



Independent Statistics & Analysis

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Administration

Supporting Statement for Manufacturing Energy Consumption Survey

Part A: Justification

Form EIA-846, Manufacturing Energy Consumption Survey

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Introduction

The U.S. Energy Information Administration (EIA) is the statistical and analytical agency within the U.S. Department of Energy (DOE). It collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding regarding energy and its interaction with the economy and the environment. EIA is required to publish, and otherwise make available independent, high-quality statistical data to federal government agencies, state and local governments, the energy industry, researchers, and the general public. To meet this obligation, EIA utilizes Form EIA-846, *Manufacturing Energy Consumption Survey (MECS)*, to collect data on manufacturing energy consumption and expenditures within the United States.

EIA is requesting a three-year extension with changes to Form EIA-846. Response to this survey is mandatory.

EIA-846, Manufacturing Energy Consumption Survey

Form EIA-846 is a national sample survey that collects information on energy consumption and expenditure data from establishments in the manufacturing sector; i.e., North American Industry Classification System (NAICS) codes 31-33. The information collected is used to publish aggregate statistics for the manufacturing sector on the consumption of energy for fuel and nonfuel purposes, as well as certain energy-related issues such as energy prices, on-site electricity generation, purchases of electricity from utilities and non-utilities, and, occasionally, the capability to switch fuels. The MECS data is also used in EIA's National Energy Modeling System (NEMS) industrial models which are used to benchmark other government and non-government modeling systems.

Clearance is requested to permit EIA to implement the 2018 Manufacturing Energy Consumption Survey (MECS), Form EIA-846, to collect data on energy consumption and related subjects for the manufacturing sector of the U.S. economy. The MECS will be conducted by the U.S. Department of Commerce's Bureau of the Census, acting as the data collection agent for EIA. This survey will be fielded in early 2019 to collect data for calendar year 2018. This is the tenth time the MECS will be conducted. Although responses are mandatory under law, the MECS data will be used for statistical purposes only. All individual responses are strictly confidential and no data that could lead to respondent identification, either directly or indirectly, will be released.

Changes to Form EIA-846

- EIA seeks to gather information related to tire derived fuel on Form EIA-846. To do this, EIA will add questions about tire derived fuel (TDF) to the MECS specifically for those industries, Paper (NAICS 322) and Nonmetallic Mineral Products (NAICS 327), which use TDF as an energy source. EIA will collect information about TDF and includes: purchases, expenditures, transfers-in, amount produced on-site, whether it's a product/byproduct of another energy source consumed on-site, and fuel consumption.
- EIA seeks to collect data on manufacturers with electricity generation capacity of less than one megawatt. To collect this information, EIA will include a question on the electricity section of

Form EIA-846 to gather information from manufacturing establishments that have electricity generation with a total nameplate capacity of less than one megawatt. This question is in response to a comment received from the National Renewable Energy Laboratory (NREL) during the 60-day Federal Register Notice period. NREL identified an information gap in electricity generation data. Currently, EIA collects data for establishments with electricity generation of one megawatt or greater, however no data is being collected for manufacturers with electricity generation below one megawatt. EIA will begin collecting this information to better understand the energy generation habits of manufacturing establishments with an electricity capacity less than 1MW.

Besides the changes already discussed, the content of the 2018 MECS will be unchanged from the 2014 survey. Most respondents will submit their data electronically in a question/answer format as opposed to the spreadsheet format used in the past. The MECS information products will continue to present industry-by-Census Region level data as well as national data.

A.1. Legal Justification

The authority for this mandatory data collection is provided by the following provisions:

- a. Section 13(b), 15 U.S.C. 772(b), of the Federal Energy Administration Act of 1974 (FEA Act), Public Law 93 275, states:
 - a. "All persons owning or operating facilities or business premises who are engaged in any phase of energy supply or major energy consumption shall make available to the (Secretary) such information and periodic reports, records, documents, and other data, relating to the purposes of this Act, including full identification of all data and projections as to source, time and methodology of development; as the [Secretary] may prescribe by regulation or order as necessary or appropriate for the proper exercise of functions under this Act."
- b. Section 5(b), 15 U.S.C. 764(b), of the FEA Act, states that to the extent authorized by Section 5(a), the [Secretary] shall:
 - a. (1) ...advise the President and the Congress with respect to the establishment of a comprehensive national energy policy in relation to the energy matters for which the Administration has responsibility, and, in coordination with the Secretary of State, the integration of domestic and foreign policies relating to energy resource management;
 - b. (2) ...assess the adequacy of energy resources to meet demands in the immediate and longer range future for all sectors of the economy and for the general public;
 - c. (3) ...develop effective arrangements for the participation of State and local governments in the resolution of energy problems;
 - d. (4) ...develop plans and programs for dealing with energy production shortages; ...
 - e. (5) ...promote stability in energy prices to the consumer, promote free and open competition in all aspects of the energy field, prevent unreasonable profits within the various segments of the energy industry, and promote free enterprise; ...

- f. (6) ...assure that energy programs are designed and implemented in a fair and efficient manner so as to minimize hardship and inequity while assuring that the priority needs of the Nation are met; ...
- g. (9) ...collect, evaluate, assemble, and analyze energy information on reserves, production, demand, and related economic data; ...
- h. (12) ...perform such other functions as may be prescribed by law."
- c. As the authority for invoking Section 5(b), above, Section 5(a), 15 U.S.C. 764(a), of the FEA Act in turn states:
 - a. "Subject to the provisions and procedures set forth in this Act, the [Secretary] shall be responsible for such actions as are taken to assure that adequate provision is made to meet the energy needs of the Nation. To that end, he shall make such plans and direct and conduct such programs related to the production, conservation, use, control, distribution, rationing, and allocation of all forms of energy as are appropriate in connection with only those authorities or functions...
 - i. (1) ...specifically transferred to or vested in him by or pursuant to this Act...
 - ii. (3) ...otherwise specifically vested in the (Secretary) by the Congress."
- d. Authority for invoking Section 5(a) of the FEA Act is provided by Section 52, 15 U.S.C. 790a, of the FEA Act which states that the Administrator of the EIA:
 - a. "... (Shall) establish a National Energy Information System... which shall contain such information as is required to provide a description of and facilitate analysis of energy supply and consumption within and affecting the United States on the basis of such geographic areas and economic sectors as may be appropriate... to meet adequately the needs of..."
 - i. (1) ...the Department of Energy in carrying out its lawful functions;
 - ii. (2) ...the Congress;
 - iii. (3) ...other officers and employees of the United States in whom have been vested, or to whom have been delegated energy-related policy decision-making responsibilities;
 - iv. (4) ...the States to the extent required by the Natural Gas Act [15 U.S.C. 717 et seq.] and the Federal Power Act [16 U.S.C. 791a et seq.].
 - b. "...the System shall contain such energy information as is necessary to carry out the Administration's statistical and forecasting activities, and shall include, such energy information as is required to define and permit analysis of;"
 - i. (1) ...the institutional structure of the energy supply system including patterns of ownership and control of mineral fuel and non-mineral energy resources and the production, distribution, and marketing of mineral fuels and electricity;
 - ii. (2) ... the consumption of mineral fuels, non-mineral energy resources, and electricity by such classes, sectors, and regions as may be appropriate for the purposes of this Act;
 - iii. (5) ...industrial, labor, and regional impacts of changes in patterns of energy supply and consumption;
 - iv. (6) ...international aspects, economic and otherwise, of the evolving energy situation;

- v. (7) ...long-term relationships between energy supply and consumption in the United States and world communities.

The Department of Energy (DOE) Organization Act of 1977, Public Law 95-91, created the Department of Energy. [42 U.S.C. 7135](#) of this law established the Energy Information Administration (EIA) to carry out a

. . . central, comprehensive, and unified energy data and information program which will collect, evaluate, assemble, analyze, and disseminate data and information which is relevant to energy resource reserves, energy production, demand, and technology, and related economic and statistical information, or which is relevant to the adequacy of energy resources to meet demands in the near and longer term future for the Nation's economic and social needs.

Section 42 U.S.C. 7135(i) provides specific statutory authority and justification for the Manufacturing Energy Consumption Survey. This section states:

(i) Manufacturers energy consumption survey

(1) The Administrator shall conduct and publish the results of a survey of energy consumption in the manufacturing industries in the United States . . . in a manner designed to protect the confidentiality of individual responses. In conducting the survey, the Administrator shall collect information, including -

- (A) quantity of fuels consumed;
- (B) energy expenditures;
- (C) fuel switching capabilities; and
- (D) use of non-purchased sources of energy, such as solar, wind, biomass, geothermal, waste by-products, and cogeneration.

(2) This subsection does not affect the authority of the Administrator to collect data under section 52 of the Federal Energy Administration Act of 1974 ([15 U.S.C. 790a.](#))

A.2. Needs and Uses of Data

The purpose of the MECS is to collect information from manufacturing establishments on basic energy consumption and expenditures, shipments of energy offsite, end use consumption, building

characteristics, participation in energy management programs, technologies, and fuel-switching capacity.

The MECS fulfills multiple needs and requirements for analysis at DOE. It is the only national survey on energy consumption of the manufacturing sector that is both statistically reliable and comprehensive. Data obtained from the MECS serves as a major input into EIA's National Energy Modeling System (NEMS) industrial models which are used to benchmark other government and non-government modeling systems. The results of the NEMS, as well as the MECS data themselves, are used as inputs into national energy policy decisions and DOE research and development strategies as well as a broad range of conservation and renewable energy industrial programs. In addition, the MECS provides a point of reference of manufacturers' adoption of energy efficiency activities in the form of energy management programs and general-purpose energy efficient technologies, providing an indication of manufacturers' ability to reduce the cost and consumption of energy, and to react to changing economic and energy circumstances.

EIA has a series of surveys in place that collect data on energy consumption to analyze the issues of the demand for energy and the effect of that demand on the Nation's social and economic needs. Three of these systems are now operating: Forms EIA-457 A-G, "Residential Energy Consumption Survey" (OMB Number 1905-0092); Forms EIA-871 A-F, "Commercial Buildings Energy Consumption Survey" (OMB Number 1905-0145); and Form EIA-846, "Manufacturing Energy Consumption Survey" (OMB Number 1905-0169). These surveys span end-use sectors that account for roughly 55 percent of the energy consumption in the United States. Manufacturing operations alone account for approximately one-third of total energy consumption. The wide range of data that the MECS collects and publishes, with known precision, make it the most reliable and accurate tool for providing comprehensive energy statistics covering the manufacturing sector.

Another dimension of MECS data, besides accuracy and reliability, is relevancy. A review, undertaken by EIA before the 2014 MECS, revealed specific data needs by the users of energy information. This review focused on the needs for data from the manufacturing subsector of industry by DOE, other Federal agencies, and the private sector. That review was built on the following sources:

- A *Federal Register* notice (Vol. 79, No. 100, pp. 29756-29757, FR Doc. 2014-12008 published May 23, 2014) that requested comments on the design and development of the 2014 MECS.

Updates are in progress for another set of Web products, Manufacturing Energy and Carbon Footprints, which can be found at <http://www1.eere.energy.gov/manufacturing/resources/footprints.html>. Those documents, originally developed in partnership with DOE's Advanced Manufacturing Office, summarize MECS and other related data for sixteen manufacturing industries that are significant consumers of energy. The MECS establishes the basis of ongoing estimates for changes in energy intensity and greenhouse gases. The data are used extensively by EIA's Office of Energy Consumption and Efficiency Analysis as inputs to NEMS models.

In addition, MECS aggregate data are submitted regularly to the International Energy Agency as their benchmark for U.S. manufacturing energy consumption. MECS estimates are used routinely in many

research projects being conducted by organizations such as the Gas Research Institute, Pacific Northwest National Laboratory, Argonne National Laboratory, Lawrence Berkeley National Laboratory and others.

A.3. Use of Technology

The MECS is largely an Internet-based electronic survey, with a paper form version for those respondents that require it. Although manufacturing establishments that have Internet access have the option either to complete the form using the Internet through Centurion, the Census Bureau's internal electronic data collection system, or complete a paper questionnaire, EIA promotes the Internet as the primary mode of data collection. Each establishment that does not have Internet access will receive a specific MECS paper form based on the NAICS code in which they are classified.

Due to the ease of electronic filing, approximately 85 percent of respondents who reported data for the 2006 MECS did so using the Internet. EIA has continued to collect data through the Internet for every MECS since then and will continue this practice. The reporting of data electronically has continued to increase. As of the 2014 MECS about 91 percent of respondents reported data through the Internet. EIA believes that collecting data through the Internet lessens the response burden because it is easier to use, faster to complete, and requires fewer edit callbacks than the paper form reporting method.

Many of the same features that were employed for the 2006 MECS Internet-based electronic questionnaire such as using the NAICS code to customize the form without prior preparation will continue to be utilized for the 2018 MECS. This allows respondents in the refining industry to tailor their form so that it includes only questions relevant to their industry. Thus, Form EIA-846 represents a substantial reduction in burden on the refining industry and will continue to collect only fuel consumption for petroleum products. For energy sources that are not petroleum products, the same data will be collected as for other industries. However, for both petroleum and non-petroleum products consumed in refineries, no feedstock data will be collected.

Petroleum refineries, which used to receive Form EIA-846 (B), ship greater quantities of energy sources than any other manufacturing industry. However, Form EIA-846 (B) took advantage of common data available from Form EIA-810, "Monthly Refinery Report" and employed a different concept of energy sources inputs. Data reported on Form EIA-810, "Monthly Refinery Report" are used to measure feedstock and offsite-produced fuel usage. Therefore, petroleum refiners will receive a shorter Internet-based electronic questionnaire for the 2018 MECS because EIA will continue to make use of data from other surveys.

A.4. Efforts to Identify Duplication

EIA reviews and evaluates manufacturing energy consumption information available from a variety of sources, including other federal agencies, industry trade associations, state governments, and commercial information services, to identify instances of duplication. Additionally, in the public notices

and consultations associated with the re-clearance of Form EIA-846, EIA encourages respondents and data users to identify alternate sources of manufacturing energy consumption information EIA proposes to collect. Instances of potential data duplication identified by EIA are evaluated in terms of data coverage, level of aggregation, frequency of collection, data reliability, and statutory requirements to determine whether alternate data sources represent a suitable substitute for EIA data.

EIA has carefully examined several federal government survey instruments to assess whether there is any duplicative data collection with Form EIA-846. These instruments are: Form EIA-3, Quarterly Survey of Non-Electric Sector Coal Data; Form EIA-810, Monthly Refinery Report; Form EIA-820, Annual Refinery Report; FERC-1, Annual Report of Major Electric Utilities, Licensees, and Others; EIA-923, Power Plant Operations Report; the Environmental Protection Agency Rule (40 CFR Part 98), Mandatory Reporting of Greenhouse Gases; and Bureau of the Census Form MA-1000, Annual Survey of Manufactures and Economic Census - Manufacturing. The inadequacies of these data as a substitute for the MECS are discussed below.

The Inadequacies of Similar Data

Each survey form (Forms EIA-3, EIA-810, EIA-820, FERC-1, EIA-923, Rule (40 CFR Part 98), and MA-10000) was established to collect a specific set of data for in depth, narrowly defined purposes. The specificity of these data collections that makes these data both unsuitable to the purposes of the MECS and impractical to modify to substitute for data collected through MECS.

a. Quarterly Survey of Non-Electric Sector Coal Data (EIA-3) (OMB No. 1905-0167)

Form EIA-3 provides data on consumption of coal on a limited number of establishments. It collects information only from manufacturing establishments that are known to consume coal for purposes other than coke production. The list of such establishments contains approximately 825 of the 293,000 manufacturing establishments in the United States, restricted to those that consumed 1,000 or more tons in the previous year. There are no data on inputs, dispositions, and consumption for energy sources other than coal. Nor are there data that MECS requires: cogeneration of electricity, uses of energy sources as feedstocks, end-use estimates, or establishment characteristics. There are some differences between the two systems in what establishments populate the manufacturing sector.

b. Monthly and Annual Refinery Reports (EIA-810 and EIA-820) (OMB No. 1905-0165)

Forms EIA-810 and EIA-820 are considered together because they are complementary systems that cover the same population. From the universe of approximately 200 refineries and blenders in the United States, these reports collect data on inputs of crude oil and other unfinished products, outputs of petroleum products, and on-site consumption of energy by those establishments. Refineries constitute a small but significant segment of the manufacturing industries. In addition, the two systems are designed to collect data for refining and blending operations only. In cases where the establishment houses a refinery that also contains separate petrochemical processing (not unusual), the data exclude the petrochemical activities. Thus, these refinery data systems do not provide comprehensive coverage of the energy sources of refining establishments. The MECS, on the other hand, obtains energy data on the entire establishment.

Prior to fielding the 1985 MECS, EIA proposed modifying Form EIA-820, the Annual Refinery Report, to collect MECS data. To explore this possibility, discussions were held with the American Petroleum Institute (API) before the 1985 MECS was conducted. API pointed out that since Form EIA-820 is an ongoing data collection that is well understood at the refineries, modifying it to incorporate all of the data to be collected for a periodic MECS would cause confusion and increase the burden on respondents. Spokesmen for API said that it would be preferable to conduct the two surveys separately rather than combine them. EIA will continue to manage burden by using Form EIA-810 data to arrive at an estimate of the nonfuel energy consumed in the refining process. The refineries' data on fuel consumption, however, must be obtained via the MECS because MECS fuel-switching and end-use estimates are calculated based on the MECS data on fuel consumption.

c. Annual Report of Major Electric Utilities, Licensees and Others (FERC-1) (OMB No. 1902-0021)

The Federal Energy Regulatory Commission (FERC), Form FERC-1, Annual Report of Major Electric Utilities, Licensees, and Others, collects financial information from privately owned utilities. Data gathered via FERC-1 include quantity and value of electricity purchases and transfers from "other non-utility sources." Because these sources are listed by name but not categorized, industrial sources are included with other sources and not always readily identifiable.

The survey of utilities develops information on how much electricity is produced and consumed in the non-utility sector. Moreover, the survey does not address the topics of energy sources or processes by how electricity is produced in the manufacturing sector. The MECS must obtain information from manufacturers about the extent of industrial self-generation of electricity, and sales and transfers to utilities on a nationwide basis. MECS data will provide complete information for electric-power analysis and modeling efforts.

d. Power Plant Operations Report (EIA-923) (OMB No. 1905-0129)

Form EIA-923 collects monthly cost and quality of fossil fuels delivered to unregulated and regulated entities with a total fossil fuel nameplate generating capacity of 50 megawatts or greater. Although some intersection with MECS respondents is expected, there would be great difficulty in determining exact matches. Further, Form EIA-923 is designed to collect fuels that enter the generating plant only and not for the entire establishment as is the MECS.

Form EIA-923 also collects data on air and water quality from steam-electric plants. Information collected on this form is used to derive emission estimates and includes fuel consumption, electricity generation, and useful thermal output. Form EIA-923 respondents include all regulated and unregulated electric power plants in the United States. Respondents report electric power generation, energy source consumption, end of reporting period fossil fuel stocks, and useful thermal output from co-generators. Although MECS establishments can be expected to be a subset of the facilities that provide data for these surveys, the MECS requires information for all aspects of consumption in manufacturing plants, not just for electric generation systems. Second, the MECS collects thermal output from boilers not necessarily associated with electric generation. It is often difficult to match generators identified separately on EIA electric generation forms with MECS manufacturing plants as identified by boundaries and classification associated with the Economic Census - Manufacturing, the MECS frame. Therefore, the

surveys may differ as to which generating facilities are associated with particular establishments or more generally, the manufacturing sector. Finally, MECS respondents must have at hand electricity generation data to complete the section on categorizing end-use energy.

e. Mandatory Reporting of Greenhouse Gases Rule (40 CFR Parts 86, 87, 89, 90, 94, 98, 1033, 1039, 1042, 1045, 1048, 1051, 1054, 1065) (OMB No. 2060-0629)

The rule requires reporting of greenhouse gas (GHG) emissions from large sources and suppliers in the United States; facilities emitting 25,000 metric tons or more of GHG emissions per year. It is not entirely clear at this point the exact extent of the duplication with MECS. These facilities are required to collect combustion-unit level and fuel type data; however they do not have to report these data in 2014. The reporting requirements for these entities may change for the reporting year 2014 and beyond. These data are used to calculate the facility-wide GHG emissions that are submitted to the Environmental Protection Agency (EPA).

Although the mandatory reporting of greenhouse gases rule has some overlap with the MECS it is small and hard to know in advance which establishments or facilities overlap. First, the EPA reporting requirement is annual whereas the MECS is collected every four years. The second difference is definitional in the level of reporting. The MECS is an establishment survey; however, according to the rule, the level of reporting for EPA is at the facility level. "Facilities" may or may not align exactly with the Census/MECS definition of the "establishment". Also, as mentioned above, the rule requires only the largest and most energy/carbon-intensive facilities to report their emissions presumably excluding all others. Alternatively, the MECS is a sample survey that includes small, medium, and large U.S. manufacturing establishments (although the smallest establishments are excluded from MECS).

As both the MECS and the EPA rule have respondents assemble and collect energy consumption data albeit for different purposes, there is be some duplication for some subsets of the manufacturing population. However, this duplication is necessary for the MECS to fulfill its mission of providing not only energy consumption data, but also data on energy expenditures, prices, end-use consumption and fuel-switching. All of these data sets contribute to determining manufacturing's use of energy but also adds to the understanding of carbon dioxide emissions.

f. Annual Survey of Manufactures (MA-1000) (OMB No. 0607-0449)

The Census Bureau's Annual Survey of Manufactures (ASM) is an economic survey that collects information on such characteristics as employment, payroll, value of shipments, capital expenditures, and value added by manufacturing. As such, the ASM collects limited energy data. The relationship of the ASM's energy data to the MECS program is discussed below.

- Cost of Fuels--The ASM collects data on total costs for all purchased fuels. The MECS, on the other hand, collects data on the cost for each separate fuel.
- Cost and Quantity of Purchased Electricity--The MECS collects purchases and transfers separately, including expenditures for purchases. The ASM collects data on electricity purchases and expenditures, but it does not collect any data pertaining to electricity transfers into the establishment.

- **Generated Electricity**--The ASM collects data on total quantity of electricity generated on site. The MECS divides generated electricity into that produced by cogeneration, renewable energy sources, and conventional generation. The sum of these three items should equal the total ASM estimate of generated electricity for an establishment.
- **Electricity Sold or Transferred**--The ASM collects data on total electricity sold or transferred to other establishments. The MECS collects and publishes these data separately.

Thus, although there is some overlap between the two surveys, the MECS provides more comprehensive energy related data needed for policy and program management analysis than the ASM. This overlap is desirable from the point of view of increasing the reliability of the MECS. As described in Section B.3., the Census Bureau will conduct the MECS using a sample selected from the Economic Census - Manufacturing (ECM) mail frame. Editing procedures will be developed for the MECS responses that will compare the total of the disaggregated quantities on Form EIA-846 with the corresponding totals reported on MA-1000, providing a check on respondents' errors and misreporting. This was the case for the previous MECS, where both respondent and editing errors were identified using ASM data. Additionally, it is appropriate to have some intersection between the two questionnaires for control purposes to improve the reliability of the MECS. This greater control would decrease non-sampling error and reduce overall respondent burden.

g. Economic Census - Manufacturing (MA-1000, plus industry supplements) (OMB No. 0607-0899)

The Economic Census - Manufacturing (ECM) is conducted by the Census Bureau in place of the ASM for years ending in the digit "2" and the digit "7" (e.g., 2012 and 2017). The ECM, like the ASM, collects primarily economic data. Prior to 1997, the ECM was called the Census of Manufactures (CM). In the 1992 CM, the Census Bureau collected the same energy-related data as described above for the ASM. In the absence of the MECS, the Census Bureau would also have collected data on the consumption of purchased fuels, by type, used for heat and power without the benefit of related energy data items to improve the editing and quality that MECS provides. These data parallel those that have been and will be collected by the MECS. In the interests of minimizing burden and duplication, the Census Bureau has not collected these data since the 1992 CM.

The ECM also collects data about material inputs. Some of those data items correspond to nonfuel or feedstock use of energy sources which are also collected by the MECS. In fact, this overlap was helpful for editing purposes in the 2002 MECS. However, the MECS is currently on a four-year cycle while the ECM is conducted every five years so in most years a one-to-one comparison is not possible. Further, not all MECS feedstock data are duplicated by the ECM, nor does the ECM collect the data for all applicable industries as does the MECS.

A.5. Provisions for Reducing Burden on Small Businesses

EIA recognizes the need to minimize the reporting burden on small businesses and designs data surveys so that small operations are not unduly affected. EIA has established reporting thresholds for survey

likely to affect small businesses. These threshold either eliminate the reporting requirement for small businesses or limit the amount of information they are asked to supply.

Because the MECS spans the entire manufacturing sector, small establishments will be included in the sample frame out of necessity. However, the current version of the MECS form is designed to minimize the complexity of reporting, which will help the small establishments. As mentioned above in Section A.3, by using the Internet-based electronic questionnaire, establishments are able to customize their form and only see the data items relevant to them. This is a significant time savings over the written questionnaire. A paper version of Form EIA-846 will be made available only as a back-up for those establishments that do not have Internet access or who choose not to use it for other reasons. The paper version will organize the energy sources according to groups of similar types and frequency of use, but will not have all of the burden reduction capabilities of the Internet-based questionnaire. Therefore, all respondents will be eligible and highly encouraged to use the Internet-based electronic questionnaire.

Overall, the role of the small establishment in the survey will be relatively minor. Under EIA's arrangement with the Census Bureau to serve as the data-collection agent for this survey, the MECS will be a sample of 15,000 manufacturing establishments selected from the Economic Census - Manufacturing (ECM) mail file and supplemented by Social Security Administration lists of new establishments. By sampling directly from the ECM rather than sub-sampling from the ASM, the overlap of small establishment in the MECS and ASM samples is significantly reduced. The ASM sample contains approximately 50,000 establishments selected from the ECM, supplemented by the Social Security Administration's lists of new establishments, which reduces coverage error within the current sampling frame.

Establishments with fewer than approximately five employees (the actual number varies based on NAICS classification) are considered administrative record establishments and are excluded from the MECS population and therefore the sample. Other establishments (i.e., those having approximately 5 to 250 employees) are sampled with probabilities ranging from 0.005 to 1.000. In the MECS sampling strategy, the sampled proportion of establishments that employ 100 to 250 employees is greater than the sampled proportion of establishments with fewer than 100 employees. Moreover, the sampling of establishments with fewer than 50 employees is expected to be very light. The MECS sample will be selected to maximize the efficiency of the survey for estimating energy consumption.

Establishments with fewer than 50 employees consume less than four percent of total purchased fuels and, in general, do not have the wide variability of consumption of the larger establishments. Therefore, the proportion of smaller establishments selected for the MECS is designed to be quite low. However, small establishments are eligible, which allows the sample to represent the population of manufacturing establishments, excluding those with five or fewer employees

A.6. Consequences of Less-Frequent Reporting

The MECS had a statutory requirement to be a biennial survey and was a triennial survey, providing data for 1985, 1988, 1991, and 1994, before switching to a quadrennial schedule because of budget

considerations. The current statutory requirement is for the MECS to be a quadrennial survey with the option to conduct the survey more frequently.

The manufacturing sector is constantly evolving, in part, because of technological advancements. The increased monitoring of manufacturing energy demand is essential in keeping pace with the changing manufacturing trends. Major shifts in energy demand, especially in the manufacturing sector, are tied to both profitability and expenditures for capital equipment--and both require medium- to long-term planning processes. The proposed four-year cycle is necessary for depicting manufacturing trends. If the collection period were to be extended past a quadrennial cycle, EIA would be less able to monitor these major shifts in manufacturing energy demand accurately.

A.7. Compliance with 5 CFR 1320.5

Form EIA-846 data collection is in compliance with the guidelines in CFR 1320.5.

A.8. Summary of Consultations Outside of the Agency

This will be the tenth time the MECS will be conducted. EIA has conducted extensive consultations prior to clearance of the 2018 MECS. They include:

- The publication of and responding to a 60-day *Federal Register* notice (Vol. 82, No. 245, pp. 60720-60721, FR Doc. 2017-27596) published December 22, 2017.

The above mentioned 60-day *Federal Register* notice proposed one change for the 2018 MECS.

EIA seeks to gather information related to tire derived fuel on Form EIA-846. To do this, EIA proposes to ask questions about tire derived fuel (TDF) on the MECS, specifically for those industries, Paper (NAICS 322) and Nonmetallic Mineral Products (NAICS 327), which use TDF as an energy source. The questions EIA proposes utilizing to collect information about TDF will be similar to the questions EIA asks for other energy sources and include: purchases, expenditures, transfers-in, amount produced on-site, whether it's a product/byproduct of another energy source consumed on-site, and fuel consumption.

Further, EIA received two responses to the 60-day *Federal Register* notice. The first was from the Chief Statistician of the Bureau of Economic Analysis (BEA). BEA affirmed that it "strongly supports" the continued collection of data on the MECS, including having a more frequent data collection. It stated that MECS data are crucial to key components of BEA's economic statistics. Those MECS data include expenditures for electricity, natural gas, steam, fuel oil and other energy sources. The data are used as input for the annual input/output accounts. A copy of the letter sent by the Chief Statistician of the Bureau of Economic Analysis is included in the supplemental documents. EIA responded to the Chief Statistician with an email thanking him and BEA for their continued support.

The second comment was a response from the National Renewable Energy Laboratory (NREL). NREL requested that EIA ask the MECS respondents about small-scale (less than one megawatt) distributed electricity generation occurring at U.S. manufacturing establishments. Distributed generation is a subset of “distributed energy resources” which are modular, moderately sized generation sources that are used to produce electricity, or combined heat and power (CHP), near the site of end use. Detailed projections from EIA’s 2017 Annual Energy Outlook (AEO) indicate that generation from non-renewable, small-scale distributed generation (e.g., micro turbines, fuel cells, natural gas generator sets, and diesel generator sets below 1 MW) could increase by a factor of six from approximately 6 trillion wathours in 2015 to about 38 trillion wathours in 2040. This increase in non-renewable, small-scale distributed generation is expected to be driven by a variety of factors, including increased demand for reliable and resilient power, deployment mandates (e.g., renewable portfolio standards), improved technology, decreased cost of distributed generation, low natural gas prices, and high retail electricity rates.

NREL is not aware of any other survey, EIA or otherwise, that asks about distributed generation below one megawatt. Manufacturing establishments will often generate at least some of their own electricity. The MECS already collects electricity generation and fuel consumption by fuel type data for all sizes of generators at U.S. manufacturing establishments. NREL is requesting that questions be added to the MECS questionnaire to determine the portion of fuel consumption or generation that occurs at manufacturing establishments below one megawatt. After discussions with NREL, EIA and NREL agree that instead of collecting detailed data at this time, EIA will instead add a new question to the survey that would allow it to monitor how many manufacturing establishments use non-renewable distributed generation, and then use these data to anticipate and assess when more detailed data collection might be needed. As such, EIA will add a Yes/No question about distributed generation to the electricity section of the MECS.

The 30-day *Federal Register* notice (Vol. 83, No. 146, pp. 36581-36582, FR Doc. 2018-16250) was published on July 30, 2018 announcing the submission of this information collection request to OMB.

A.9. Payments or Gifts to Respondents

There will be no gifts or payments given to respondents as an incentive for completing Form EIA-846.

A.10. Provisions for Protection of Information

The MECS will be conducted by the Special Reimbursement Survey Branch within the Economic Reimbursable Division of the Census Bureau, as EIA's collection agent. The survey, authorized by the data-collection mandate of DOE, will be conducted according to the confidentiality provisions of the Census Bureau as specified in 13 U.S.C. § 9. This law requires, (1) the information furnished under the provisions of this title may not be used for any purpose other than the statistical purposes for which it is supplied; (2) the agency to protect the identifiability of the reported information; and (3) restricts access to the information to sworn officers and employees of the Census Bureau.

The respondents will be informed of both the confidentiality provisions and the mandatory nature of the survey on the first page of the questionnaire, in the instructions, and in a cover letter cosigned by the Administrator of the EIA and the Director of the Census Bureau.

A.11. Justification for Sensitive Questions

No sensitive questions are asked on Form EIA-846.

A.12. Estimate of Respondent Burden Hours and Cost

The sample size will not significantly change from the 2014 MECS sample. A breakdown for total respondent burden is shown below. The numbers of respondents completing the form in the following table are estimates.

Table A1. Estimated Respondent Burden

EIA Form Number/Title	Annual Reporting Frequency	Number of Respondents	Annual Number of Responses	Burden Hours Per Response	Annual Burden Hours
Form EIA-846 (A) (general)	0.25	11,460	2,865	9.00	25,785
Form EIA-846 (B) (NAICS 324110)	0.25	140	35	8.00	280
Form EIA-846 (A) (NAICS 321, 322, 324 (except for NAICS 324110), 325, and 331110)	0.25	3,400	850	10.00	8,500
TOTAL	0.25	15,000	3,750	9.22¹	34,565

If all 15,000 establishments completed the survey as indicated above, the total burden would be 138,260 hours. Because the MECS will collect information every four years, the average annual reporting burden is 34,565 hours.

The annual cost to the respondents is estimated to be \$2,616,225 (34,565 annual burden hours multiplied by \$75.69 per burden hour).

An average cost per hour of \$75.69 is used because that is the average loaded (salary plus benefits) cost for an EIA employee. EIA assumes that the survey respondent workforce completing surveys for EIA is comparable with the EIA workforce.

A.13. Annual Cost to the Federal Government

The total cost to the Government for the 2018 MECS is \$5,606,289. This survey is conducted on a quadrennial cycle, the annualized cost to the Government is $\$5,606,289/4 = \$1,401,572$. Of the \$5,606,289, over two-thirds (\$3,926,289), is paid to the U.S. Census Bureau, pursuant to a reimbursable agreement, for selecting the sample, collecting, and processing the data. The annualized cost to EIA from the Census Bureau is $\$3,926,289/4 = \$981,572$. The remaining \$1,680,000 covers EIA staff time, which is estimated at three EIA employees per year (12 total), at an average cost of \$140,000 per

employee. The annualized cost of EIA staff time is $\$1,680,000/4 = \$420,000$. EIA staff costs cover: 1) identifying and monitoring user needs; 2) revising the survey questionnaire; 3) consulting with the Census Bureau on sample design, data collection, non-response follow-up, non-response adjustments, data processing, parameter and variance estimation, production of tables and survey documentation; 4) analyzing data; and 5) preparing data reports and special analyses.

TOTAL COST TO THE FEDERAL GOVERNMENT, FORM EIA-846 (ESTIMATED)	
Data Collection and Processing (Census Bureau)	\$3,926,289
System Maintenance and Enhancement (EIA)	\$1,680,000
Total	\$5,606,289

A.14. Changes in Burden

Table A2. Changes in Burden

EIA Form Number/Title	Annual Reporting Frequency	Number of Respondents (Previously Approved)	Number of Respondents (Requested)	Annual Number of Responses (Previously Approved)	Annual Number of Responses (Requested)	Burden Hours Per Response (Previously Approved)	Burden Hours Per Response (Requested)	Annual Burden Hours (Previously Approved)	Annual Burden Hours (Requested)	Annual Number of Responses			Annual Burden Hours		
										Change Due to Agency Discretion	Change Due to Adjustment in Agency Estimate	Adjustment	Change Due to Agency Discretion	Change Due to Adjustment in Agency Estimate	Adjustment
EIA-846	.025	15,500	15,000	5,167	3,750	9.21	9.22	47,603	34,565	0	-1,417	-1,417	-4,610	-8,428	-13,038

A.15. Reasons for Changes in Burden

The total burden hours for the 2014 MECS was estimated to be 142,810 hours. As stated in Table A1 above, the 2018 MECS burden is 138,260 hours. The burden hours slightly changed for the 2018 survey because the sample size was reduced by 500 establishments from 15,500 to 15,000 establishments.

The prior approval was for an estimated burden 47,603 hours. The average annual burden for this clearance is 34,565 hours and represents a decrease of 13,038 hours. The decrease of 4,610 hours is due to the decrease of 500 respondents in the sample and that is shown under Change Due to Agency Discretion. The remaining decrease of 8,428 hours is due to an error in the last clearance that calculated the annual burden hours based on a triennial collection instead of a quadrennial collection and is shown under Change Due to Agency Estimate.

Table A3. ICR Summary of Burden

	Requested	Program Change Due to Agency Discretion	Change Due to Adjustment in Agency Estimate	Previously Approved
Annual Number of Responses	3,750	0	-1,417	5,167
Annual Time Burden (Hr)	34,565	-4,610	-8,428	47,603

A.16. Collection, Tabulation, and Publication Plans

The results of the MECS will be released electronically by EIA on the EIA Website <http://www.eia.gov/consumption/manufacturing/index.cfm>.

All tables in the publication will be prepared by the Census Bureau in accordance with EIA's directions. All tables will be reviewed by the Census Bureau for conformity to their disclosure standards. These standards are established to protect the confidentiality of individual respondents as required by Title 13, Section 9, of the U.S. Code.

The primary electronic output for the 2018 survey will contain tables covering consumption of energy sources by 3-digit and selected 4 and 6-digit North American Industry Classification System (NAICS) codes; by Census Regions; by levels of values of shipments; and by levels of total employment. Consumption estimates are of four types: total primary consumption; consumption for heat, power, and generation of electricity; consumption for non-fuel (e.g. feedstock) use; and consumption of received energy sources for the purpose of heat, power, and generation of electricity. Additionally, there will be tables covering:

- onsite generation
- purchases, expenditures, and average prices for energy sources
- selected operating ratios
- consumption by end-use

- participation in energy management programs
- number and square-footage of onsite buildings
- general energy-saving and cogeneration technologies and
- fuel-switching capability

The 2018 MECS release will continue the practice of presenting estimates of generalized relative standard errors (RSE) for each table estimate.

A website report reviewing the results of the 2018 MECS and changes from the 2014 will be produced along with other special topic analytical reports to be determined.

Data collection for the 2018 MECS is scheduled to begin in January 2019. Responses are expected no later than September 2019. (See Section B.3. for follow-up procedures.) The final data set (including final edits and linking with the ASM file) and the summary tabulations are expected to be ready by August 2020. The analysis and publication of summary reports are scheduled for December 2020 through March 2021.

Plans to tabulate and publish data collected by Form EIA-846 are described below.

Activity	Expected Date of Completion
Begin Data Collection	January 2019
End Data Collection	September 2019
Final Data Set Compiled	July 2020
Summary Tabulations	August 2020
Publication of Analysis	December 2020 through March 2021

A.17. OMB Number and Expiration Date

The OMB Number (1905-0169) and data collection expiration date will be displayed on all data collection forms and instructions.

A.18. Certification Statement

There are no exceptions to the certification statement identified in Item 19, “certification for Paperwork Reduction Act Submissions,” of OMB Form 83-I. This information collection request complies with 5 CFR 1320.9.