320,196
	July	96	44,391	3,730	48,216	41,895	2,413	23	369,318
	August	97	44,553	3,899	48,549	42,478	2,416	23	375,370
	September	86	38,920	3,162	42,167	36,768	1,747	17	338,308
	October	75	39,634	3,261	42,970	33,445	1,132	16	323,082
	November	92	39,571	3,317	42,980	37,822	1,954	18	260,982
	December	96	43,480	3,499	47,075	41,601	1,906	20	249,249
	TOTAL	1,046	488,129	37,878	527,051	492,606	30,691	268	3,490,523
1980	January	74	46,516	3,779	50,369	41,107	2,197	54	276,784
	February	72	43,969	3,471	47,513	40,238	1,920	21	263,709
	March	83	43,244	3,357	46,685	33,113	1,097	13	283,845
	April	71	37,971	2,651	40,692	27,030	673	7	256,606
	May	88	38,116	3,282	41,464	27,090	841	11	281,862
	June	89	42,073	3,658	45,821	29,635	1,139	11	336,894
	TOTAL (Year-to-date)	476	251,889	20,178	272,543	198,514	8,168	118	1,699,688

Geographic coverage: the 50 United States and District of Columbia.
Totals may not equal sum of components due to independent rounding.
Source: • Federal Power Commission Form 4, "Monthly Power Plant Report."

- Table - Consumption and Stocks of Coal
- Graphs - Consumption of Coal
 - Stocks of Coal
- Table - Consumption and Stock of Petroleum
- Graphs - Consumption of Petroleum
 - Stocks of Petroleum
- Table - Consumption of Natural Gas
- Graph - Consumption of Natural Gas (See Exhibits 16, 17, 18.)

The advantages of this option are that consumption and stocks data for each fuel source can easily be compared and that the probability of incorrect comparisons being drawn between fuel source data are significantly reduced. However, there are some problems with this option. The first of these is the tabular display.

- Petroleum coke consumption and stocks are displayed in short tons, instead of barrels. If petroleum coke data are displayed with petroleum data, this table will have incomparable units of measurement. Although shifting petroleum coke to the coal table is apparently the simplest solution, to do so would be inconsistent with its display as a petroleum product in the rest of the MER. Fortunately, the amounts of petroleum coke consumed and in stock are very small in comparison to liquid petroleum (nine thousand short tons consumption in comparison to about forty million barrels), so the difference in data should be fairly obvious.
- This format is less economical than the current format, and requires six pages instead of four.

Another problem is the relatively small amount of data that could be displayed on each of the pages containing tables. Natural gas is not stockpiled and consumption data are presented in one column. A page containing only natural gas data would have one column. The petroleum and coal pages will have eight columns each. However, a previous discussion of coal rank data contained an option that all coal data be displayed as an aggregate number. If this option is implemented, the number of columns on the coal page will drop from eight to two.

Coal Consumption and Stocks

Stocks

Thousand short tons

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60

Petroleum Consumption and Stocks

Exhibit 17. Electric Utility Petroleum Consumption and Stocks Table

Gas Consumption

Million Cubic Feet

This image shows a completely blank white page. It is surrounded by a thick black border, which appears to be the edge of a scanner or a frame. There are no markings, text, or illustrations on the page itself.

62

Other Options

There are other options available that will eliminate the problem of incompatible units. However, these require severe modifications to the existing format or diminish the clarity of the data substantially. Some of these are briefly noted below.

Option: Convert consumption and stocks data to comparable units such as Btu.

Discussion: The MER currently has a table on consumption of energy electric utilities by fuel source. Therefore, another consumption table would be redundant. The use of Btu's may cause difficulties in establishing relationships between fuel source data in other sections and utility data and between utility stocks and consumption.

Option: Presentation of petroleum and gas consumption and stocks tabular and graphic data on separate fuel and function pages.

Discussion: This format option requires five pages:

Consumption of Coal (table and graph)

Stocks of Coal (table and graph)

Consumption of Petroleum (table and graph)

Stocks of Petroleum (table and graph)

Consumption of Gas (table and graph)

(See Exhibit 19.)

Although there will be sufficient space on each page for a table and a standard size graph, the graph will have to be placed on the page vertically, which is inconsistent with the format of the MER and generally accepted standards of graphic display.

Summary

Of the four options discussed, the first is the simplest to implement and has the fewest disadvantages.

Electric Utilities

Coal - Consumption

		Coal			
		Anthracite	Bituminous	Lignite	Total
		Thousand short tons			
1973	TOTAL	1,443	378,975	10,794	389,212
1974	TOTAL	1,498	378,643	11,670	391,811
1975	TOTAL	1,480	388,523	15,960	405,962
1976	TOTAL	1,350	425,205	21,817	448,371
1977	TOTAL	1,425	451,051	24,650	477,126
1978	TOTAL	1,084	448,783	31,407	481,235
1979	January	89	43,791	3,021	46,902
	February	75	39,010	2,806	41,891
	March	65	38,865	2,852	41,781
	April	66	36,362	2,551	38,979
	May	108	38,669	2,757	41,532
	June	103	40,882	3,023	44,008
	July	96	44,391	3,730	48,216
	August	97	44,553	3,899	48,549
	September	86	38,920	3,162	42,167
	October	75	39,634	3,261	42,970
	November	92	39,571	3,317	42,980
	December	96	43,480	3,499	47,075
	TOTAL	1,046	488,129	37,876	527,051
1980	January	74	46,516	3,779	50,369
	February	72	43,969	3,471	47,513
	March	83	43,244	3,357	46,685
	April	71	37,971	2,851	40,692
	May	86	38,116	3,262	41,464
	June	89	42,073	3,658	45,821
	TOTAL (Year-to-date)	476	251,889	20,178	272,543

Coal Consumption

Geographic coverage: the 50 United States and District of Columbia.
Totals may not equal sum of components due to independent rounding.
Source: • Federal Power Commission Form 4, "Monthly Power Plant Report."

Exhibit 19. Consumption Table and Graph

Nuclear Power Data. The Nuclear section of the MER consists of two tables containing data on various aspects of nuclear powerplant operations and status. No fuel data are included. Given this specificity of coverage, an argument could be made for the elimination of the Nuclear section in the MER and the placement of these two tables in the electric utilities section.

However, there are reasons why the presentation of nuclear data in a separate section is justified:

- Nuclear power is a controversial energy form and is the focus of considerable attention.
- The nuclear data published in the MER represent powerplant status licensing, capacity rather than fuel use data and are inconsistent with the type of information found in the electric utility section of the MER.

Given these reasons, the current separation of nuclear utility data from fossil fuel data seems to be the best method of presentation.

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Timeliness

The timeliness of published data is dependent on three factors:

- The periodicity of a reporting form. If data are collected quarterly, the data for the first month of that period have a built in delay;
- The length of time required for processing the data, including:
 - Lag time between the end of the reporting period and one hundred percent report submittal
 - Data processing and verification
- The length of time required for publication production and printing.

The majority of the coal and electric utility data in the MER are compiled from nine data sources or reporting forms (See Exhibit 20). The electric utilities forms are on a monthly reporting cycle and the majority of the coal forms are collected quarterly. The lag time (time between end of period and processing of all respondent data) for electric utility data is between 45 and 65 days. Coal forms have a longer time lag averaging about 90 days.

The Monthly Energy Review is published during the last week of the cover month, for example, the March 1981 issue was released for printing on March 25th. The publication requires about four weeks to produce.

The energy data in the MER have a time lag of about ninety days (for data from quarterly reports add sixty and thirty days to this figure for the first and second months of the quarter). Due to the length of time required for processing and publication, it is questionable whether a ninety day time lag can be significantly reduced under current data collection and processing procedures.

Form Number	Title	Periodicity	Due Date (Days After End of Report Period)	Approximate Processing lag
FPC 4	Monthly Power Plant Report	Monthly	10	45
FPC 423	Monthly Report of Cost and Quality of Fuels for Electric Power Plants	Monthly	45	65
FERC 5	Monthly Electric Utility Report	Monthly	40	50
EIA 6.	Coal Distribution Report	Quarterly	30	90
EIA 5	Coke Plant Report	Quarterly	30	90 (estimate)
EIA 3	Quarterly Coal Consumption Report Manufacturing Plants	Quarterly	30	90
Am. Assoc. of Railroads		Weekly	--	--
IM 455	BOC Import Report	Monthly		60
EM 522	BOC Export Report	Monthly		60

One of the MER's purposes is to provide data users with a timely accurate status report on energy and its components. Timeliness is one of the most important requirements of an energy data publication. Current energy data are often critical to assessing marketplace conditions and making informed decisions.

There are two options for improving the timeliness of the data in the MER:

- Increased use of estimates or preliminary numbers;
- Forecasting

EIA and OEDO offices have at their disposal statistical procedures for the estimation and forecasting of data. These procedures include time series analysis, regression analysis, and other forecasting techniques that include adjustments for seasonality. Indices are also potentially useful tools for predictions. The use of estimated and/or projected data will address the timeliness issue as data will be up-to-date. Revised additions can address forecasting errors. In the March 1981 issue of the MER, some petroleum figures for January are included with the notation: "Estimated data in *italics*. These are likely to be revised next month."

The use of estimated data throughout the MER will require that these numbers be displayed clearly and that revisions be included and notated on a regular basis.

Data forecasts are not widely used in OEDO publications. However, projected data can be derived through common statistical methods.

The use of projected data in the MER could compensate for the time lag between the end of a report period and the publication of the data. For example, using a six month projection, either in tables or graphs, the March 1981 MER would give users a rough idea of data for January through June.

The use of projections, especially in the areas of petroleum and petroleum pricing, could be controversial. However, forecasting would improve the timeliness of the publication and add to its value to users.

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Data Presentation

Previous sections of this report have contained analyses of issues concerning the content of the MER. This section consists of a discussion of the presentation of data in the MER and contains two parts:

- Data Ordering
- Table and Graph Formats.

Data Ordering

The issues involved in data ordering in the MER can be summarized in two areas:

- Column Ordering
- Aggregate and Disaggregate Data Ordering.

A discussion of each of these areas follows.

Column Ordering

The first page of the coal chapter in the MER is a summary page displaying data on five coal industry functions:

- Production
- Consumption
- Imports
- Exports
- Stocks.

The ordering of these columns emphasizes key relationships between elements of the data such as production and consumption data, and imports and exports. This emphasis on the ordering of data according to functional interrelationships is followed throughout the MER.

In a previous report, Review of a Proposed Quarterly Coal Publication, MAXIMA identified and analyzed the interrelationships between the major functions of the coal industry through the use of an input-output or balance equation. The equation used was:

Stock Change + Shipments - Net Exports - Losses = Domestic Consumption

$(EI - BI) + S - (E - I) - L = C$ where,

Production = Stock Change + Shipments of Producers

$P = (EI - BI)_d + S_d$ and,

Consumption = Stock Change + Receipts of Consumers

$C = (EI - BI)_o + R_o$ where,

BI = beginning inventories; EI = ending inventories; S = shipments;

E = exports; I = imports; L = losses; C = domestic consumption;

P = production; R = receipts; and subscripts d = producers and o = consumers.

Based on this equation, the recommendation was made that the chapters of the proposed quarterly publication be ordered according to one of two options.

The first ordering option was as follows:

- Production
- Stocks
- Net Exports
- Distribution (or Shipments)
- Receipts
- Consumption.

The second ordering option was:

- Supply
 - Production
 - Stocks
 - Imports
- Disposition
 - Exports
 - Shipments
 - Receipts
 - Consumption.

The MER does not include shipments or receipts data. Therefore, if the recommendations for ordering data which were made for the QCR were followed the order would look like one of the following two options:

- Option 1
 - Production
 - Stocks
 - Net Exports
 - Consumption
- Option 2
 - Production
 - Stocks
 - Imports
 - Exports
 - Consumption.

Either of these options will order the columns so that they represent a flow of coal from extraction through consumption.

The use of a balance equation as a basis for ordering coal data was recommended for a coal publication, based on assumptions about the use of the publication. However, the readership of the MER seems to require the presentation of more general relationships among energy components than specific supply and disposition data concerning a specific energy source. Therefore, any changes in column ordering in the MER must take into account the MER audience as well as consistency with other subject-specific publications that feed into the MER.

Aggregate and Disaggregate Data Ordering

Some of the tables in the MER consist of both aggregate and disaggregate data. A good example is in the electric utility section of the MER (page 64), where an electric utility fuel table has three columns of coal data by rank followed by a totals column.

There are two conventions for ordering aggregate to disaggregate data. The majority of OEDO publications follow a disaggregated to aggregated tabular format and place totals data in the farthest right column and the last line caption on the page. Some OEDO publications, such as the Coal Distribution Quarterly follow the convention of aggregate to disaggregate ordering.

MAXIMA's previous reports on the Electric Power Monthly and the Quarterly Coal Review recommended that both publications adopt an aggregate-to-dis-aggregate tabular format. The reasoning behind this recommendation was that placement of totals data simplified the referencing of summary data and provided readers with an overall perspective of the data immediately without the detailed display of data components. Although consistent use of either option presents the data clearly, aggregate to disaggregate ordering of tables seems more appropriate for a summary publication.

Table and Graph Formats

Our review of the MER was based on a number of criteria. The foremost of these was clarity of data presentation. EIA standards and statistical conventions were also factors in this review. In general, the formats currently used in the MER effectively and clearly display the data. Of the publications reviewed during this report, the formats used in MER were among the most effective OEDO publications in presenting the data clearly.

Three areas concerning table and graph formats of the MER merit discussion:

- Main Headings of Tables
- Endnotes
- Graphs .

It should be stressed that none of these areas have substantial problems. The material presented includes alternatives to the present format that may simplify the data presentation in the MER or further clarify the data displayed.

Electric Utilities

Electricity Sales¹

		Total	Residential	Commercial	Industrial	Other ²
		Million kilowatt-hours				
1973	TOTAL	1,712,909	579,231	388,266	686,085	59,326
1974	TOTAL	1,705,924	578,184	384,826	684,875	58,039
1975	TOTAL	1,729,810	584,712	401,674	675,271	68,153
1976	TOTAL	1,836,024	602,863	423,639	739,965	69,557
1977	TOTAL	1,928,845	641,134	444,931	772,291	70,489
1978	TOTAL	2,004,814	671,094	459,908	800,656	73,152
1979	January	185,387	69,939	40,362	68,324	6,762
	February	181,515	67,842	39,865	67,632	6,176
	March	R173,249	R59,314	R38,123	R69,783	R6,029
	April	R161,557	R50,079	R35,930	R69,944	R5,604
	May	157,688	45,378	36,259	70,421	5,630
	June	165,256	49,109	39,474	70,968	5,705
	July	176,495	58,054	42,528	69,938	5,975
	August	185,519	64,168	43,915	71,058	6,377
	September	178,220	59,251	42,416	70,075	6,479
	October	165,721	49,430	38,750	71,444	6,098
	November	162,096	49,480	36,656	69,787	6,173
	December	169,815	58,437	37,952	67,283	6,142
	TOTAL	R2,062,518	R680,481	R472,230	R836,657	R73,150
1980	January	179,660	65,852	39,516	67,634	6,658
	February	178,658	64,503	39,600	68,384	6,171
	March	174,368	60,497	38,784	69,058	6,028
	April	161,703	51,749	36,436	68,007	5,510
	TOTAL	694,389	242,601	154,336	273,083	24,367
	(Year-to-date)					

EXAMPLE

Geographic coverage: the 50 United States and District of Columbia.

Totals may not equal sum of components due to independent rounding.

¹Electricity sales to all ultimate consumers.

²Includes street lighting and transportation uses.

R = Revised data.

Source: • 1973 through February 1980: FPC Form 5, "Monthly Statement of Electric Operating Revenue and Income"; March 1980 forward: Federal Energy Regulatory Commission Form 5, "Electric Utility Company Monthly Statement."

Main Headings of Tables

Main headings in the tables of most OEDO publications include a reference number, title and headnote such as units of measurement. According to EIA standards, the title should include at least one or more of the following:

- Data Illustrated
- Geographic Coverage
- Periodicity
- Unit of Measure
- Reference Numbers.

Of these five items, the MER includes one - data illustrated. However, with the exception of a reference number, the rest of these items are clearly indicated in the line captions, boxheads or endnotes. This format is consistent throughout the MER.

The display of units of measure in the boxhead is the one area where the potential of user confusion exists. Many OEDO publications use two methods to display units of measure. In tables having only one unit of measure, these data are placed under the title. In tables having two or more units, these data are placed within the boxhead (see Exhibit 22). The advantage of this headnote format is that tables containing two or more units of measurement are clearly noticeable.

The MER uses one format for the display of single or multiple units of measurement. Although units of measure are clearly marked in the boxhead, the lack of a format difference between single and multiple unit tables may not clearly define the units of measurement associated with the data (see Exhibit 23).

The MER has relatively few multiple unit tables. Many of these multi-unit tables are in the petroleum section, where the last column, stocks, is a monthly rather than a daily figure.

Peak Load-Net Capability

Table 15. Capability and Peak Load Data by NERC Region, November 1980
(Megawatts)

National Electric Reliability Council Region and State	Installed Capacity	System Net Capability	Demand on Generation	Demand on Receipts ¹	Demand on Deliveries ¹	Peak Load
ECAR	92,142	86,527	51,371	9,238	6,733	53,876
MAAC ²	48,793	44,994	23,864	2,208	0	26,072
MAIN	47,807	43,473	24,653	3,702	3,487	24,868
MARCA (U.S.)	25,409	24,820	13,086	7,210	6,482	13,814
NPCC (U.S.)	52,221	53,364	30,785	7,658	6,279	32,164
SERC	114,760	114,760	68,653	9,735	6,163	72,225

Peak Load-Net Capability

Table 14. System Net Capability by NERC Region, November 1980

National Electric Reliability Council Region and State	Running & Quick Start		Available Not Needed		Scheduled Maintenance		Full Forced Outage		Other Unavailable	
	MW	Percent of Net	MW	Percent of Net	MW	Percent of Net	MW	Percent of Net	MW	Percent of Net
ECAR	58,101	67.1	3,922	4.5	12,480	14.4	7,525	8.7	4,499	5.2
MAAC ¹	30,003	66.7	426	0.9	7,147	15.9	6,992	15.5	426	0.9
MAIN	28,601	65.8	3,012	6.9	3,913	9.0	4,983	11.5	2,221	5.0
MARCA (U.S.)	18,228	73.4	2,052	8.3	2,007	8.2	2,007	8.2	2,007	8.2
NPCC (U.S.)	39,430									
SERC										

Petroleum

Jet Fuel

		Product Supplied	Refinery Production	Imports	Exports	Stocks
						Thousand barrels
			Thousand barrels per day			
1973	AVERAGE	1,059	859	212	4	‡28,544
1974	AVERAGE	993	836	163	3	‡29,435
1975	AVERAGE	1,001	871	133	2	‡30,380
1976	AVERAGE	987	918	76	2	‡32,085
1977	AVERAGE	1,039	973	75	2	‡34,548

Total Crude Oil and Petroleum Products Trade				
Total Imports (Excluding SPR)	SPR Imports ^a	Total Imports (Including SPR) ^a	Total Exports	Net Imports
Thousand barrels per day				
6,256			231	6,025
6,112			221	5,892
0,056			209	5,846
7,313			223	7,090
8,787	21	8,807	243	8,565
8,202	161	8,363	362	8,002
8,878	204	9,082	388	8,694
8,406	179	8,585	488	8,036
8,687	179	8,866	488	8,378

Exhibit 23: Single and Multiple Unit Tables in the MER

Although the display of units of measure in the boxheads differs from EIA standards, the consistency of the presentation of these data throughout the MER minimizes the necessity for a change of format. One easily implemented option, previously discussed in this report, is to place lines between columns of data to clearly indicate differences in units.

Endnotes

Endnotes fulfill three functions in most publications:

- Identify sources of data;
- Define unique symbols or terms; and
- Supply explanatory information.

The EIA Publication Manual and other style manuals usually describe endnotes as consisting of up to three parts in the following order:

- Footnotes: There are two types of footnotes.
 - Notes consisting of explanatory information, such as a definition or a caveat and are referenced in the text by a letter or number (a, 1).
 - Short phrases or caveats (R = Revised, E = Estimate) which are required frequently throughout a publication. These footnotes are referenced with a letter or symbol (R, E, (*)).
- Notes: Explanatory information on a table or figure can be displayed in a "Note." The common note found in EIA publications is "Totals may not equal the sum of the components due to independent rounding."
- Source: The source note identifies the form or publication from which data in tables or illustrations were obtained. A common format for the source note is, "Source . Form EIA 6, Coal Distribution Report, Energy Information Administration, U.S. Department of Energy." The note may contain two or more sources of data.

The Government Printing Office (GPO) Style Manual and the Energy Information Administration Publications Manual, Volumes 1 and 2 contain specific guidelines for endnotes.

The standards for footnotes within the GPO and EIA manuals are inconsistent in two areas. The Energy Information Administration Publications Manual, Volume 1 (February 1980) states:

"Each footnote is a self-contained unit. In each illustration or table, the first footnote begins with "a," the second with "b," and so forth. A single footnote may be keyed to several items in the same illustration.

A statement or source that recurs in a series of illustrations must be restated in full for each illustration. Do not use *ibid.* or other similar devices. Do not abbreviate author or title references in a footnote of an illustration or table."

In contrast, the Government Printing Office Style Manual, 1973 states:

"Footnotes and references

13.104. Footnotes to tables are numbered independently from footnotes to text.

13.105. Superior figures are used for footnote references, beginning with 1 in each table.

13.108. If a reference is repeated on another page, it should carry the original footnote; but, to prevent repetition, especially of a long note, it may carry instead, as a cross-reference, the words 'See footnote 1 (or 2, 3, etc.), p.-'"

Of the two sets of standards, the MER more closely adheres to the GPO format. All footnotes are referenced with numbers instead of letters and lengthy source notes are placed at the end of the chapter.

Some sections of the MER present data from a variety of sources. For example, coal production data are obtained from ten different sources whereas consumption data, which are displayed within the same table, are taken from five sources. When combined with footnotes and notes, an endnote containing these data would require a relatively large amount of space. Therefore, the placement of this information at the end of the chapter is a viable solution to this problem.

Another possible solution to the problem of extended endnotes is to reference publications instead of forms. The use of this option could simplify or eliminate requirements for explanatory and source notes. However, the implementation of this option will require an extensive effort in order to be successful. A referenced publication by the MER should contain comparable data, definitions and explanatory notes. Some coal and electric utility data in the MER are not completely comparable to similar data in other OEDO publications.

For example:

- The MER contains data on lignite stocks at electric utilities. Although the Weekly Coal Production (WCP) report contains electric utility stocks data, lignite and bituminous are combined, making lignite data impossible to reference.
- The Electric Power Monthly classifies petroleum coke as coal, while the MER puts these data under the heading of petroleum.
- The MER and WCP both contain monthly coal consumption figures which are estimated from quarterly reports. The MER includes a note explaining the estimation methodology while the WCP does not.

Graphic Formats

The MER primarily contains two types of graphs - cumulative and line. The cumulative graphs are used in the summary sections and the line graphs are used in the fuel source sections.

Although the cumulative graphs are attractively presented, some form of additional identification could be included to indicate that the areas on the graph represent proportions instead of absolute or actual numbers.

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Review of OEDO Publications

This section of the report consists of a discussion of data presentation issues relevant to all OEDO publications. The review focusses on two general areas:

- Data Organization; and
- Data Presentation.

The section on Data Organization consists of recommendations and options for the ordering of data within a publication and within chapters or sections. The next section, Data Presentation, addresses the presentation of data in tables, including titling, and endnotes.

The analysis, options and recommendations contained in this section of the report are based on a review of forty-six OEDO gas, oil, electric, coal and consolidated publications. Appendix A includes a list of these, as well as the results of our review of each publication format and content.

The diversity of OEDO publication content, periodicity, and constraints virtually guarantee that any standard will require exceptions. Therefore, all recommendations and options contained in this report are provided as general publication guidelines. However, where applicable, their use should improve the usefulness and consistency of OEDO publications.

OEDO publications vary widely in appearance. This diversity is attributable to available graphics production systems and other constraints. Even a general analysis of table and graph cosmetics in these forty-six publications would require an extensive review of these factors. Therefore, this report concentrates on substantive data presentation issues rather than cosmetics.

Data Organization

This section contains a discussion of the overall organization of data within OEDO publications including front and end matter and data ordering.

Front Matter

The EIA Publications Manual, Volume 1 describes front matter as consisting of one or more of the following components:

- Cover;
- Title Page;
- Back of Title;
- Half Title Page;
- Abstract;
- Letter of Transmittal;
- Foreward;
- Preface;
- Contents, including lists of illustrations and tables; and
- Executive Summary.

A number of OEDO publications also include sections entitled Highlights, Overview, Summary, Introduction and Scope of Publication. Virtually none of the self-covered publications (short periodicals that display data on the cover pages) include any front matter.

The preface, foreward and introduction are often the most important front matter components. They contain information which is necessary for a comprehensive understanding of the published data, such as:

- Publication purpose;
- Description of publication content;
- Data coverage; and
- Data limitations.

Of the publications reviewed, the Electric Power Monthly (EPM) most clearly presents the data through the inclusion of a comprehensive, two-page Scope of Publication (See Exhibits 24 and 25.)

2. Scope of Publication

This report presents monthly summaries of electric utility statistics at the national, regional, state, or local levels on the following subjects:

- Net Generation
- Net Energy for Load
- Peak Load and Net Capability
- Consumption (Fuel)
- Stocks (Fuel)
- Deliveries (Fuel)
- Price (Fuel Deliveries and Retail Electricity)

Each of these subjects is treated in a separate section in this publication, as shown in Table 1.

In addition, an appendix lists the thermal conversion factors.

Sources of Data

The electric utility data published in this report are compiled from four statistical forms filed monthly by electric utilities with the Energy Information Administration. The form numbers and titles are given in Table 1 and on each chart and table in the publication.

Coverage of Sources

The Form 4 data source represents 100 percent coverage of electric utilities with generating plants. However, none of the remaining four data sources represents 100 percent coverage of its field, as shown in Table 1.

The National Electric Reliability Council (NERC) data presented in this publication are limited to that portion applicable to the contiguous United States, thereby excluding that portion of NERC data applicable to the provinces in Canada. Also, in all tables excepting those in the Deliveries Section

and the Price Section, data from Alaska and Hawaii, which are not associated with a NERC council area, are added to the 48 State NERC subtotal to give a 50 State total. A map showing the NERC council areas is given near the end of this report.

Adjustments to Basic Data

No adjustments have been made to basic data. If it is necessary to extend source data to obtain 100 percent coverage, refer to the "Coverage of Sources" entries in Table 1.

Glossary

A glossary has been provided to give practical definitions of electric utility terms in this publication.

Reader's Comment Form

Your views concerning this publication will increase its usefulness. All comments regarding the accuracy, completeness, and organization will be appreciated. For your convenience, we have attached a self-addressed Reader's Comment Form at the back of this report.

Scope of Publication

Table 1. Source of Data and Coverage of Sources

Section of Publication	Source of Data	Coverage	Reporting Cycle	EIA Technical Contact
Net Generation	FPC Form 4, "Monthly Power Plant Report"	All electric utilities with generating plants, accounting for 100% of total electric utility generation.	Monthly	Melvin Johnson (202)252-6520
Consumption (Coal, Oil, and Gas) Stocks (Coal and Oil)				Muriel Moorhead (202)252-6521
Net Energy For Load	FPC Form 12E-2, "Supplemental Power Statement"	Major electric systems accounting for approximately 98 percent of total electric utility generation.	Monthly	Elsie Bess (202)252-6534
Peak Load, Net Capability				Dean Fennell (202)252-6523
Deliveries (Coal, Oil, and Gas)	FPC Form 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants"	Fossil fuel plants with a combined capacity of 25 MW or greater, accounting for approximately 95 percent of electric utility fossil fuel deliveries.	Monthly	Deborah Johnson (202)252-8952
Price (Coal, Oil, and Gas Delivered portion of section)				Kenneth McClevey (202)252-5310
				Hilary Salkov (202)252-6522
Price (Retail Electricity portion of section)	EIA 101, "Monthly Residential, Commercial and Industrial Electric Bill Data for the U.S. Bureau of Labor Statistics Consumer and Producer Price Indexes"	Retail electric bills in major U. S. cities for representative amounts of electricity consumed in residential, commercial, and industrial service.	Monthly	Beverly Byrdsong (202)252-5253
				Tabitha Chamberlain (202)252-6872
				Dean Fennell (202)252-6523
Editor				Carol French (202) 252-5311 Lawrence Prete (202) 252-6535
Publication Coordinator				Elsie Bess (202) 252-6534 Muriel Moorhead (202) 252-6521
Graphics				Elsie Bess (202) 252-6534 Lucinda Gilliam (202) 252-6524

Exhibit 25. EPM Scope of Publication

The EPM's purpose and contents are described within the text and its data sources and their coverage are displayed in a table. This consolidation of front matter saves space, facilitates referencing and clearly displays all relevant data. The inclusion of a Scope of Publication section is impractical in self-covered publications; however, the use of this format in larger periodicals will simplify and enhance the presentation of important data.

Most of the larger publications contain written or tabular data summaries within the front matter. These sections are usually titled Summary or Overview. The EIA Publications Manual uses the title "Executive Summary" for this section and defines its purpose as "primarily for government officials and others whose time is limited or who need only an overview of the publication."

The Executive Summary is a valuable tool for referencing data and establishing a perspective on the content of the publication. We recommend that summary sections be included in all larger OEDO publications and that these sections be consistently titled Executive Summary.

Most of the larger publications include lists of tables and illustrations. These references are useful and should be included in all OEDO publications.

Data Ordering

The majority of OEDO publications consist of statistical data in tabular form accompanied by a minimal amount of explanatory text. Therefore, the ordering of chapters, tables and graphs is important for establishing relationships between data and facilitating comparisons. The ordering of data within a publication should be determined by purpose and content. However, there are ordering options which are applicable to most publications.

Two data ordering options are used in virtually all OEDO publications that contain more than a few independent tables. The first option, disaggregate to aggregate data ordering, presents the most detailed data first and progresses to the most general (i.e., city, county, state, U.S.).

An example of disaggregate to aggregate ordering can be seen in the first chapter of the EPM, Net Generation, which begins with the table "Hydroelectric and Coal Net Generation by Fuel Source, Census Region and State," and concludes with "Total Net Generation by Census Region and State."

The second option, aggregate to disaggregate ordering reverses the order of display. If used consistently, either option describes the data clearly. However, the placement of totals data first in a publication or chapter helps to establish a perspective on the data that follow. When prefaced with summary tables, this ordering also facilitates referencing of general data and provides a logical starting point for users requiring more specific data.

A third option for data ordering is applicable to summary publications that contain data for each major function of an entire industry. A prime example of this kind of publication is the Electric Power Monthly. Under this option the ordering of chapters or data parallels a supply and disposition equation that attempts to balance energy input and output. Most balance equations are derived for one segment of an industry; i.e., refineries in the Petroleum Statement Monthly. Input/output equations can become cumbersome if a number of industry functions require balancing. However, they can be useful as general guidelines for data ordering.

There are other options for data ordering currently in use. Alphabetic ordering is used when organizing state data or, in a few publications, geographic areas such as P.A.D.s, Census Regions, or NERC regions are numbered and ordered accordingly.

End Matter

Most OEDO publications contain glossaries of terms. These are especially useful when data are aggregated into general headings that do not indicate what is included, i.e., "Other Industrial." Most of the larger publications included conversion factors and degree days. The conversion factor table is helpful in comparing data but the applicability of heating degree days to the published data are not fully explained in the text.

Data Presentation

This part of the report consists of a review of data presentation or display in OEDO publications.

Table Formats

As mentioned in the first section of this report, according to the Energy Information Administration Publications Manual, Volume 1, a formal table consists of five parts, including:

- Main heading, including reference number, title and headnote;
- Boxhead, including the spanners, subspanners and subhead;
- Stub or line captions;
- Field including field spanners and cells; and
- Endnotes including footnotes, notes and source references.

The formal table is illustrated in Exhibit 26. All of the components should combine "to arrange and present the data so that the meaning and style are readily grasped," (EIA Publications Manual, Volume 1).

We have reviewed each table component in a variety of OEDO publications based on this criterion, and on EIA and GPO standards.

Main Heading. The main heading consists of one optional and three required components:

- Reference number;
- Title;
- Headnote; and
- Running head (optional).

Reference numbers are used in a majority of OEDO publications. These numbers are an excellent tool for referencing data, especially when used with lists of illustrations and tables. Running heads (words or short phrases above the title that identify the data) are not required by EIA. However, they also

facilitate data referencing in longer publications or when a number of tables containing different types of data are presented without chapter or section divisions.

A variety of titling and headnote formats are currently in use within OEDO publications. Examples of titles are shown in Exhibit 13. The GPO style manual does not contain specific guidelines on the content of a title and the EIA style manual is somewhat ambiguous. It states:

"A well constructed title expresses at least one or more of the following things about the illustration in the following order:

- Data illustrated (what)
- Geographic area of measurement (where)
- Date of data (when)
- Unit of Measure (how classified)."

The title is one of the most important elements of a table and should clearly and consistently identify the data. One method that ensures that titles are consistent and comprehensive is the use of titling syntactic structure. An example of this type structure is:

- Energy Function (Production, Value);
- Energy Source (Coal, Oil);
- Industry Aggregation, where necessary (Producers, Electric Utilities);
- Other Identifier where necessary;
- Geographic Aggregation (State, U.S. Total);
- Reported Time Intervals; and
- Units of Measure.

There should be flexibility in the ordering of each of these components; however if this, or a similar structure is used throughout OEDO publications, the data within tables will be uniformly and clearly identified.

Exhibit 27. Headnotes in OEDO publications.

- Net Generation
Table 3. Oil and Gas Net Generation by Fuel Source, Census Region and State (Gigawatthours)
(Electric Power Monthly, June 1980, p.6.)
- Coal
Consumption - Bituminous, Lignite, and Anthracite
(Monthly Energy Review, October 1980, p.56.)
- East Central Reliability Coordination Agreement (ECAR) Peak Load (Megawatts)
(EIA Annual Report on Monthly Comparisons of Peak Demands and Energy for Load, May 1980, p.7.)
- Table 10. Typical Residential Electric Bills as of January 1, 1980. (Dollars)
(Typical Electric Bills, January 1, 1980, December 1980, pp.19-167.)
- Balance Sheet
(Statistics of Privately Owned Electric Utilities in the United States - 1979, Classes A and B Companies, October 1980, pp.46-119.)
- Table 1. Refinery Operations (Thousands of 42-Gallon Barrels)
(Monthly Petroleum Statistics Report, September 1980, p.9.)
- Table 1. Crude Distillation Capacity in the United States by Refinery in Descending Order: January 1, 1980 (Barrels per Calendar Day)
(Petroleum Refineries in the United States and U.S. Territories, January 1, 1980, pp.3-22.)
- Table 9. Domestic Distribution of Coal Produced in the U.S. by Coal Producing District, Census Region and State of Destination, Consumer Category and Method of Transportation: January-March 1980 (Thousand Short Tons)
(Coal Distribution, January-March 1980, August 29, 1980, pp.14-56.)

Boxheads. The EIA and GPO publication manuals provide standards for the language and layout of the stubhead, spanners and subspanners in formal tables.

Adhering to these standards will clearly identify the data within the majority of tables. Confusion can occur, however, when multiple spanners and subspanners appear. The use of more than three levels of spanners should, therefore, be avoided whenever possible.

Line Captions and the Field. The line captions and the field contain the actual data within a table. There are no major problems with the data displayed in the tables. The majority of tables placed totals data in the last, or bottom, line cell of the page and in the last, or farthest right, column. An alternative to this format is the presentation of totals data in the first line cell and column. This approach conforms to the standard of aggregate to disaggregate ordering and can be helpful in referencing totals data in multi-page tables.

Endnotes. As was mentioned in the first section of this report, endnotes fulfill three functions in most publications:

- Identify sources of data;
- Define unique symbols or terms; and
- Supply explanatory information.

There is a great deal of inconsistency among footnote formats in OEDO publications. In some publications numbers are used to reference footnotes while letters are used in others. EIA and GPO standards conflict on the correct format. The EIA manual states, "In each illustration or table, the first footnote begins with "a," the second with "b" and so forth." The GPO manual differs: "Superior figures are used for footnote references, beginning with 1 in each table."

There are also inconsistencies in the use of other reference symbols that identify zero values, estimated data, revised data and preliminary data. In some publications, the symbol is referenced with a number and identified in a footnote, while in others the symbol is identified in a note.

The issue of footnote and note inconsistency involves the diversity of publications, graphics systems and other factors and, as such, requires careful consideration.

A detailed set of guidelines should be issued by EIA to standardize the symbols, footnote references and overall footnote formats.

According to EIA standards, each table must be "self-contained" and display complete endnotes, including all data source information. The majority of OEDO publications conform to this standard, but there are exceptions such as the MER which was discussed in the first section of this report.

Appendix A

Review of OEDO Publications

Forty-six OEDO publications were reviewed for organization of format and presentation of data. Exhibit 14 displays a list of names and DOE numbers of these publications. In Exhibit 28, grids have been constructed to display the findings of this comparative review.

Exhibit 28. List of Reviewed OEDO Publications

1. (0004)
EIA Report on 500 KWH Residential Electric Bills in Major Cities Oct. 1980
2. (0010)
EIA Annual Report on Monthly Comparisons of Peak Demands and Energy for Load - 1976-1979
3. (0040)
Typical Electric Bills - January 1, 1980
4. (0050)
Report on Monthly Electric Energy and Peak Load Data for June 1980
5. (0033)
Steam-Electric Plant Construction Cost and Annual Production Expenses - 1978
6. (0044)
Statistics of Privately Owned Electric Utilities in the United States - 1979
7. (0095)
Inventory of Power Plants in the United States - December 1979
8. (0147)
Sales, Revenue, and Income of Electric Utilities, Oct. 1980
9. (0171)
Hydroelectric Plant Construction Cost and Annual Production Expenses 1977
10. (0191)
Cost and Quality of Fuels for Electric Utility Plants - 1979
11. (0226)
Electric Power Monthly Oct. 1980
12. (0118)
Bituminous Coal and Lignite Production and Mine Operations - 1977
13. (0120)
Coke and Coal Chemicals in 1979
14. (0121)
Coke and Coal Chemicals in July 1980
15. (0125)
Coal Distribution January - June 1980
16. (0218)
Weekly Coal Production - Bituminous and Lignite • Pennsylvania Anthracite

Exhibit 28. Continued

- (0011)
17. Monthly Petroleum Statistics Report - Sept. 1980
- (0013)
18. Heating Oil Prices and Margins (Preliminary) Oct. 1980
- (0032)
19. Monthly Petroleum Production Price Report - July 1980
- (0066)
20. Petroleum Market Shares-Sept. 1980
- (0208)
21. EIA Weekly Petroleum Status Report
- (0105)
22. Availability of Heavy Fuel Oils by Sulfur Level - July 1980
- (0109)
23. Crude Petroleum, Petroleum Products, and Natural Gas Liquids - April 1980
- (0111)
24. Petroleum Refineries in The United States and U.S. Territories - Jan. 1, 1980
- (0112)
25. Sales of Asphalt in 1979
- (0114)
26. Sales of Liquified Petroleum Gases and Ethane in 1979
- (0115)
27. Supply, Disposition, and Stocks of All Oils by P.A.D. Districts and Imports into the United States, by Country - Final 1978
- (0116)
28. Supply, Disposition, and Stocks of All Oils by P.A.D. Districts and Imports into the United States, by Country - 2nd Quarter 1980
- (0129)
29. Main Line Natural Gas Sales to Industrial Users: 1978
- (0130)
30. Natural and Synthetic Gas: Sept. 1980
- (0131)
31. Natural Gas Production and Consumption: 1978
- (0133)
32. World Natural Gas: 1976

Exhibit 28. Continued

- (0145)
- 33. Statistics of Interstate Natural Gas Pipeline Companies - 1979
- (0150)
- 34. Natural Gas Deliveries and Curtailments to End-Use Customers and Potential Needs for Additional Alternate Fuels - 1979-1980 Heating Season (November - March)
- (0167)
- 35. Gas Supplies of Interstate Natural Gas Pipeline Companies - 1978
- (0167) - 79
- 36. Preliminary Report of Domestic Natural Gas Reserves and Production Dedicated to Interstate Pipeline Companies - 1979
- (0180)
- 37. Gas Turbine Electric Plant Construction Cost and Annual Production Expenses - 1977
- (0188)
- 38. U.S. Imports and Exports of Natural Gas - 1979
- (0239)
- 39. Underground Natural Gas Storage in the United States - 1979 - 1980 Heating Year (April 1979-March 1980).
- (0151)
- 40. Underground Storage of Natural Gas by Interstate Pipeline Companies for 1978 and Winter 1978-1979
- (0008)
- 41. Quarterly Report to Congress - Jan. 1981
- (0035)
- 42. Monthly Energy Review - Jan. 1981
- (0173)
- 43. Annual Report to Congress - 1978
- (0214)
- 44. State Energy Data Report - 1960-1978
- (0219)
- 45. 1979 International Energy Annual - Aug. 1980
- (0253)
- 46. The Substitution of Coal for Oil and Natural Gas in the Industrial Sector Nov. 1980

Exhibit 29.. Format Organization of Selected OEDD Consolidated Publications

FORMAT ORGANIZATION	0008	0035	0173	0214	0219							
Type of Cover:												
Cover	X	X	X	X	X							
Self Cover												
Number of Pages	45	103	202	428	93							
Front Material:												
Table of Contents	X	X										
List of Tables												
List of Illustrations												
Foreword												
Preface												
Executive Summary		X			X							
Scope of Publication												
Highlights												
Overview			X									
Summary	X											
Introduction			X	X	X							
End Material:												
Glossary												
Index												
Conversion Factors												
Degree Days												
Other Appendices												

Exhibit 29. Format Organization of Selected OEDD Oil Publications

FORMAT ORGANIZATION	0011	0013	0032	0066	0105	0109	0111	0112	0114	0115	0116	0208
Type of Cover:												
Cover			X	X								
Self Cover	X	X			X	X	X	X	X	X	X	
Number of Pages	21	3	15	13	16	57	43	8	13	11	8	30
Front Material:												
Table of Contents	NA	NA		X	NA	NA	NA	NA	NA	NA	NA	X
List of Tables												
List of Illustrations												
Foreword												
Preface												
Executive Summary												
Scope of Publication												
Highlights												
Overview												X
Summary												
Introduction			X	X								
End Material:												
Glossary	NA	NA	X	X	NA	NA	NA	NA	NA	NA	NA	X
Index												
Conversion Factors												
Degree Days												X
Other Appendices												

Exhibit 29. Format Organization of Selected OEDO Electric Publications

FORMAT ORGANIZATION	0004	0010	0033	0040	0044	0050	0095	0147	0171	0191	0226	
Type of Cover:												
Cover			X	X	X		X		X	X	X	
Self Cover	X	X				X		X				
Number of Pages	4	23	199	214	613	15	551	3	126	60	123	
Front Material:												
Table of Contents	NA	NA	X	X	X	NA	X	NA	X	X	X	
List of Tables				X			X			X	X	
List of Illustrations				X			X				X	
Foreword												
Preface			X	X	X		X			X		
Executive Summary												
Scope of Publication											X	
Highlights			X								X	
Overview				X								
Summary			X						X			
Introduction			X						X			
End Material:												
Glossary	NA	NA	NA	NA		NA	X ^F					
Index					X							
Conversion Factors												
Degree Days												
Other Appendices												

NA = Not Applicable

X^F = Information Appendix

Exhibit 29. Format Organization of Selected OEDO Coal Publications

FORMAT ORGANIZATION	0118	0120	0121	0125	0218							
Type of Cover:												
Cover	X	X		X								
Self Cover			X		X							
Number of Pages	78	36	7	68	3							
Front Material:												
Table of Contents	X	X		X	NA							
List of Tables	X	X		X								
List of Illustrations	X			X								
Foreword				X								
Preface	X	X	X	X								
Executive Summary												
Scope of Publication												
Highlights	X											
Overview												
Summary		X	X									
Introduction	X											
End Material:												
Glossary	NA	NA	NA	NA								
Index												
Conversion Factors												
Degree Days												
Other Appendices												

NA = Not Applicable

Exhibit 29. Format Organization of Selected OEDO Gas Publications

FORMAT ORGANIZATION	0129	0130	0131	0133	0145	0150	0151	0167	0167 (79)	0180	0188	0239
Type of Cover:												
Cover	X	X	X	X			X	X				
Self Cover					X	X						
Number of Pages	72	1	12	8	262	155	33	117	6	104	13	30
Front Material:												
Table of Contents	X	NA	NA	NA		X		X	NA	X		
List of Tables	X				X	X		X				
List of Illustrations						X		X				
Foreword												
Preface								X				
Executive Summary												
Scope of Publication												
Highlights								X				
Overview						X	X					
Summary							X			X	X	X
Introduction						X	X			X	X	X
End Material:												
Glossary	NA	NA	NA	NA			NA	X	NA	NA	NA	X
Index					X							
Conversion Factors						X						
Degree Days												
Other Appendices						X		X				

NA = Not Applicable

Exhibit 29. Data Presentation of Selected OEDO Consolidated Publications

DATA PRESENTATION	0008	0035	0173	0214	0219										
Aggregate-to-Disaggregate		X	X	NA	NA										
Disaggregate-to-Aggregate	X														
Title Position of Tables:															
Above	X	X	X	X	X										
Below															
Title Position of Graphs:															
Above	NA	X	X	NA	NA										
Below															
Title Syntax:															
Energy Function	X	XGXT	XGXT	X	X										
Energy Source	X	XGXT	XGXT		X										
Energy Adverbial Phrase															
Geographic Aggregation	X														
Reported Time Interval			X ^T												
Unit of Measure	X	X ^G	XGXT	X	X										
Placement of "Totals" Line Cell:															
Top/Left															
Bottom/Right	X	X	X	X	X										
Order of Current & Historic Data:															
Past-to-Present															
Present-to-Past															

NA = Not Applicable
 XGXT = Information Appears
 in Both Graphs & Tables

Exhibit 29. Data Presentation of Selected OEDO Coal Publications

DATA PRESENTATION	0118	0120	0121	0125	0218						
Aggregate-to-Disaggregate		X	NA		NA						
Disaggregate-to-Aggregate	X			X							
Title Position of Tables:											
Above	X	X	X	X	X						
Below											
Title Position of Graphs:											
Above	X	NA	X	X	X						
Below											
Title Syntax:											
Energy Function	XGXT	X	XGXT	XGXT	XGXT						
Energy Source	XGXT	X	XGXT	XGXT	XGXT						
Energy Adverbial Phrase		X									
Geographic Aggregation				XGXT							
Reported Time Interval	XGXT	X	XT	XGXT	XGXT						
Unit of Measure	XG	X	XGXT	XGXT	XGXT						
Placement of "Totals" Line Cell:											
Top/Left				X							
Bottom/Right	X	X	X		X						
Order of Current & Historic Data:											
Past-to-Present	NA	X		X							
Present-to-Past			X		X						
NA = Not Applicable XGXT = Information Appears Both in Graphs & Tables											

Exhibit 29. Data Presentation of Selected OEDO Oil Publications

DATA PRESENTATION	0011	0013	0032	0066	0105	0109	0111	0112	0114	0115	0116	0208
Aggregate-to-Disaggregate	NA	NA		NA	NA	X	NA	NA	NA	NA	NA	X
Disaggregate-to-Aggregate			X									
Title Position of Tables:												
Above	X	X	X	X	X	X	X	X	X	X	X	X
Below												
Title Position of Graphs:												
Above	X	NA	NA	X	NA	NA	NA		NA	NA	NA	X
Below								X				
Title Syntax:												
Energy Function	X ^G X ^T	X	X	X ^T	X	X	X	X ^T	X	X	X	X ^G X ^T
Energy Source	X ^G X ^T	X	X	X ^T	X	X	X	X ^T	X	X	X	X ^G X ^T
Energy Adverbial Phrase					X	X	X	X ^T	X			
Geographic Aggregation	X ^G X ^T				X	X	X	X ^T	X	X	X	X ^T
Reported Time Interval	X ^G X ^T				X		X		X	X	X	
Unit of Measure	X ^G X ^T	X	X	X ^G X ^T	X	X	X	X ^G X ^T	X	X	X	X ^G X ^T
Placement of "Totals" Line Cell:												
Top/Left												
Bottom/Right	X	X	X	X	X	X	X	X	X	X	X	X
Order of Current & Historic Data:												
Past-to-Present		X	X	X	X		NA		NA	NA	NA	X ^G
Present-to-Past	X					X		X				X ^T
NA = Not Applicable X ^G X ^T = Information Appears Both in Graphs & Tables												

Exhibit 29. Data Presentation of Selected OECD Electric Publications

DATA PRESENTATION	0004	0010	0033	0040	0044	0050	0055	0147	0171	0191	0225	
Aggregate-to-Disaggregate	NA	X	X			NA	NA	NA	NA	X		
Disaggregate-to-Aggregate				X	X						X	
Title Position of Tables:												
Above	X	X	NA	NA	NA	X	NA	X	X	X	X	
Below												
Title Position of Graphs:												
Above	NA	NA	NA	NA	NA	X	NA	NA	NA	NA		
Below											X	
Title Syntax:												
Energy Function	NA	X	X	X	X	X ^G X ^T	NA	X	X	X	X ^G X ^T	
Energy Source		X	X	X	X	X ^G		X	X	X	X ^G X ^T	
Energy Adverbial Phrase												
Geographic Aggregation		X				X ^G X ^T				X	X ^T	
Reported Time Interval		X	X	X		X ^T		X	X			
Unit of Measure		X		X		X ^G		X		X	X ^G X ^T	
Placement of "Totals" Line Cell:												
Top/Left	NA	NA	NA	NA			NA					
Bottom/Right					X	X		X	X	X	X	
Order of Current & Historic Data:												
Past-to-Present	X	X	NA	NA		X	NA	X	NA	X		
Present-to-Past					X						X	
NA = Not Applicable X ^G X ^T = Information Appears in Both Graphs & Tables												

Exhibit 29. Data Presentation of Selected OECD Gas Publications

DATA PRESENTATION	0129	0130	0131	0133	0145	0150	0151	0167	0167 (79)	0180	0188	0239
Aggregate-to-Disaggregate	NA	NA	NA	NA	X		NA		NA	NA	X	X
Disaggregate-to-Aggregate						X		X				
Title Position of Tables:												
Above	X	X	X	X	X	X	X	X	X	X	X	X
Below												
Title Position of Graphs:												
Above	NA	NA	NA	NA	NA	X	X	X	NA	NA	NA	
Below												X
Title Syntax:												
Energy Function	X	X	X	X		X ^{GXT}	X ^{GXT}	X ^{GXT}	X	X	X	X ^{GXT}
Energy Source		X	X	X		X ^T	X ^{GXT}	X ^{GXT}		X	X	X ^{GXT}
Energy Adverbial Phrase					X		X ^{GXT}		X			
Geographic Aggregation	X		X			X ^T		X ^T				
Reported Time Interval	X	X	X			X ^{GXT}	X ^{GXT}		X	X	X	
Unit of Measure		X	X	X		X ^{GXT}	X ^{GXT}	X ^{GXT}	X			X ^{GXT}
Placement of "Totals" Line Cell:												
Top/Left						X		X				X
Bottom/Right	X	X	X	X	X			X	X	X	X	X
Order of Current & Historic Data:												
Past-to-Present	X	X	X	X		X	NA	X	X	NA	X	X
Present-to-Past					X							

NA = Not Applicable

X^{GXT} = Information Appears
in Both Graphs & Tables

Exhibit 29. Format Organization of Selected OECD Oil Publications

FORMAT ORGANIZATION	0011	0013	0032	0066	0105	0109	0111	0112	0114	0115	0116	0208
Volumetric & Economic Data:												
Separate	X	X	X	X	X	X	X	X	X	X	X	X
Combined												
End note Symbols												
Footnotes:												
Asterisks		NA										
Numbers	X											X
Letters												
Estimated Data			X	X								
Withheld	X											
Revised	X	X	X	X								X
Preliminary	X		X	X								
Not Meaningful												
Corrected												
Not Available		X										
Not Applicable			X									X
Explanatory Notes												
Notes	X			X								X
Source			X	X								X ^e
NA = Not Applicable												
X ^e = Includes Estimated Data in Source Note												

Exhibit 29. Format Organization of Selected OEDD Electric Publications

FORMAT ORGANIZATION	0004	0010	0033	0040	0044	0050	0095	0147	0171	0191	0226	
Volumetric & Economic Data:												
Separate	X	X	X	X	X	X	X	NA	X	X	X	
Combined												
End note Symbols												
Footnotes:												
Asterisks	X						NA	NA		X		
Numbers		X	X	X	X	X		X	X	X	X	
Letters										X		
Estimated Data												
Withheld												
Revised	X											
Preliminary												
Not Meaningful								X				
Corrected												
Not Available												
Not Applicable												
Explanatory Notes												
Notes					X					X	X	
Source						X				X	X	
NA = Not Applicable												

Exhibit 29. Format Organization of Selected OECD Coal Publications

FORMAT ORGANIZATION	0118	0120	0121	0125	0218							
Volumetric & Economic Data:												
Separate	X		NA	X	X							
Combined		X										
End note Symbols												
Footnotes:												
Asterisks				X								
Numbers	X											
Letters		X	X	X	X							
Estimated Data												
Withheld		X		X								
Revised		X	X		X							
Preliminary			X									
Not Meaningful												
Corrected												
Not Available												
Not Applicable												
Explanatory Notes												
Notes												
Source	X	X	X	X	X							
NA = Not Applicable												

Exhibit 29. Format Organization of Selected OEDO Gas Publications

FORMAT ORGANIZATION	0129	0130	0131	0133	0145	0150	0151	0167	0167 (79)	0180	0188	0239
Volumetric & Economic Data:												
Separate	X	NA	NA	X	X	X	X	X	X	X	X	X
Combined												
End note Symbols												
Footnotes:												
Asterisks					X		X	X				
Numbers			X	X	X	X	X	X		X	X	
Letters		X		X					X		X	X
Estimated Data		X		X								
Withheld		X		X								
Revised	X			X	X							
Preliminary				X								
Not Meaningful					X							
Corrected												
Not Available												
Not Applicable	X			X				X				
Explanatory Notes												
Notes					X	X						X
Source	X	X	X	X	X	X		X	X	X	X	
NA = Not Applicable												

Appendix B

User Survey

One aspect of evaluating the usefulness of a publication is to observe its readership. In order to gain a perspective on which EIA publications are most widely used, a random sampling was taken from the November 1980 EIA subscribers mailing list. The results of this sampling are organized by type of respondent (education, government, private industry, and a 'Not Identifiable' category), and in descending order of use.

Education: 1. Coal Distribution

2. Coke and Coal Chemicals Annual

3. Coke and Coal Chemicals Monthly

4. Petroleum Refineries in the U.S. and U.S. Territories

5. Supply, Disposition, and Stocks of all Oils by P.A.D. Districts
Annual

6. World Natural Gas

Government: 1. Coal Distribution

2. Coke and Coal Chemicals Annual

3. Coke and Coal Chemicals Monthly

4. Crude Petroleum, Petroleum Products and Natural Gas Liquids
Monthly

5. Monthly Energy Review

6. Petroleum Refineries in the U.S. and U.S. Territories

7. Supply, Disposition, and Stocks of all Oils by P.A.D. Districts
Annual

8. Supply, Disposition, and Stocks of all Oils by P.A.D. Districts
Monthly

9. World Natural Gas

10. Weekly Petroleum Status Report

Private Industry:

1. Coke and Coal Chemicals Monthly
2. Cost and Quality of Fuels for Electric Utility Plants
3. Mainline Natural Gas Sales to Industrial Users
4. Petroleum Refineries in the U.S. and U.S. Territories
5. Sales of Fuel Oil and Kerosene
6. Supply, Disposition, and Stocks of all Oils by P.A.D. Districts Annual
7. Supply, Disposition, and Stocks of all Oils by P.A.D. Districts Monthly
8. World Natural Gas
9. Weekly Petroleum Status Report

Not Identifiable:

1. Coal Distribution
2. Coke and Coal Chemicals Monthly
3. Coke and Coal Chemicals Annual
4. Petroleum Refineries in the U.S. and U.S. Territories

Appendix C

Comparison of Coal and Electric Utility Data

As discussed earlier in this report, the MER and other OEDO publications contain the same data elements. As part of the review of the MER, data for some coal and electric utility functions were checked against those in other publications, such as the EPM and WCP.

With one exception, there were no substantial, consistent discrepancies in data between publications. The exception was due to the difference in the handling of petroleum coke data which in the EPM is classified as coal and in the MER as petroleum.

The numbers in Exhibit 30 have not been rounded and appear as published.

Item		Coal Chapter MER <u>a/</u>	Weekly Coala/ Product	Electric Utilities Chapter MER <u>a/</u>	Coke & Coal Chemicals	EPM ^{b/}	Electric Util.Sales Income/Rev.
Coal Consumption (Thousand Short Tons)							
May 1980	Utilities	41,464	41,464	41,464		41,475	
	Coke Plants	6,127	6,127				
	Industrial	4,907	4,907				
June 1980	Utilities	45,821	45,820	45,821		45,832	
	Coke Plants	5,326	5,326				
	Industrial	4,688	4,688				
August 1980	Utilities	53,214	53,214	53,214		53,229	
	Coke Plants	4,878	4,878				
	Industrial	4,487	4,487				
September 1980	Utilities	47,913	47,913	47,913		47,925	
	Coke Plants	4,794	4,794				
	Industrial	4,315	4,315				
October 1980	Utilities	45,085	45,085	45,085		45,093	
	Coke Plants	5,107	5,108				
	Industrial	6,175	N/A				
November 1980	Utilities	45,698	45,698	45,698		45,705	
	Coke Plants	5,152	5,151				
	Industrial	5,875	N/A				

Publications: MER: March 1981

WCP: March 13, 1981

EPM: June '80, Sept. '80, Oct. '80, Dec. '80

a/ Excludes petro coke

b/ Includes petro coke

Item		MER	Weekly Coal Product	Coal Distrib.	Coke & Coal Chemicals	EPM	Electric Util.Sales Income/Rev.
Coal Imports		(Thousand short tons)	(Short tons)				
	May 1980	207	207,060				
	June 1980	104	104,153				
	July 1980	32	31,913				
	August 1980	166	165,673				
	September 1980	2	2,287				
	October 1980	139	139,484				
	November 1980	3	2,664				
	December 1980	70	70,132				
Coal Exports	May 1980	8597	8,596,522				
	June 1980	8899	8,899,158				
	July 1980	8247	8,247,375				
	August 1980	9270	9,269,541				
	September 1980	8364	8,364,254				
	October 1980	9454	9,454,015				
	November 1980	8987	8,986,429				
	December 1980	8228	8,227,728				

Publications: MER: March 1981

WCP: March 6, 1981

Item		Coal Chapter MER <u>a/</u>	Weekly Coal Product	Elec. Util. Chapter MER	Coke & Coal Chemicals	EPM <u>b/</u>	Electric Util.Sales Income/Rev.
Coal Stocks (Thousand Short Tons)							
May 1980	Utilities Coke Plants Industrial	174,044 9,692 10,119	174,044 9,693 10,119	174,044		174,113	
June 1980	Utilities Coke Plants Industrial	178,959 9,913 10,332	178,959 9,913 10,332	178,959	9,913	179,024	
August 1980	Utilities Coke Plants Industrial	171,891 7,866 10,878	166,890 7,866 10,878	171,891	7,866	171,953	
September 1980	Utilities Coke Plants Industrial	175,067 8,213 11,052	175,068 8,213 11,052	175,067	8,213	175,128	
October 1980	Utilities Coke Plants Industrial	182,045 8,488 11,025	182,045 8,487 N/A	182,045	8,488	182,105	
November 1980	Utilities Coke Plants Industrial	184,133 8,606 11,165	184,133 8,606 N/A	184,133	8,606	184,186	

Publications: MER: March 1981

WCP: March 13, 1981

EPM: June 1980, Sept.1980, Oct.1980, Dec.1980

CCC: July 1980, Sept.1980, Nov.1980, Dec.1980

a/ Excludes petro coke

b/ Includes petro coke

Item	MER	Weekly Coal Product	Cost Quality of Fuels	Coke & Coal Chemicals	EPM	Electric Util.Sales Income/Rev.
Delivered Coal Prices National Average Cents per Million BTU	May 1980	133.3	133.3		133.3	
	June 1980	135.1	135.1			
	July 1980	137.4	137.4			
	August 1980	139.5	139.5		139.6	
	September 1980	138.9	138.9		139.0	
	October 1980	138.1	138.1			
	November 1980	139.3	139.3		139.3	

Publications: MER: March 1981
 Cost and Quality of Fuels for Electric Plants, Nov. 1980
 EPM: June 1980, Sept.1980, Oct.1980, Dec.1980

Item

MER

Weekly
Coal
ProductCoal
Distrib.Coke
& Coal
Chemicals

EPM

Electric
Util. Sales
Income/Rev.Net Generation by Fuel Source
(Gigawatthours)

Coal

May 1980

84,822

84,911^{a/}

June 1980

93,690

93,722

August 1980

107,580

107,621

September 1980

97,556

97,587

October 1980

91,147

91,167

Oil

May 1980

16,560^{a/}

16,531

June 1980

18,034

18,003

August 1980

24,889

24,848

September 1980

17,816

17,785

October 1980

15,893

28,592

Total (All Fuels, including
hydro, nuclear, etc.)

May 1980

175,733

175,733

June 1980

189,430

189,430

August 1980

215,435

215,435

September 1980

191,483

191,483

October 1980

178,541

178,541

Publications: MER: March 1981

EPM: June 1980, Sept.'80, Oct.'80

^{a/} Includes petroleum coke

Item	MER	Weekly Coal Product	Coal Distrib.	Coke & Coal Chemicals	EPM	Electric Util. Sales Income/Rev.
------	-----	---------------------------	------------------	-----------------------------	-----	--

Electricity Sales (Million KWH)	Residential	June 1980	52,267				52,277
		September 1980	67,969				67,969
		October 1980	54,012				54,012
	Commercial	June 1980	40,129				40,129
		September 1980	46,028				46,028
		October 1980	40,478				40,478
	Industrial	June 1980	66,739				66,739
		September 1980	69,570				69,570
		October 1980	69,414				69,414
	Total (all Sectors)	June 1980	164,872				164,872
		September 1980	190,139				190,139
		October 1980	170,078				170,078

Publications: MER: March 1981

Electric Utility Sales Income & Rev., June '80, Sept. '80, Oct. '80