Appendix D

Estimating and Presenting Power Sector Fuel Use in EIA Publications and Analyses

I. Background

The Energy Information Administration (EIA) has comprehensively reviewed and revised how it collects, estimates, and reports fuel use for facilities producing electricity. The review addressed inconsistent reporting of the fuels used for electric power and changes in the electric power marketplace that have been inconsistently represented in various EIA survey forms and publications. For example:

- In some cases fuel use by combined-heat-and-power (CHP) plants[1] has been reported as industrial sector fuel use, while in other cases it has been reported as electric power sector fuel use.
- Electricity generation and fuel consumption have been categorized and reported in several different ways, such as (1) utility only; (2) utility and independent power producers; or (3) utility, independent power producers, and CHP plants. The restructuring of the power industry is making some of these categories less meaningful.

The goal of EIA's comprehensive review was to improve the quality and consistency of its electric power data throughout all data and analysis products. Because power facilities operate in all sectors of the economy (e.g., in commercial buildings, such as hospitals and college campuses, and industrial facilities, such as paper mills and refineries) and use many fuels, any change to electric power data affects data series in nearly all fuel areas and causes changes in a wide variety of EIA publications.

As a result of the comprehensive review, EIA has made the following changes:

- EIA has adjusted all presentations of data on electric power to a consistent format and defined the electric power sector to include electricity-only plants and CHP plants whose primary business is to sell electricity, or electricity and heat, to the public.
- EIA is providing detail within the electric power sector, commercial sector, and industrial sector on fuel used by CHP plants in those sectors.
- EIA has changed the sources of data on fuel used by components of the electric power sector. All tabulations and publications will use data obtained from EIA's surveys of electric power generators. This change in data source contributes to changes in total fuel consumption of natural gas.
- EIA has revised its historical data on electric power to resolve data anomalies. The revisions contribute to changes in EIA's electricity series as well as the fuel-use series.

This document provides detail on these changes and describes the reasoning behind the changes and their effects on EIA publications. The *Annual Energy Review (AER) 2001* (November 2002) was the first of EIA's annual publications to be released with the new formats. Since then, EIA has released several other annual reports with the electric power data in parallel formats: *Emissions of Greenhouse Gases in the United States 2001* (December 2002); *Natural Gas Annual 2001* (February 2003); *Electric Power Annual 2001* (March 2003) and *Annual Coal Report 2001* (March 2003). Beginning with the April 2003 *Monthly Energy Review*, EIA's monthly reports are being redesigned to present the electric power statistics in the new formats.

The remainder of this document is organized as follows:

- Section II: an overview of the key changes.
- Section III: the impacts on multi-fuel publications, particularly the *Monthly Energy Review* (*MER*).[2]
- Section IV: specific information on electric power data.
- Section V: specific information for data on natural gas, coal, petroleum, and renewable energy.

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[1] Combined-heat-and-power plants (CHP) produce both electricity and useful thermal output. EIA formerly referred to these plants as cogenerators, but has determined that CHP better describes the facilities because some of the plants included in EIA's data do not produce heat and power in a sequential fashion, and as a result do not meet the legal definition of cogeneration specified in the Public Utility Regulatory Policies Act (PURPA).

[2] Multi-fuel publications are those that provide information on multiple fuels and sectors, such as the *Monthly Energy Review* and the *Annual Energy Review*.

Figure D1. Industrial Sector for Natural Gas in March 2003 MER and April 2003 MER

Column Headers from March 2003 MER Table 4.4

	Lease and Plant Fuel	Pipeline Fuel[a]	Delivered to Consumers						Total Consumption[c]
			Residential	Commercial	Industrial[b]	Vehicles	Electric Utilities	Total	

Column Headers from April 2003 MER Table 4.4

	End-Use Sectors										Electric Power Sector[e,f]	Total
			Industrial					Transportation				
				Other Industrial								
	Resi-dential	Com-mercial[a]	Lease and Plant Fuel	CHP[b]	Non-CHP[c]	Total	Total	Pipeline Fuel[d]	Vehicle Fuel	Total		

II. Overview of Key Changes

The many changes that occur because of the fuel review generally fall into three broad categories; (1) the categorization of electric power facilities, (2) the reporting of combined-heat-and-power plant fuel use; and (3) data series revisions resulting from revised electric power fuel use estimates. Each of these areas is discussed below.

Categorization of Electric Power Facilities

Until the 1990s, most electric power generation and fuel use data could be meaningfully categorized into electric utilities and nonutility power producers.[3] Electric utilities were generally structured as vertically integrated[4] power companies that were responsible for generating, transmitting, and distributing power to consumers within their franchised service territory. Nonutility power producers were generally independent generators (mostly combined-heat-and-power plants) that produced some power for their own use and sold the remainder to utilities for distribution to consumers. However, in recent years, many formerly integrated utilities have split apart, spinning off the generating part of their business into separate companies. Independent developers have built most of the new generating capacity that has been installed in recent years. As a result, the distinction between utility and nonutility power plants has become much less meaningful. In fact, a large portion of the growth in nonutility generation in recent years is due to the reclassification of utility power plants as nonutility power plants.

To reflect the changing industry structure, EIA is now organizing electric power generation and fuel use data into two new categories: electricity-only and combined-heat-and-power (CHP) plants. These categories separate power plants by function; i.e., power only or power plus thermal, rather than by ownership class.

Electricity-only plants represent all plants, whether owned by utilities or nonutilities that produce only electricity. CHP plants represent entities that produce both electricity and some form of thermal energy. Both categories will have some facilities that are owned by traditional utilities and independent companies.

In addition, EIA is now presenting data for an electric power sector that includes electricity-only plants and CHP plants whose primary business is to sell electricity, or electricity and heat, to the public (North American Industry Classification System code 22). This contrasts with some previous data presentations in which the electric power sector included industrial and commercial CHP plants as well.

Reporting of CHP Plant Fuel Use

Historically, fuel consumption in CHP plants has been combined with other uses in many EIA data presentations. For example, in some tables the use of natural gas in commercial and industrial CHP plants was included with other commercial and industrial uses. Further, some of the fuel consumption (the portion associated with electricity production) at these same facilities was also reported under the column labeled "Nonutility Power Producers." Based on questions received from many EIA customers, it became clear that this categorization led to confusion.

Currently, EIA is distinguishing within the industrial, commercial, and electric power sectors what portion of fuel consumption is used in CHP facilities and non-CHP facilities. For example:

- In tabulations of energy use by end-use sector, if a commercial or industrial facility has a CHP unit, the total fuel consumption for that unit will be reported under commercial or industrial, but it will be identified separately from other commercial or industrial consumption. Figure D1 provides an example for

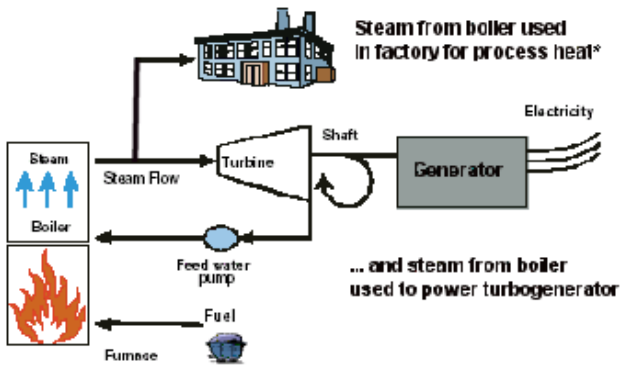
[3] For an example of this, see *Electric Power Annual 1998, Volume II*, DOE/EIA-0348(98)/2, December 1999.
[4] In this context "integrated" means that the company is involved in the three main sectors of the electric power business—generation, transmission, and distribution.

natural gas consumption in the industrial sector. It shows the headings in Table 4.4 of the April 2003 *MER* compared with the headings for the same table in the March 2003 *MER*.

CHP plants reporting that their primary business is generating and selling power to others will be reported in a separate column in the electric power sector, as shown in Figure D1.

- In tabulations of energy use to produce electric power, the total fuel consumption reported by CHP plants will be further separated into that which is used to produce electricity and that which is used to produce thermal energy.[5] Figure D2 shows a schematic for a combined-heat-and-power plant.

Figure D2. Schematic for Combined-Heat-and-Power Plants



*Useful heat may also be recovered as a byproduct of electric power generation.

The separation between electricity and thermal uses is being done because many EIA data users have expressed interest in knowing how much fuel is used to produce electricity in the United States.

Data Series Revisions Resulting From Changes in Electric Power Fuel Use Estimates

The revisions to electric power data affect many areas. For example, to estimate natural gas use, EIA has historically surveyed natural gas pipeline-companies and local gas utilities to obtain data on natural gas used by residential, commercial, industrial, and electric utility and nonutility generators.[6] However, EIA also surveyed electric utilities on their natural gas use. The data obtained directly from the end user were generally thought to be more accurate than the data obtained from natural gas suppliers. As a result, total natural gas use was estimated by adding the data from natural gas companies on residential, commercial, industrial, and nonutility power producer use to the amount reported directly by electric utilities. The data collected for nonutility power producers were included with industrial use in previous EIA natural gas data presentations.

With the changing structure of the electricity sector, this reporting approach no longer appears reasonable. EIA has decided to follow the procedure described for electric utilities and use data obtained from its direct surveys of nonutility electric generators rather than the natural gas supplier surveys.[7] More detail on how the various fuel sectors are affected is given in the following sections.

Data changes are also occurring because of the extensive review of reported data that was undertaken in this process. Since it was decided that data reported directly by utilities and nonutility power generators would be the primary source of fuel consumption data for the power sector, an examination of heat rates,[8] capacity factors,[9] and power-to-steam ratios across 13 years of reported data was conducted. As a result, data for nonutility power producers for 1989 through 2002 have been revised. The data review procedure is described in Section IV under the heading "Efforts to Improve Data." As a result of the review by expert EIA analysts, anomalous values have been investigated and resolved and the result is higher quality data at aggregated levels.

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[5] For the method used to separate the fuel used at CHP plants between electricity and useful thermal energy production, see Section IV.
[6] Energy Information Administration, Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition."
[7] Energy Information Administration, Form EIA-759, "Monthly Power Plant Report" for electric utilities and Forms EIA-867 and EIA-860B, "Annual Electric Generator Report–Nonutility" for nonutilities. Starting with 2001, data for both utilities and nonutilities are collected on a new survey, Form EIA-906, "Power Plant Report."
[8] Heat rates are computed by dividing the heat content of the fuel burned to generate electricity by the resulting net kilowatthour generation.
[9] Capacity factors are the ratio of the electrical energy produced by a generating unit for the period of time considered to the e lectrical energy that could have been produced at continuous full power operation during the same period.

Table D1. Revisions to Selected Estimates: March 2003 MER and April 2003 MER

Electricity Net Generation: Total (All Sectors)
(Billion Kilowatthours)

Year	March 2003 MER	April 2003 MER	Percent Difference
2000	3,800	3,802	0.1
2001	3,758	3,737	-0.6
2002	3,861	3,836	-0.7

Total Natural Gas Consumption
(Trillion Cubic Feet)

Year	March 2003 MER	April 2003 MER	Percent Difference
2000	22.5	23.5	4.4
2001	20.9	22.3	6.7
2002	20.3	23.2	14.3

Total Coal Consumption
(Million Short Tons)

Year	March 2003 MER	April 2003 MER	Percent Difference
2000	1,081	1,084	0.3
2001	1,053	1,060	0.7
2002	1,063	1,065	0.2

Total Petroleum Consumption
(Thousand Barrels per Day)

Year	March 2003 MER	April 2003 MER	Percent Difference
2000	19,701	19,701	0.0
2001	19,649	19,649	0.0
2002	19,656	19,656	0.0

Total Renewable Energy Consumption
(Trillion Btu)

Year	March 2003 MER	April 2003 MER	Percent Difference
2000	6,868	6,158	-10.3
2001	6,189	5,324	-14.0
2002	6,760	5,891	-12.9

Sources: Electricity Net Generation, Table 7.2 of March 2003 *MER* and Table 7.2a of the April 2003 *MER*. Natural Gas, Consumption, Table 4.4 March 2003 *MER* and April 2003 *MER*. Coal Consumption, Table 6.2 of March 2003 *MER* and April 2003 *MER*. Petroleum Consumption, Table 3.1a of March 2003 *MER* and April 2003 *MER*. Renewable Energy Consumption, Table 10.1 of March 2003 *MER* and April 2003 *MER*.

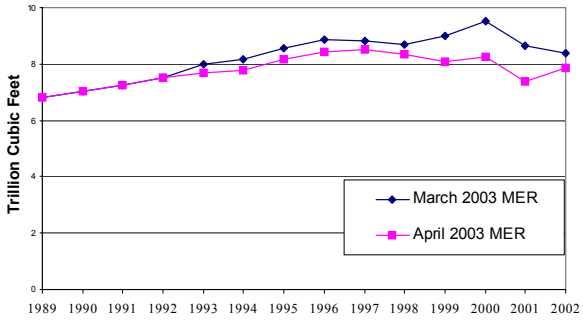
Revisions resulting from changing the source of fuel consumption data for nonutilities and from EIA's data review affect data beyond the category of nonutilities. For example, the revised estimate of natural gas consumption for 2002 is 14 percent higher in the April 2003 *Monthly Energy Review (MER)* than in the March 2003 *MER* (Table D1).

On the other hand, the revised estimate of renewable energy consumption for 2002 is 13 percent lower in the April 2003 *MER* than in the March 2003 *MER* (Table D1), due largely to a downward revision in the estimate of biomass energy consumption particularly wood/wood waste at electric power plants. A smaller revision resulted from the procedure to assign fuel consumption by energy type at some solar and hydroelectric plants. In the April *MER*, the assignment was made at the boiler level while in the March *MER* it was based on aggregate plant-level information. In addition, beginning with the April 2003 *Monthly Energy Review*, electricity net imports derived from hydroelectric power and geothermal energy are no longer included in renewable energy consumption data. They continue to be included in total U.S. energy consumption, with fuel sources unspecified (see Tables 1.3 and 2.6). The change results in a 0.1-to-0.5 quadrillion Btu drop in total renewable energy consumption from 1973 forward.

Estimates for coal and petroleum consumption show little or no change between the March and April *MER's* for the same year. This is also true for electricity net generation.

In addition, as a result of the recategorization of nonutility data, estimates of industrial natural gas consumption have been revised and are lower. For example, in March 2003 *MER,* EIA showed 8.39 trillion cubic feet delivered to industrial facilities in 2002. In April 2003 *MER*, the comparable figure (under the "other industrial" heading) for 2002 is 7.85 trillion cubic feet (Figure D3). This revision is a result of the change in the operational definition of deliveries to the industrial sector, which is explained in Section V.

Figure D3. Industrial Natural Gas Consumption: March 2003 MER and April 2003 MER



To summarize the changes, data for combined-heat-and-power plants are shown separately by end-use sector in the April 2003 *MER* while they were included with the sector totals in the March 2003 *MER*. Independent power producers are excluded from the industrial sector in the April 2003 *MER* and included in the electric power sector. Data are based on a survey of electric generators. By contrast, independent power producers were included in the industrial sector in the March 2003 *MER* for natural gas and data were based on a survey of natural gas suppliers.

III. Multi-Fuel Publications

EIA's multi-fuel publications—i.e., those that report data on numerous energy sources and provide overall energy totals—have been reformatted to incorporate the new approach described in detail in the preceding sections. The *Annual Energy Review* (*AER*) *2001* was the first of the historical multi-fuel publications to be released with the new formats. EIA has now redesigned the *Monthly Energy Review* (*MER*) to make its data and presentations conform to the *AER 2001*. In addition to the *MER*, the State-level consumption, price, and expenditure estimates that have previously been released under the titles *State Energy Data Report* and *State Energy Price and Expenditure Report* will be reformatted beginning with the 2001 update. Coordinated data and presentation changes are also being incorporated into EIA's forecast products—the *Short-Term Energy Outlook* (STEO) and the *Annual Energy Outlook* (AEO).

The April 2003 *MER* includes many redesigned tables (and related graphs) that were adapted to present the new electricity data. Revised tables fall into three groupings: electricity, fuels, and total energy. These tables are interrelated.

Tables 7.3a, 7.3b, and 7.3c provide data on fuel consumption for both electricity generation and useful thermal output. Data on consumption by the electric power sector on Table 7.3b correspond with data for this sector on fuel consumption tables (e.g., Table 4.4 on natural gas, Table 6.2 on coal, and Table 10.2c on renewable energy consumption).

Similarly, data on commercial sector CHP plants on Table 7.3c correspond with the commercial sector CHP columns of the fuel consumption tables and data on industrial sector CHP plants on Table 7.3c correspond with the industrial sector CHP columns of the fuel consumption tables.

Table 7.3d provides data on consumption of combustible fuels for electricity generation. Data on the amount of fossil fuel (such as coal, residual fuel oil, and natural gas) and on the amount of renewable energy used to generate electricity at both electricity-only and CHP plants can be found on this table.

Table 7.3d data on fuel consumed for electricity generation differ from those for the electric power sector on the fuel consumption tables (e.g., Table 4.4 for natural gas) because the electric power sector includes entities that produce thermal energy as well as electricity (CHP plants whose primary business is to sell electricity). In addition, there are entities that generate electricity that are not in the electric power sector (commercial sector CHP plants and industrial sector CHP plants).

Electricity Tables. Most March 2003 *MER* electricity tables were altered in format for presentation in the April 2003 *MER*. Below is a crosswalk of the March 2003 *MER* tables to their closest matches in the April 2003 *MER*:

March 2003 MER	April 2003 MER Table Title
7.1	7.1 Electricity Overview
7.2	7.2a Electricity Net Generation: Total (All Sectors)
7.3	7.2b Electricity Net Generation: Electric Power Sector
7.4	7.2c Electricity Net Generation: Commercial and Industrial Sectors
---	7.3a Consumption of Combustible Fuels for Electricity Generation and Useful Thermal Output: Total (All Sectors)
---	7.3b Consumption of Combustible Fuels for Electricity Generation and Useful Thermal Output: Electric Power Sector
---	7.3c Consumption of Selected Combustible Fuels for Electricity Generation and Useful Thermal Output: Commercial and Industrial Sectors
7.6	7.3d Consumption of Combustible Fuels for Electricity Generation: Total (All Sectors)
7.7	7.3e Consumption of Combustible Fuels for Electricity Generation: Electric Power Sector
7.8	7.3f Estimated Consumption of Selected Combustible Fuels for Electricity Generation: Commercial and Industrial Sectors
7.9	7.4 Stocks of Coal and Petroleum: Electric Power Sector
7.5	7.5 Electricity End Use

Fuel Tables. The following April 2003 *MER* fuel tables were reformatted from the previous year's report to incorporate the new electricity information:

4.4	Natural Gas Consumption by Sector
6.2	Coal Consumption by Sector
6.3	Coal Stocks by Sector
10.2c	Renewable Energy Consumption: End-Use Sectors
A3	Approximate Heat Content of Petroleum Product Weighted Averages
A4	Approximate Heat Content of Natural Gas
A5	Approximate Heat Content of Coal and Coal Coke

Total Energy Tables. The following April 2003 *MER* tables summarize all energy consumption and include format changes that are related to the new electricity information:

2.1	Energy Consumption by Sector
2.3c	Commercial Energy Consumption Sector
2.4d	Industrial Energy Consumption Sector
2.6	Electric Power Sector Energy Consumption

IV. Electric Power Data

Summary of Key Changes

EIA previously presented data on electric power, such as generation and fuel consumption, in the following categories:

- Electric utilities
- Nonutility power producers (independent power producers and combined-heat-and-power plants)
- Electric power industry (sum of electric utilities and nonutility power producers)

Now EIA is organizing data using the following new categories:

- Electricity-only-plants
- Combined-heat-and-power (CHP) plants

Data on CHP plants are disaggregated by the end-use category (commercial, industrial, electric power) that they report as their major line of business. The categorization is based on their North American Industry Classification System code. For example, a CHP plant that is part of a hospital will be classified as "commercial." Similarly, a CHP plant that reports that it is part of a paper mill will be classified as "industrial," and a CHP plant that reports that its primary business is selling power to others will be classified as "electric power." In addition, EIA is defining the electric power sector to include electricity-only plants and CHP plants whose primary business is to sell electricity, or electricity and heat, to the public.

EIA is presenting data for the following categories:

- Electric Power Sector
- Commercial and industrial CHP plants
- Total (sum of Electric Power Sector plus commercial and industrial CHP plants and equal to the prior "electric power industry" category)

Another change is that EIA has estimated and is presenting data on the amount of fuel used to generate electricity and the amount of fuel used for useful thermal output. Furthermore, during the course of recategorizing the data, EIA performed a thorough data quality review and revised data to resolve anomalies.

Efforts to Improve Data

EIA reviewed electric power data from 1989 through 2002 to determine whether there were anomalies. The 1989–2000 data for nonutilities were from Form EIA-860B, "Annual Electric Generator Report-Nonutility," and its predecessor, Form EIA-867, "Annual Nonutility Power Producer Report." The 2001 and 2002 data are from Form EIA-906, "Power Plant Report." These forms are used to collect data on fuel consumption, generation, and, with the exception of 1995 through 1997, useful thermal output. When anomalies were identified in the data for the more recent years (1998–2002), EIA contacted selected respondents to resolve the inconsistencies. For the older data it was not pratical to contact respondents. In this situation EIA made data adjustments to resolve the anomalies.

The review included an examination of both respondent-level data and aggregate-level data. EIA reviewed data for facilities with heat rates greater than 40,000 Btu per kilowatthour and less than 5,000 Btu per kilowatthour. The upper limit was chosen to allow for the heat rates of older non-electricity boilers. In addition, EIA reviewed data for facilities with overall efficiency of greater than 100 percent and identified facilities with thermal output that were not designated as CHP plants. To ensure consistency, EIA compared North American Industry Classification System (NAICS) codes, cogenerator status, fuel consumption, electric generation, and thermal output levels over time.

EIA analysts reviewed and evaluated aggregate-level data by State, NAICS code, fuel type, and generator type. For the historical data (1989–1997), EIA also:

- Estimated a value for useful thermal output for 1995 through 1997 (when useful thermal output was not included on the survey form) that produced a heat rate and an efficiency consistent with that observed in other years (see discussion below on CHP fuel use methodology).
- Corrected errors in units reported for fuel consumption.
- Compared data on fuel consumption with data on electric generation and adjusted data on fuel consumption or generation to maintain a consistent ratio.
- Adjusted data on useful thermal output for those respondents with heat rates outside the 5,000-to-40,000 Btu per kilowatthour range to produce an efficiency consistent with other years.

For the 1998-2000 data, the review also included a comparison for consistency with data reported by manufacturing plants on Form EIA-3, "Quarterly Coal Consumption—Manufacturing Plants," since a subset of the EIA-3 manufacturing plants generate electricity and also reported on the electric generator survey Form EIA-860B. In general, there was good correspondence between the data submissions. In situations where there were inconsistencies, selected respondents were contacted to explain the differences.

Allocating CHP Fuel Use

EIA developed the following method for estimating how the total fuel consumed in the boiler is split between electricity generation and useful thermal output:

- First, a steam boiler efficiency rate of 80 percent was assumed[10].
- Then the reported or estimated value for useful thermal output (in Btu) was divided by 0.8 to estimate the fuel used to generate this amount of thermal output.
- Next, this value was subtracted from total fuel consumption and the remainder was assumed to be the amount used for electric generation.

V. Other Energy Data

Natural Gas

A number of changes have been made to natural gas consumption data presentations, definitions, and data sources. As a result of these changes the presentation of natural gas consumption by end-use sector will be consistent with end-use sector presentations and definitions in other EIA publications and the measures of natural gas used by electricity generators will be explicitly presented and identical to the quantities presented in electric power publications.

In prior EIA data publications natural gas consumption was presented for residential, commercial, industrial, transportation, and electric utility sectors. Deliveries of natural gas to independent power producers (called "other nonutility power producers" on the survey form) were included in the data reported for the industrial sector and the measures were collected through natural gas survey forms submitted by gas delivery agents (local distribution companies and pipelines).

Beginning with the April 2003 *Monthly Energy Review* (*MER*) the definition of industrial sector gas consumption for 1993-2002 no longer includes independent power producers. In addition, a new electric power sector is being used that includes independent power producers, utilities, and other electricity generators as described in the previous electricity discussion. The data reported for the electric power sector are derived entirely from data submitted on electricity data collection forms used over the period 1993-2002. These include Forms EIA-759, "Monthly Power Plant Report," and EIA-860B, "Annual Electric Generator Report-Nonutility," through 2000 and Form EIA-906, "Power Plant Report," for 2001 forward.

Compared with past publications, the impact of the definitional change for the industrial sector is to reduce measured natural gas consumption by the industrial sector. For example, in the March 2003 *MER* EIA showed 8.39 trillion cubic feet delivered to industrial facilities in 2002. In the April 2003 *MER*, the comparable figure (under the "other industrial" heading) for 2002 is 7.85 trillion cubic feet. This revision is a result of the change in the operational definition of deliveries to the industrial sector.

Compared with past publications, the impact of the definitional change and the new data sources for the electric power sector is to increase measured natural gas consumption compared to the previous electric utility data series. As a result of the changes in data sources (predominantly new electric power data sources), total natural gas consumption is higher than previously published, i.e., total natural gas consumption has increased by 4, 7, and 14 percent in 2000, 2001, and 2002, respectively.

Also new detail is available about gas consumption in the commercial, industrial and electric power sectors that distinguishes deliveries of natural gas to combined-heat-and-power (CHP) plants in these sectors from deliveries to other facilities within these sectors. "Deliveries to industrial consumers" includes deliveries to industrial consumers that are CHP plants, such as paper mills, as well as other industrial users. Included with the CHP plant data are a small number of industrial firms that report using natural gas only to generate electricity (most likely for their own use). "Deliveries to commercial consumers" also include deliveries to CHP plants, such as hospitals. Similarly, a small number of plants that report natural gas use for only electricity generation are included with the data on commercial CHP plants.

The sources for total commercial and industrial sector data are natural gas survey forms while the sources of the subcomponent CHP data series are electric power survey forms. The sources of all electric power data series, including the CHP subcomponent, are electric power survey forms.

Coal

Data on coal consumed by the commercial and industrial sectors will now be separated into coal consumed by combined-heat-and-power (CHP) plants and coal consumed by the other plants in the commercial and industrial sector (referred to as "other" or "non-CHP").[11]

Consumption by electric utilities and independent power producers, shown separately in the past, will be combined and called "electric power sector." Note that "independent power producers" were previously called "other power producers" in the coal publications and tabulations. Both

[10] Arthur D. Little, Report to the Energy Information Administration, *Industrial Model: Update on Energy Use and Industrial Characteristics*, (September 2001), Appendix C, "Average Boiler Efficiencies."

[11] A small number of commercial and industrial plants that use coal only to generate electricity are included with the data on comm ercial and industrial CHP plants.

terms refer to the same entities, i.e., generating facilities with a North American Industry Classification System (NAICS) code of 22.

The sources for total coal consumption remain unchanged for the residential and commercial sectors and for coke plants. They are:

- Residential and Commercial–Form EIA-6A, "Coal Distribution Report."
- Coke–Form EIA-5, "Coke Plant Report."

For the industrial sector excluding coke plants (referred to as "other industrial") the data sources remain the same for the following categories:

- Manufacturing–Form EIA-3, "Quarterly Coal Consumption—Manufacturing Plants."
- Mines–Form EIA-7A, "Coal Production Report."
- Agriculture, Mining, Construction, and Transportation–Form EIA-6A, "Coal Distribution Report."

For the portion of coal consumed by CHP plants in the commercial and industrial sectors through 2000, data were obtained from Form EIA-860B, "Annual Electric Generator Report-Nonutility," and beginning in 2001, Form EIA-906, "Power Plant Report."

Data for the electric power sector for the years 1989 through 2000 were from Form EIA-759 and Form EIA-860B. Beginning in 2001, data from Form EIA-906 are used.

Petroleum

Data on sales to independent power producers (that may have been previously reported in the industrial sector) are now included in the sales for electric power generation category in the "adjusted sales" tables of the *Fuel Oil and Kerosene Sales Report*, Tables 13-24. These data are presented in Table 2.6 of the April 2003 MER for the electric power sector. This category includes data on electric utilities and data on independent power producers. The data on electric utilities are obtained from Form EIA-759, "Monthly Power Plant Report," and FERC Form 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants," and Form EIA-906, "Power Plant Reports." The data on independent power producers are from Form EIA-860B, "Annual Electric Generator Report-Nonutility," through 2000, and Form EIA-906, "Power Plant Report," for 2001 forward. Previously, some data on sales of kerosene, distillate, and residual fuel oils to independent power producers were obtained from Form EIA-821, "Fuel Oil and Kerosene Sales Report," but coverage may not have been complete or data for independent power producers may have been included in the end-use sectors.

Renewable Energy

For the first time EIA is presenting data on biomass energy consumption that were obtained by aggregating individual power plant data for nonutilities rather than by applying a generalized heat rate to the aggregate net generation figure. All new renewable energy publications also reflect changes in EIA definitions of the energy use sectors described earlier.