



Independent Statistics & Analysis

U.S. Energy Information
Administration

Supporting Statement for Coal Markets Reporting System

Part B: Collections of Information Employing Statistical Methods

Form EIA-3, "Quarterly Survey of Industrial, Commercial, & Institutional Coal Users"

Form EIA-7A, "Annual Survey of Coal Production and Preparation"

Form EIA-8A, "Annual Survey of Coal Stocks and Coal Exports"

Form EIA-6, "Emergency Coal Supply Survey (Standby)"

Form EIA-20, "Emergency Weekly Coal Monitoring Survey for Coal Burning Power Producers (Standby)"

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Introduction

To help accomplish EIA's overall mission to provide high quality, informative energy data and analyses, the Office of Energy Statistics employs five statistical surveys to gather relevant, accurate, and timely information from a variety of business establishments that participate in the production, distribution, and utilization of coal in the United States. Within this context, the standard practices applicable and relevant to the design and operation of these statistical surveys are identified below.

B.1. Respondent Universe

EIA coal surveys are conducted at the site, company, and mine level. The coal surveys (EIA-3, EIA-7A, and the EIA-8A) do not employ sampling except that the smallest entities in the respondent universe are not required to respond. The following criteria are applied:

EIA-3 “Quarterly Survey of Industrial, Commercial, & Institutional Coal Users”: Responses are limited to non-electric sector sites (e.g., manufacturers, hospitals, universities, and correctional facilities) that consume more than 1,000 short tons of coal annually, with the exception of coke plants. All coke plants are required to report because there are only 18 facilities in the United States.

EIA-7A “Annual Survey of Coal Production and Preparation”: Responses are limited to U.S. coal mining companies that produce 25,000 or more short tons of coal during the reporting year, except for anthracite mines. All anthracite mines that produced 10,000 or more short tons during the reporting year must submit Form EIA-7A. (The distinction is due to the fact that anthracite mines tend to be small so a higher threshold would exclude much of the sector). Standalone facilities (e.g., coal preparation plants, coal loading facilities (“tipples”), and loading docks) that operated 5,000 or more hours must submit Form EIA-7A.

EIA-8A, “Annual Survey of Coal Stocks and Coal Exports”: Responses are limited to coal brokers, coal traders, and coal terminals that own stocks of 10,000 or more short tons of coal originating in the United States on December 31st of the reporting year, or exported coal originating in the United States during the reporting year. Companies that take custody (physical possession) of the coal and transport, but never own the coal do not report. Companies that report coal stocks on Form EIA-923, “Power Plant Operations Report,” are not required to report.

Table B1 shows the estimated frame size for the routine surveys.

Table B1 Frame Size for Routine Coal Surveys

Survey	Annual Reporting Frequency	Number of Respondents	Annual Number of Responses
EIA-3, Quarterly Survey of Industrial, Commercial, & Institutional Coal Users	4	432	1,728
EIA-7A, Annual Survey of Coal Production and Preparation	1	848	848
EIA-8A, Annual Survey of Coal Stocks and Coal Exports	1	48	48
TOTAL		1,328	2,624

In addition to the routine surveys, standby Forms EIA-6, “*Emergency Coal Supply Survey*,” and EIA-20, “*Emergency Weekly Coal Monitoring Survey for Coal Burning Power Producers*,” may be activated during coal availability emergencies. Form EIA-6 collects data from coal mining companies on production and stocks on a state basis. Companies that produced 25,000 or more short tons of coal during the previous calendar year can be directed to respond. There are currently about 453 mining companies that meet the reporting criteria for this survey.

Form EIA-20 survey collects data on coal consumption, stocks, generation, capacity and deliveries from individual coal-fired power plants. Plants that meet the following criteria can be directed to report: 1) have a total generator nameplate capacity (sum for generators at a single site) of 1 megawatt (MW) or greater; and 2) the generator(s), or the facility in which the generator(s) resides, is connected to the local or regional electric power grid and has the ability to draw power from or deliver power to the grid. There are currently about 337 coal-fired power plants that meet the reporting criteria for this survey.

Depending on the circumstances of the coal disruption, EIA may require only a subset of the potential respondents of the standby surveys to report. It is unlikely that a coal availability emergency would be so widespread to require all 453 mining companies or all 337 coal-fired plants to report. For the purposes of estimating burden, a method that assumes that 25 percent of respondents would actually be required to report data is used. For additional information see Section A.12. *Estimate of Respondent Burden Hours and Cost*.

B.2. Statistical Methods

The EIA coal surveys employ several methods to impute for item and unit nonresponse. These include mean substitution and regression techniques.

Response rates on the coal surveys are high (see Section B.3., below). For those instances in which a respondent has failed to report or a questionable data value cannot be verified, the following imputation methods are applied:

Forms EIA-3 and EIA-8A: EIA uses ratio imputation models to handle unit and item nonresponse for each of these surveys. To impute data for a given missing item for the current period, a non-respondent's reported or imputed value for the prior period is multiplied by a ratio using data provided by survey respondents that reported the item for both the current and prior periods and are as similar as possible to the non-respondent. The numerator of the ratio is the total of the item for the current period from the respondents, and the denominator of the ratio is the total of the item for the prior period from the respondents. By using this ratio imputation model, we assume that the non-respondent is similar to the respondents that contribute to the ratio in terms of the period-to-period change in the item. For EIA-3, the imputation is generally done at the end-use sector level, but the imputation is done using respondents across all the sectors if there are not enough respondents by sector. When computing a given ratio, respondents that have the largest individual effect on improving the correlation between the two periods of data are removed from the ratio until this correlation is greater than 80%. However, reported zeroes are not automatically excluded from the numerator or denominator of the ratio.

For EIA-3, EIA imputes missing quarterly data for coal receipts, consumption and stocks; coking receipts, stocks and production; and breeze production using a ratio imputation model applied to a non-respondent's reported or imputed value from the same quarter a year ago. For the EIA-8A, EIA similarly imputes missing data for end-of-year coal stocks by state of location using a ratio imputation model applied to a non-respondent's reported or imputed annual stock value from the prior year.

Form EIA-7A: In the case of the EIA-7A, Table B2 lists the variables subject to imputation if a value is either missing or a value appears to be unreasonable and cannot be validated. Table B3 lists the imputation method applied to each variable.

Table B2. List of Variables Subject to Imputation as Necessary, EIA-7A Survey

Facilities that Include Mines and Preparation Plants	Mine-Only Facilities	Preparation Plant-Only Facilities
Latitude and longitude coordinates Percentage of production by mine type Heat (BTU) content of coal produced Recoverable reserves (tons) Recovery %* Coal Bed Mined Coal Bed Thickness Type of Mining Operation Open Market Sales (tons) Open Market Sales (revenue) Portion of coal sales that is exported Split of exported coal between metallurgical and steam coal. Total disposition Sales to Parent (revenue) Sales to Other Mines (revenue) Coal stocks at remote locations Prepared coal: surface mined % Prepared coal: underground mined % Productive Capacity (tons)	Latitude and longitude coordinates Percentage of production by mine type Heat (BTU) content of coal produced Recoverable reserves Recovery % Coal Bed Mined Coal Bed Thickness Type of Mining Operation Open Market Sales (tons) Open Market Sales (revenue) Portion of coal sales that is exported Split of exported coal between metallurgical and steam coal. Total disposition Sales to Parent (revenue) Sales to Other Mines (revenue) Coal stocks at remote locations Productive capacity (tons)	Prepared coal: surface mined % Prepared coal: underground mined % Productive capacity (tons)

* EIA is proposing to remove this variable from the survey form due to the results of cognitive testing

Table B3. EIA-7A Imputation Methods

Variable	Method When Data for Prior Year Has Been Submitted	Method When Prior Year Data is Unavailable
Latitude and longitude coordinates	Last reported values	Variable value set to null
Percentage of production by mine type	Prior year value	As reported by MSHA [2]
Heat (BTU) content of coal produced	Prior year value	Variable value set to null
Recoverable reserves (tons)	Prior year value minus current year production	Variable value set to null
Recovery %	Prior year value [1]	Variable value set to null
Coal Beds Mined	Prior year value	Variable value = unknown
Coal Bed Thickness	Prior year value	Default value = 36 inches
Prepared coal: % from surface mines	Prior year value	Variable value set to null
Prepared coal: % from underground mines	Prior year value	Variable value set to null
Portion of coal sales that is exported	Prior year value	Variable value set to null
Split of exported coal between metallurgical and steam coal	Prior year value	Variable value set to null
Coal stocks at remote locations	Prior year value	Variable value set to null
Type of Mining Operation	Mine type recorded by MSHA [2]	
Open Market Sales (tons)	Set equal to actual production recorded by MSHA [2]	
Open Market Sales (revenue)	$(\text{Avg. Price}) \times (\text{Open Market Sales})$ where Avg. Price = $\frac{\text{sum}(\text{Sales to all rev})}{\text{sum}(\text{sales to all})}$ by State, County and Mine type	
Total disposition of coal produced (tons)	Set equal to actual production recorded by MSHA [2]	
Sales to Parent (revenue)	$(\text{Avg. Price}) \times (\text{Sales to parent})$ where Avg. Price = $\frac{\text{sum}(\text{Sales to parent rev})}{\text{sum}(\text{sales to parent})}$ by State, County and Mine type [3]	
Sales to Other Mines (revenue)	$(\text{Avg. Price}) \times (\text{Sales to mines})$ where Avg. Price = $\frac{\text{sum}(\text{Sales to mines rev})}{\text{sum}(\text{sales to mines})}$ by State, County and Mine type [4]	
Productive Capacity (tons)	Set equal to actual production recorded by MSHA [2]	
Notes:		
[1] EIA is proposing to remove this variable from the survey form due to the results of cognitive testing.		
[2] The Mining Health and Safety Administration (MSHA) provides EIA with preliminary data on production by mine and mining method (e.g., surface, underground).		
[3] This estimate of sales revenue is applied if Sales to Parent (tons) has been reported by the respondent. If this value has not been reported the revenue value is set to null.		
[4] This estimate of sales revenue is applied if Sales to Other Mines (tons) has been reported by the respondent. If this value has not been reported the revenue value is set to null.		

Imputation methods on the 7A include substituting or adjusting prior year data for many of variables. For other variables, MSHA data are used as the imputed values. Finally, an average price of coal is estimated and is multiplied by sales to impute for missing revenue.

Out of 1,160 records for 7A in 2015, 91 have imputed sales, 287 have imputed capacity, and 72 have imputed reserves. All three fields are imputed for 72 respondents.

B.3. Maximizing Response Rates

To help ensure maximum response, EIA uses a multiple stage approach. Before the due date, an email and phone message are sent to remind respondents of the upcoming submission and to provide assistance if needed. Once the due date is passed, EIA continues to contact respondents via email and phone to indicate the overdue survey form and encourage response. If a respondent still does not submit the form, the survey manager will contact respondents and their supervisors to encourage response. Finally, EIA sends a noncompliance letter requesting submission by a specific date. Approximately 7 to 10 business days before the end of the reporting period, respondents on the latest respondent list are sent an email inquiring whether they will submit, or if not, to reply with the name, telephone number and e-mail address of the new submitter. This advance query helps EIA keep its list of e-mail addresses and names current. It is important to keep email addresses current because most communication with survey respondents is done via email messages.

Procedures specific to each survey are presented below:

Form EIA-3 quarterly survey: Respondents are expected to submit Form EIA-3 no later than 30 days after the end of a calendar quarter. If respondents are delayed in submitting their survey(s), emails are used to notify non-respondents on a weekly basis for the first three weeks following the survey due date. For those surveys that are still outstanding after this three-week period, a survey staff member will begin making calls and sending emails to the survey submitters and their supervisors, to increase awareness about the delinquent survey. Finally, noncompliance letters will be sent requiring respondents to submit by a specified date.

Forms EIA-7A and EIA-8A annual surveys: Respondents of Forms EIA-7A and EIA-8A must submit completed forms no later than April 1 of the year following the reporting year. If respondents are delayed in submitting their survey(s), emails are used to notify non-respondents. For those surveys that are still outstanding after the email notification period, a survey staff member will begin making calls and sending emails to the survey submitters and their supervisors, to increase awareness about the delinquent survey. Finally, noncompliance letters will be sent requiring respondents to submit by a specified date. More attention is given to large coal mines that report on the EIA-7A so as to increase production coverage.

Recent response rate statistics for the surveys are shown below in Table B4:

Table B4 Recent Coal Survey Response Rates

Survey	Time Period	Response Rate (% of Respondents)
EIA-3, Quarterly Survey of Industrial, Commercial, & Institutional Coal Users	Third Quarter 2016	100%
EIA-7A, Annual Survey of Coal Production and Preparation	2015	89%
EIA-8A, Annual Survey of Coal Stocks and Coal Exports	2015	100%

The methods employed to impute for non-response are described above in Section B2.

B.4. Test Procedures and Form Consultations

EIA conducted 19 cognitive interviews made up of four EIA-3 respondents, 11 EIA-7A respondents, and four EIA-8A respondents. Explanatory cognitive interviews were conducted for six EIA-7A respondents during September 28-29, 2015 in the St. Louis, MO area and September 30 – October 1, 2015 in Montana and Wyoming. Cognitive interviews for four EIA-3 respondents and five EIA-7A respondents were conducted during March 21-25, 2016 in the Birmingham area of Alabama and during April 11-14, 2016 outside of Pittsburgh, Pennsylvania. Four EIA-8A respondents were cognitively interviewed via telephone at the EIA headquarters beginning on March 3rd and ending on March 31st. EIA selected a sample of companies to include companies of varying size.

The objectives of the cognitive research were to: identify areas of survey specification errors that respondents are reporting inconsistently and/or applying different assumptions in their reported values; explore proposed changes to questions and survey design to reduce specification and measurement errors; collect information on the respondents' understanding of the current questions and data elements; and assess respondents' ability to report on additional data elements and design changes that supplement existing parts of the survey forms.

One significant consequence of the cognitive testing was an increase to the estimated burden hours for the EIA-7A coal production survey from one hour to 3.25 hours.

In addition to the cognitive testing, other routine form consultations were performed. These consultations included review and response to comments received in response to the September 16, 2016, Federal Register Notice, and a November 9, 2016 webinar on proposed changes to the surveys with 35 remote participants. For additional information see Section A.8., *Summary of Consultations Outside the Agency*.

B.5. Statistical Consultations

No statistical consultations were performed.

The data collections for the Forms EIA-3, EIA-7A, and EIA-8A and EIA-3 are performed by the Office of Electricity, Renewables, and Uranium Statistics (ERUS), Office of Energy Statistics, with contractor assistance.

The data collections for the standby Forms EIA-6 and EIA-20 would be performed by ERUS if the surveys are activated. Contractor assistance may be employed, depending on specific circumstances.

For more information concerning this request for OMB approval, please contact the agency Forms Clearance Officer, Brian.Hewitt@eia.gov or (202) 586-5045.