

2018 Manufacturing Energy Consumption SurveySponsored by the Energy Information Administration
U.S. Department of EnergyAdministered and Compiled by the Bureau of the Census
U.S. Department of CommerceForm **EIA-846B**
(11-05-2018)**Report Electronically:**
<https://portal.census.gov>

Authentication Code:

Reporting electronically allows you to save your work as you go through the form and can save you time.

If you need additional time or have questions about what to report on this questionnaire, please call our processing office at 1-800-528-3049. Return the completed questionnaire in the enclosed envelope. If the envelope has been misplaced, please mail to:

Bureau Of The Census
1201 East 10th Street
Jeffersonville, IN 47132-0001

Reporting Requirement: This survey is **mandatory** under the Federal Energy Administrative Act of 1974, Pub. Law No. 93-275, and under Title 3, Subtitle B, of the Omnibus Budget Reconciliation Act of 1986, Pub. Law No. 99-509, as amended by Title 1, Subtitle G, of the Energy Policy Act of 1992, Pub. Law No. 102-486.

Title 18 U.S.C. 1001 makes it a criminal offense for any person knowingly and willingly to make to any Agency or Department of the United States any false, fictitious, or fraudulent statements as to any matter within its jurisdiction.

Per the Paperwork Reduction Act of 1995, you are not required to respond to any Federally sponsored collection of information unless it displays a valid OMB Approval Number. The valid OMB Approval Number for this information collection (1905-0169) is displayed at the top left of this page.

Instructions and Frequently Asked Questions can be found at <https://portal.census.gov>



Contact Information

Date (mm-dd-yyyy)

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Area Code

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Telephone

Number

Ext.

--	--	--	--	--	--	--	--	--	--	--	--

Name of person to contact regarding this questionnaire

Title of contact person (above)

Address (number and street)

City

State

Zip Code

Zip + 4

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E-mail address

Refinery Information

Indicate the correct description of this establishment.

Definition of Refinery:

- For the purpose of this survey, a refinery is an installation that manufactures finished petroleum products from crude oil, unfinished oils, natural gas liquids, other hydrocarbons and alcohol. Processes used by a refinery include fractional distillation, cracking (both catalytic and hydro cracking), coking, reforming, alkylation, isomerization, polymerization, hydro treating, and sweetening. Products include, but are not limited to, unfinished oils, motor gasoline, aviation gasoline, special naphthas, kerosene, distillate fuel oil, residual fuel oil, lubricating oils, asphalt and road oil, waxes, petroleum coke, still gas, and petrochemical feedstocks.

Definition of Nonrefinery (Petrochemical):

- A nonrefinery is an installation that produces substances by the chemical treatment of raw materials derived from petroleum or natural gas. Among the final products are plastics (including synthetic rubbers), synthetic fibers, chemicals, drugs, and detergents. A nonrefinery is also called a petrochemical operation.
- Please check the reporting boundaries of the Economic Census - Manufacturing (EC-M) to determine if your establishment is considered to include an adjacent nonrefinery (petrochemical operation).

Check one box only

18010

1 Establishment consists of REFINERY operations ONLY.

- (There may be nonrefinery (petrochemical) operations co-located, but those operations are identified as a separate establishment for purposes of the Economic Census - Manufacturing.)

2 Establishment consists of both REFINERY and NONREFINERY operations.

- For this survey questionnaire, report for the entire establishment, including both refinery and nonrefinery operations, unless those are identified as a separate establishment for purpose of the Economic Census - Manufacturing. If nonrefinery is identified as a separate establishment, then the REFINERY operations ONLY button above should be checked.

3 Neither of the above

- Call the MECS specialist at 1-800-528-3049 if this establishment is NOT A REFINERY. Please call before continuing the questionnaire.



Instructions for Completing Form EIA-846B

General Instructions:

1. Individuals most familiar with the plant energy systems and operations, such as engineers, should complete the questionnaire especially for the end use and fuel switching sections.
2. Use the units specified on the questionnaire for reporting all quantities. See the Btu conversion factors on page 6 for a comprehensive list of various energy conversion factors. If your establishment uses more precise conversion values for your operations, use them, and indicate in the "Remarks" at the end of the form, the conversion factor(s) used.
3. Do **not** consolidate establishments. The reporting boundaries for your establishment should correspond to those used in the Economic Census - Manufacturing (EC-M). Responses to the MECS questions should be the same activities as those considered when responding to the matching EC-M.
4. Report dollar amounts rounded to the nearest dollar (e.g., report \$1,257.59 as \$1,258).
5. If you do not maintain book records for particular items, please use carefully prepared estimates.
6. Enter zeros in the data columns if the value is zero or none.
7. Complete all applicable sections of the questionnaire.
8. The sections of this questionnaire are designed so all questions associated with the particular energy source should be completed before going on to the next energy source. Therefore, within each section, the questionnaire should be answered from the top to the bottom of the same section, before moving on to the next section.
9. The energy sources that are preprinted on the questionnaire are considered the most frequently consumed, but they do not represent a complete list of applicable energy sources. If your establishment has energy sources that meet the criteria for reporting, but are not preprinted on the questionnaire, please specify those energy sources in the "Other Types Used as Energy" section and enter the data there.

Section-Specific Instructions:

Company Information

In this section, indicate any changes in the company name, address, or zip code.

Contact Information

Enter address and other contact information for the person most knowledgeable about completing this questionnaire, and the person whom we should contact if we have any questions concerning this filing.

Establishment Information

In this section, indicate any changes in the establishment ownership during 2018 and indicate the period covered by this filing, whether the calendar year or other period.



Instructions for Completing Form EIA-846B, cont.

Energy Source

An energy source should be reported on this questionnaire if it was consumed as a fuel (that is, for heat, power, or electricity generation). EIA uses other data collection instruments to obtain nonfuel (feedstock) data for petroleum refineries. If your establishment is not a petroleum refinery please call 1-800-528-3049 immediately to speak to a survey representative.

Estimated end-use percent consumption is also collected for selected energy sources. These questions are intended to provide information on the purposes for which the energy are used in the manufacturing sector. More specific instructions for completing these parts are included in the questionnaire.

Data are collected for the following energy sources (fuels):

Electricity

Petroleum-based Energy Sources

- Butane
- Ethane
- Propane
- Mixtures of Butane, Ethane, and Propane
- Other LPG and NGL which includes butylenes, ethylene, and propylene
- Diesel Fuel Oil (excluding off-site highway use)
- Distillate Fuel Oil (e.g., Numbers 1, 2, 4)
- Motor Gasoline (excluding off-site highway use)
- Residual Fuel Oil (e.g., Numbers 5, 6, Navy Special, Bunker C)
- Waste and Byproduct Gases (e.g., flue gas, off gas, plant gas, refinery gas, still gas, vent gas)
- Fluid Catalytic Cracking Unit Coke
- Marketable Petroleum Coke – Unrefined or Green
- Marketable Petroleum Coke – Calcined
- Waste Oils and Tars (excluding Coal Tar)
- Other Petroleum-based Combustion Energy Sources

Natural Gas

Steam (excluding steam generated in an onsite boiler from CHP or other fossil fuel, wood, or combustible source)

Industrial Hot Water

Coal

- Anthracite
- Bituminous and Subbituminous
- Lignite

Breeze

Coal Coke

Hydrogen

Wood Fuel and Wood/Paper Refuse (e.g., scrap, wastepaper, wood pallets, packing materials)

Other Types Used as Energy



Instructions for Completing Form EIA-846B, cont.

Energy Sources Reporting Example

Butane is used as a fuel and as a feedstock to produce butylenes onsite. Report only the portion of the butane that was burned as a fuel.

Fuel-Switching Capability

These questions are intended to measure the short-term capability of your establishment to use substitute energy sources in place of those actually consumed in 2018. These substitutions are limited to those that could actually have been introduced within 30 days without extensive modifications. More specific instructions for completing this section are included in the questionnaire.

Energy-Management Activities

In this section, indicate whether your establishment participated in the listed energy-management activities during 2018 and the source(s) of the financial support to implement the energy-management activity.

Technologies

Indicate any of the technologies present in this establishment. Listed technologies include general technologies which may be found in any manufacturing establishment and technologies related to cogeneration.

Establishment Size

This section asks for the number of buildings and total square footage associated with this establishment. See specific instructions in this section for the definition of what should be counted as a building.

Remarks

Please provide any explanations that may be helpful to us in understanding your reported data, including any Btu conversion factors you used if different from those provided in the enclosed table.

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Conversion Factors Table

To the right are Btu conversion factors that should be used only if you do not know the actual Btu factor of the fuels consumed at your establishment site.

If your establishment uses more precise conversion values for your operations, use them in place of the approximations given below. However, please identify in the Remarks, the conversion factor(s) used, if different from those listed to the right.

General Definitions:

Btu = British thermal unit(s)

One barrel = 42 gallons

One short ton = 2,000 pounds

Examples of conversion from physical quantities to Btu include:

- Your establishment consumed 250 cubic feet of hydrogen in 2018.

The Btu equivalent is:
(250 cubic feet) x (325.11 Btu/cubic foot)

$$= 81,277.5 \text{ Btu}$$

$$= 0.0813 \text{ million Btu}$$

- Your establishment consumed 300 pounds of hydrogen in 2018.

The Btu equivalent is:
(300 pounds) x (61,084 Btu/pound)

$$= 18,325,200 \text{ Btu}$$

$$= 18.325 \text{ million Btu}$$

Energy Source	Conversion Factor(s)
Acetylene	21,600 Btu/pound 1,500 Btu/cubic feet
Bagasse	4,081 Btu/pound
Biomass	5,300 Btu/pound
Breeze	19.8 million Btu/short ton
Butane	4.326 million Btu/barrel 0.10300 million Btu/gallon
Coal	22.779 million Btu/short ton
Coal (use for coke plants only)	28.673 million Btu/short ton
Coal Coke	24.8 million Btu/short ton
Distillate Fuel Oil	5.773 million Btu/barrel
Electricity	3,412 Btu/kilowatthour
Ethane	3.082 million Btu/barrel 0.07338 million Btu/gallon
Hydrogen	61,084 Btu/pound 325.11 Btu/cubic feet 35,600 Btu/gallon
Industrial Hot Water	140 Btu/pound 7.84 pounds/gallon
Isobutane	3.974 million Btu/barrel 0.09462 million Btu/gallon
Liquefied Petroleum Gas (LPG)	3.616 million Btu/barrel 0.08610 million Btu/gallon 4.5 pounds/gallon
Natural Gas	1.039 million Btu/1,000 cubic feet 10.39 therms/1,000 cubic feet
Petroleum Coke	6.126 million Btu/barrel 30.63 million Btu/short ton 5 barrels/short ton
Propane	3.836 million Btu/barrel 0.09133 million Btu/gallon
Pulping and/or Black Liquor	11 million Btu/short ton
Residual Fuel Oil	6.287 million Btu/barrel
Roundwood	21.5 million Btu/cord 17.2 million Btu/short ton 0.014 million Btu/board foot
Sawdust (7% moisture)	8,000 Btu/pound
Steam	1,200 Btu/pound
Still, Refinery, and/or Waste Gas	6.287 million Btu/barrel 1,039 Btu/cubic feet
Waste Materials (Wastepaper)	7,500 Btu/pound
Waste Oils and Tars	6 million Btu/barrel
(Green) Wood Chips (50% moisture)	10 million Btu/short ton
Wood Waste (50% moisture)	9 million Btu/short ton



Establishment Information

<p>1. Did ownership of this establishment change during 2018?</p>	Census Use Only 00011	<input type="checkbox"/> 1. No <input type="checkbox"/> 2. Yes: Establishment was sold during the year. <i>Complete all sections of this questionnaire for activities that occurred in 2018 prior to the sale.</i> <input type="checkbox"/> 3. Yes: Establishment was bought during the year. <i>Complete all sections of this questionnaire for activities that occurred in 2018 after the sale.</i>
<p>2. What best describes this establishment at the end of 2018?</p>	00010	<input type="checkbox"/> 1. In operation: Skip to question 6. <input type="checkbox"/> 2. Ceased operation: Answer question 3 then skip to question 6. <input type="checkbox"/> 3. Sold or leased to another operator: Skip to question 4.
<p>3. Enter the date in which your establishment ceased operation.</p>	00013	<div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> Enter Date (mm-dd-yyyy)
<p>4. Enter the date in which your establishment was either sold or leased to another operator.</p>	00014	<div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> Enter Date (mm-dd-yyyy)
<p>5. Enter the following information only if this establishment was sold or leased to another operator during 2018.</p> <p style="text-align: center;">Name of new owner or operator</p> <p>00015 <input style="width: 100%;" type="text"/></p> <p style="text-align: center;">Address City</p> <p>00017 <input style="width: 40%;" type="text"/> 00018 <input style="width: 40%;" type="text"/></p> <p style="text-align: center;">State Zip Code Zip + 4 Employer Identification Number (9 Digit EIN)</p> <p>00019 <input style="width: 20px;" type="text"/> 00020 <input style="width: 20px;" type="text"/> 00021 <input style="width: 20px;" type="text"/> 00016 <input style="width: 20px;" type="text"/> - <input style="width: 20px;" type="text"/></p>		
<p>6. Enter the reporting period for the information reported on this questionnaire. Unless there are special circumstances like those reported above, this reporting period should be from January 1, 2018 to December 31, 2018.</p>	00022	From: <input style="width: 100px;" type="text"/> (mm-dd-yyyy)
	00023	To: <input style="width: 100px;" type="text"/> (mm-dd-yyyy)



Electricity: Total Purchased

7. Enter the total quantity of electricity purchased by and delivered to this establishment during 2018, regardless of when payment was made.	Census Use Only 10061	<div style="border: 1px solid black; height: 25px; width: 100%;"></div> <p style="text-align: center;">Kilowatthours</p>								
8. Enter total expenditures; including all applicable taxes and any delivery, management, transportation, and demand charges, for the purchased electricity reported in question 7.	10062	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; border-bottom: 1px solid black;">\$Bil.</td> <td style="text-align: center; border-bottom: 1px solid black;">Mil.</td> <td style="text-align: center; border-bottom: 1px solid black;">Thou.</td> <td style="text-align: center; border-bottom: 1px solid black;">Dol.</td> </tr> <tr> <td style="border: 1px solid black; width: 25%; height: 25px;"></td> <td style="border: 1px solid black; width: 25%; height: 25px;"></td> <td style="border: 1px solid black; width: 25%; height: 25px;"></td> <td style="border: 1px solid black; width: 25%; height: 25px;"></td> </tr> </table> <p style="text-align: center;">U.S. Dollars</p>	\$Bil.	Mil.	Thou.	Dol.				
\$Bil.	Mil.	Thou.	Dol.							

Electricity: Source of Purchase

9. During 2018, where did this establishment's purchased electricity come from? <p>Local utility: the company in your local area that produces and/or delivers electricity and is legally obligated to provide service to the general public within its franchise area.</p> <p>Non-utility: includes generators of electricity such as independent power producers or small power producers. It also includes brokers, marketers, marketing subsidiaries of utilities, or cogenerators not owned by your company.</p>	10015	<input type="checkbox"/> 1. All local utility: Answer question 10 then skip to question 13. <input type="checkbox"/> 2. All non-utility: Answer question 10 then skip to question 13. <input type="checkbox"/> 3. Both								
10. Please specify the utility/non-utility provider from whom you purchased your electricity: <p>If this establishment purchases from more than one provider, please provide the largest provider.</p>	10016	<div style="border: 1px solid black; height: 25px; width: 100%;"></div>								
11. Enter the quantity of your total purchased electricity that was purchased from a local utility during 2018.	10010	<div style="border: 1px solid black; height: 25px; width: 100%;"></div> <p style="text-align: center;">Kilowatthours</p>								
12. Enter the total expenditures of your purchased electricity that was paid to a local utility.	10020	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; border-bottom: 1px solid black;">\$Bil.</td> <td style="text-align: center; border-bottom: 1px solid black;">Mil.</td> <td style="text-align: center; border-bottom: 1px solid black;">Thou.</td> <td style="text-align: center; border-bottom: 1px solid black;">Dol.</td> </tr> <tr> <td style="border: 1px solid black; width: 25%; height: 25px;"></td> <td style="border: 1px solid black; width: 25%; height: 25px;"></td> <td style="border: 1px solid black; width: 25%; height: 25px;"></td> <td style="border: 1px solid black; width: 25%; height: 25px;"></td> </tr> </table> <p style="text-align: center;">U.S. Dollars</p>	\$Bil.	Mil.	Thou.	Dol.				
\$Bil.	Mil.	Thou.	Dol.							

Electricity: Transfers In

13. Excluding the quantity reported in question 7, did this establishment receive any additional electricity from another establishment that was not purchased? <p>If you answer "Yes," please answer question 14. Otherwise, skip to question 15.</p>	10052	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No
14. How much of this additional electricity was received from the other establishment?	10050	<div style="border: 1px solid black; height: 25px; width: 100%;"></div> <p style="text-align: center;">Kilowatthours</p>



Electricity: Generated On-Site

	Census Use Only	
15. Enter the quantity of electricity generated on-site from each of the following:		Kilowatthours
<ul style="list-style-type: none"> • Combined Heat and Power (CHP)/Cogeneration <i>Cogeneration is the production of electric energy and another form of useful energy (such as heat or steam) through the sequential use of energy.</i> 	10070	<input type="text"/>
<ul style="list-style-type: none"> • Solar Power 	10081	<input type="text"/>
<ul style="list-style-type: none"> • Wind Power 	10082	<input type="text"/>
<ul style="list-style-type: none"> • Hydropower 	10083	<input type="text"/>
<ul style="list-style-type: none"> • Geothermal Power 	10084	<input type="text"/>
<ul style="list-style-type: none"> • Other (for example, electricity generated by diesel generators) 	10090	<input type="text"/>
16. Does your establishment's generators together have a total nameplate capacity of less than one megawatt?	10053	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/> 3. Don't know

Electricity: Sales and Transfers Offsite

17. Enter the quantity of electricity sold or transferred out of this establishment to utilities during 2018. Include quantities exchanged for the same or any other energy source. Exclude sales to independent power producers, small power producers, or cogenerators not located at this establishment.	10110	<input type="text"/> Kilowatthours
18. Enter the quantity of electricity sold or transferred out of this establishment to any non-utilities during 2018. Include: <ul style="list-style-type: none"> • Sales to independent power producers, small power producers, brokers, marketers, marketing subsidiaries of utilities, or cogenerators not located at this establishment. • Quantities exchanged for the same or any other energy source. 	10120	<input type="text"/> Kilowatthours



Electricity: Estimated End-Use Percent Consumption

The following questions refer to how this establishment consumed the electricity that was previously reported (please enter as a percentage of total consumption for each end use performed). A plant engineer or someone who is familiar with energy flows at this establishment should report this data.

Total Consumption = Question 7 [Purchases] + Question 14 [Transfers] + Question 15 [Generated] - (Question 17 + 18) [Sales and Transfers Offsite]

19. Enter the percentage of total electricity that this establishment consumed for the following:

Boilers: Boiler use includes the transformation of energy to another usable energy source, as in a boiler, gas turbine, or combustion turbine.

- **Boiler fuel** (includes fuels used for thermal outputs)

Census
Use Only

Electricity

10705

 %

Process: Process use includes usage in motors, ovens, kilns, and strip heaters.

- **Process heating** (e.g., kilns, furnaces, ovens, strip heaters)

10720

 %

- **Process cooling and refrigeration**

10730

 %

- **Machine drive** (e.g., motors, pumps, etc. associated with manufacturing process equipment)

10740

 %

- **Electrochemical processes** (e.g., reduction process)

10750

 %

- **Other process use:**

Please specify:

10761

10760

 %

Non-process: Non-process use includes usage for facility lighting and space-conditioning equipment (HVAC).

- **Facility heating, ventilation, and air conditioning**

10770

 %

- **Facility lighting**

10780

 %

- **Facility support other than that reported above** (e.g., cooking, water heating, office equipment)

10790

 %

- **On-site transportation, excluding highway usage** (e.g., forklifts)

10800

 %

- **Other non-process use:**

Please specify:

10821

10820

 %

TOTAL 100%



Petroleum-based Energy Sources

For questions 20 through 40, enter the quantity consumed on-site during 2018 as a fuel for the production of heat, steam, power, or the generation of electricity for all petroleum-based energy sources (fuel) listed below.

Exclude quantities of energy sources that were used as material inputs to your refining process or otherwise used as a non-fuel.

Include all process uses such as process heating, process cooling, and machine drive and all nonprocess uses such as facility heating, ventilation, and air conditioning.

Include fuel consumed by vehicles intended primarily for use on-site, e.g., forklifts, intra-plant shuttles, loaders and other materials-handling equipment operated solely within boundaries of the establishment size.

Energy Source ↓	Census Use Only	Quantity Consumed as a Fuel ↓
20. Butane as Liquefied Petroleum Gas (LPG) or Natural Gas Liquids (NGL).	36060	<input type="text"/> Gallons
21. Ethane as Liquefied Petroleum Gas (LPG) or Natural Gas Liquids (NGL).	37060	<input type="text"/> Gallons
22. Propane as Liquefied Petroleum Gas (LPG) or Natural Gas Liquids (NGL).	38060	<input type="text"/> Gallons
23. Mixtures of ethane, butane, and propane.	34060	<input type="text"/> Gallons
24. Other liquefied petroleum gases (LPG) and natural gas liquids (NGL) (e.g., butylenes, ethylene, propylene).	35060	<input type="text"/> Gallons
25. Total liquefied petroleum gases (LPG) and natural gas liquids (NGL). Sum the quantities reported for questions 20 through 24.	24060	<input type="text"/> Gallons



Total LPG and NGL: Estimated End-Use Percent Consumption

The following questions refer to how this establishment consumed the Total LPG and NGL that was previously reported in question 25 (please enter as a percentage of total consumption for each end use performed). A plant engineer or someone who is familiar with energy flows at this establishment should report this data.

26. Enter the percentage of Total LPG and NGL (from question 25) that this establishment consumed as the following:

Boilers: boiler use is the transformation of energy to another usable energy source, as in a boiler, gas turbine, or combustion turbine.

	Census Use Only	Total LPG and NGL
<ul style="list-style-type: none"> • Boiler fuel in a Combined Heat and Power (CHP) and/or cogeneration process 	24705	<input type="text"/> %
<ul style="list-style-type: none"> • Other boiler fuel (not included above) (includes fuels used for thermal outputs only) 	24710	<input type="text"/> %

Process: use includes usage in motors, ovens, kilns, and strip heaters.

<ul style="list-style-type: none"> • Process heating (e.g., kilns, furnaces, ovens, strip heaters) 	24720	<input type="text"/> %
<ul style="list-style-type: none"> • Process cooling and refrigeration 	24730	<input type="text"/> %
<ul style="list-style-type: none"> • Machine drive (e.g., motors, pumps, etc. associated with manufacturing process equipment) 	24740	<input type="text"/> %
<ul style="list-style-type: none"> • Other process use: Please specify: <input type="text"/> 24762 	24760	<input type="text"/> %

Non-process: non-process use includes usage for facility lighting and space-conditioning equipment (HVAC).

<ul style="list-style-type: none"> • Facility heating, ventilation, and air conditioning 	24770	<input type="text"/> %
<ul style="list-style-type: none"> • Facility support other than that reported above (e.g., cooking, water heating, office equipment) 	24790	<input type="text"/> %
<ul style="list-style-type: none"> • On-site transportation, excluding highway usage (e.g., forklifts) 	24800	<input type="text"/> %
<ul style="list-style-type: none"> • Conventional electricity generation 	24810	<input type="text"/> %
<ul style="list-style-type: none"> • Other non-process use: Please specify: <input type="text"/> 24822 	24820	<input type="text"/> %

TOTAL 100%



Petroleum-based Energy Sources Cont.

Energy Source ↓	Census Use Only	Quantity Consumed as a Fuel ↓
27. Diesel fuel, excluding offsite highway usage.	28060	<input data-bbox="1084 340 1442 403" type="text"/> Barrels
28. Distillate fuel oil (numbers 1, 2 and 4 fuel oil).	29060	<input data-bbox="1084 493 1442 556" type="text"/> Barrels
29. Total diesel fuel and distillate fuel oil. Sum the quantities in questions 27 and 28.	22060	<input data-bbox="1084 646 1442 709" type="text"/> Barrels

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Diesel or Distillate Fuel Oil: Estimated End-Use Percent Consumption

The following questions refer to how this establishment consumed diesel and/or distillate fuel oil that was previously reported in question 29 (please enter as a percentage of total consumption for each end use performed). A plant engineer or someone who is familiar with energy flows at this establishment should report this data.

30. Enter the percentage of total diesel and distillate (from question 29) that this establishment consumed as the following:

<i>Boilers: boiler use is the transformation of energy to another usable energy source, as in a boiler, gas turbine, or combustion turbine.</i>	Census Use Only	Diesel and Distillate
<ul style="list-style-type: none"> • Boiler fuel in a Combined Heat and Power (CHP) and/or cogeneration process 	22705	<input type="text"/> %
<ul style="list-style-type: none"> • Other boiler fuel (not included above) (includes fuels used for thermal outputs only) 	22710	<input type="text"/> %
<i>Process: process use includes usage in motors, ovens, kilns, and strip heaters.</i>		
<ul style="list-style-type: none"> • Process heating (e.g., kilns, furnaces, ovens, strip heaters) 	22720	<input type="text"/> %
<ul style="list-style-type: none"> • Process cooling and refrigeration 	22730	<input type="text"/> %
<ul style="list-style-type: none"> • Machine drive (e.g., motors, pumps, etc. associated with manufacturing process equipment) 	22740	<input type="text"/> %
<ul style="list-style-type: none"> • Other process use: Please specify: 22762 <input style="width: 200px;" type="text"/> 	22760	<input type="text"/> %
<i>Non-process: non-process use includes usage for facility lighting and space-conditioning equipment (HVAC).</i>		
<ul style="list-style-type: none"> • Facility heating, ventilation, and air conditioning 	22770	<input type="text"/> %
<ul style="list-style-type: none"> • Facility support other than that reported above (e.g., cooking, water heating, office equipment) 	22790	<input type="text"/> %
<ul style="list-style-type: none"> • On-site transportation, excluding highway usage (e.g., forklifts) 	22800	<input type="text"/> %
<ul style="list-style-type: none"> • Conventional electricity generation 	22810	<input type="text"/> %
<ul style="list-style-type: none"> • Other non-process use: Please specify: 22822 <input style="width: 200px;" type="text"/> 	22820	<input type="text"/> %

TOTAL 100%



Petroleum-based Energy Sources Cont.

Energy Source ↓	Census Use Only	Quantity Consumed as a Fuel ↓
31. Motor gasoline, excluding offsite highway usage.	23060	<input data-bbox="1086 342 1442 405" type="text"/> Gallons
32. Residual fuel oil (numbers 5, 6, Navy Special, and Bunker C).	21060	<input data-bbox="1086 495 1442 558" type="text"/> Barrels

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Residual Fuel Oil: Estimated End-Use Percent Consumption

The following questions refer to how this establishment consumed the residual fuel oil that was previously reported in question 32 (please enter as a percentage of total consumption for each end use performed). A plant engineer or someone who is familiar with energy flows at this establishment should report this data.

33. Enter the percentage of total residual fuel (from question 32) that this establishment consumed as the following:

Boilers: boiler use is the transformation of energy to another usable energy source, as in a boiler, gas turbine, or combustion turbine.

• **Boiler fuel in a Combined Heat and Power (CHP) and/or cogeneration process**

Census
Use Only

21705

Residual Fuel

%

• **Other boiler fuel (not included above)** (includes fuels used for thermal outputs only)

21710

%

Process: Process use includes usage in motors, ovens, kilns, and strip heaters.

• **Process heating** (e.g., kilns, furnaces, ovens, strip heaters)

21720

%

• **Process cooling and refrigeration**

21730

%

• **Machine drive** (e.g., motors, pumps, etc. associated with manufacturing process equipment)

21740

%

• **Other process use:**

Please specify:

21762

21760

%

Non-process: non-process use includes usage for facility lighting and space-conditioning equipment (HVAC).

• **Facility heating, ventilation, and air conditioning**

21770

%

• **Facility support other than that reported above** (e.g., cooking, water heating, office equipment)

21790

%

• **Conventional electricity generation**

21810

%

• **Other non-process use:**

Please specify:

21822

21820

%

TOTAL 100%



Petroleum-based Energy Sources Cont.

Energy Source ↓	Census Use Only	Quantity Consumed as a Fuel ↓
34. Waste and byproduct gases (e.g., refinery gas, off gas, vent gas, plant gas, still gas).	62060	<input type="text"/> Million Btu
35. Fluid catalytic cracking unit coke.	77060	<input type="text"/> Barrels
36. Marketable petroleum coke – unrefined or green.	78060	<input type="text"/> Barrels
37. Marketable petroleum coke – calcined.	79060	<input type="text"/> Barrels
38. Waste oils and tars, excluding coal tar.	71060	<input type="text"/> Barrels
39. Other petroleum-based combustible energy source not specified above:	95060	<input type="text"/> Units
Please specify: ⁹⁵⁹⁸⁰ <input type="text"/>	95990	<input type="text"/> Specify Units
40. Other petroleum-based combustible energy source not specified above:	96060	<input type="text"/> Units
Please specify: ⁹⁶⁹⁸⁰ <input type="text"/>	96990	<input type="text"/> Specify Units



Natural Gas: Units

41. Please indicate the units for the quantity that will be reported below.

**** Please use this unit for reporting the remainder of the Natural Gas quantity questions.**

Census
Use Only

31111

1. Therms
2. Decatherms (Dth)
3. 1,000 Cubic Feet (Mcf)
4. 100 Cubic Feet (Ccf)
5. Million British Thermal Units (MMBtu)

Natural Gas: Total Purchased

42. Enter the total quantity of natural gas purchased by and delivered to this establishment during 2018, regardless of when payment was made.

30010

Units

43. Enter total expenditures; including all applicable taxes and any delivery, management, and demand charges, for the purchased natural gas reported in question 42.

30020

\$Bil. Mil. Thou. Dol.

--	--	--	--

U.S. Dollars

Natural Gas: Source of Purchase

44. During 2018, where did this establishment's purchased natural gas come from?

Local utility: the company in your local area that produces and/or delivers natural gas and is legally obligated to provide service to the general public within its franchise area.

Non-utility: include independent producers, brokers, marketers, and any marketing subsidiaries of utilities.

30015

1. All local utility: Answer question 45 then skip to question 48.
2. All non-utility: Answer question 45 then skip to question 48.
3. Both

45. Please specify the utility/non-utility provider from whom you purchased your natural gas:

If this establishment purchases from more than one provider, please provide the largest provider.

30016

46. Enter the quantity of your total purchased natural gas that was purchased from a local utility during 2018.

31010

Units

47. Enter the total expenditures of your purchased natural gas that was paid to a local utility.

31020

\$Bil. Mil. Thou. Dol.

--	--	--	--

U.S. Dollars



Natural Gas: Transferred In and Produced On-site

<p>48. Excluding the quantity reported in question 42, did this establishment receive any additional natural gas from another establishment that was not purchased?</p> <p>If you answer "Yes," please answer question 49. Otherwise, skip to question 50.</p>	<p>Census Use Only</p> <p>30031</p>	<p><input type="checkbox"/> 1. Yes</p> <p><input type="checkbox"/> 2. No</p>
<p>49. How much of this additional natural gas was received from the other establishment.</p>	<p>30030</p>	<p><input style="width: 100%;" type="text"/></p> <p style="text-align: right;">Units</p>
<p>50. Enter the quantity of natural gas that was both produced on-site during 2018 as output from a captive (onsite) well, and was at least partially consumed on-site (as a fuel).</p>	<p>30040</p>	<p><input style="width: 100%;" type="text"/></p> <p style="text-align: right;">Units</p>

Natural Gas: Consumption

<p>51. Enter the total quantity of natural gas consumed as a fuel at this establishment during 2018.</p> <p>Include all uses that were used for the heat, power, and electricity generation. Also, include fuel consumed by vehicles intended primarily for use on-site.</p>	<p>30060</p>	<p><input style="width: 100%;" type="text"/></p> <p style="text-align: right;">Units</p>
--	--------------	--

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Natural Gas: Estimated End-Use Percent Consumption

The following questions refer to how this establishment consumed the natural gas that was previously reported in question 51 (please enter as a percentage of total consumption for each end use performed). A plant engineer or someone who is familiar with energy flows at this establishment should report this data.

52. Enter the percentage of total natural gas (from question 51) that this establishment consumed as the following:

Boilers: boiler use is the transformation of energy to another usable energy source, as in a boiler, gas turbine, or combustion turbine.

• **Boiler fuel in a Combined Heat and Power (CHP) and/or cogeneration process**

Census
Use Only

Natural Gas

30705

%

• **Other boiler fuel (not included above)** (includes fuels used for thermal outputs only)

30710

%

Process: process use includes usage in motors, ovens, kilns, and strip heaters.

• **Process heating** (e.g., kilns, furnaces, ovens, strip heaters)

30720

%

• **Process cooling and refrigeration**

30730

%

• **Machine drive** (e.g., motors, pumps, etc. associated with manufacturing process equipment)

30740

%

• **Other process use:**

Please specify:

30761

30760

%

Non-process: non-process use includes usage for facility lighting and space-conditioning equipment (HVAC).

• **Facility heating, ventilation, and air conditioning**

30770

%

• **Facility support other than that reported above** (e.g., cooking, water heating, office equipment)

30790

%

• **On-site transportation, excluding highway usage** (e.g., forklifts)

30800

%

• **Conventional electricity generation**

30810

%

• **Other non-process use:**

Please specify:

30821

30820

%

TOTAL 100%



Steam and Industrial Hot Water

53. Enter the total quantity purchased by and delivered to this establishment during 2018, regardless of when payment was made.

061 **Steam (11)**

Million Btu

Industrial Hot Water (12)

Million Btu

54. Enter total expenditures; including all applicable taxes and fees for the quantity reported in question 53.

062 **Steam (11)**

\$Bil. Mil. Thou. Dol.

--	--	--	--	--	--	--	--

U.S. Dollars

Industrial Hot Water (12)

\$Bil. Mil. Thou. Dol.

--	--	--	--	--	--	--	--

U.S. Dollars

55. During 2018, where did this establishment's purchased steam come from? (Select one)

Local utility: the company in your local area that produces and/or delivers steam and is legally obligated to provide service to the general public within its franchise area.

Non-utility: includes generators of steam such as independent power producers or small power producers. It also includes brokers, marketers, marketing subsidiaries of utilities, or cogenerators not owned by your company.

1. All local utility: Answer question 56 then skip to question 59.

2. All non-utility: Answer question 56 then skip to question 59.

3. Both (11015)

56. Please specify the utility/non-utility provider from whom you purchased your steam:

If this establishment purchases from more than one provider, please provide the largest provider.

Steam (11016)

57. Enter the quantity of your total purchased steam that was purchased from a local utility during 2018.

Steam (11010)

Million Btu

58. Enter the total expenditures of your purchased steam that was paid to a local utility.

Steam (11020)

\$Bil. Mil. Thou. Dol.

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U.S. Dollars

59. Excluding the quantity reported in question 53, did this establishment receive any additional material from another establishment that was not purchased? (If you answer "Yes" to any of the alternatives below, please answer question 60. Otherwise, skip to question 61.)

051 **Steam (11)**

Yes

No

Industrial Hot Water (12)

Yes

No



Steam and Industrial Hot Water

60. How much of this additional material was received from the other establishment?

050

Steam (11)**Industrial Hot Water (12)**

Million Btu

Million Btu

61. Enter quantity of steam or industrial hot water generated on-site from each of the following:
Steam (11)
 Million Btu

Industrial Hot Water (12)
 Million Btu

- Solar Power (081)

- Wind Power (082)

- Hydropower (083)

- Geothermal Power (084)

62. Enter the quantity sold or transferred out of this establishment during 2018.

Include quantities exchanged for the same or any other material.

Exclude sales to independent power producers, small power producers, or cogenerators not located at this establishment.

110

Steam (11)**Industrial Hot Water (12)**

Million Btu

Million Btu

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Coal

63. Enter the total quantity purchased by and delivered to this establishment during 2018, regardless of when payment was made.

010 Anthracite (40)	Bituminous and Subbituminous (41)	Lignite (42)
<input style="width: 100%; height: 30px;" type="text"/>	<input style="width: 100%; height: 30px;" type="text"/>	<input style="width: 100%; height: 30px;" type="text"/>
Short tons	Short tons	Short tons

64. Enter total expenditures; including all applicable taxes and fees for the quantity reported in question 63.

020 Anthracite (40)				Bituminous and Subbituminous (41)				Lignite (42)			
\$Bil.	Mil.	Thou.	Dol.	\$Bil.	Mil.	Thou.	Dol.	\$Bil.	Mil.	Thou.	Dol.
<input style="width: 100%; height: 25px;" type="text"/>											
U.S. Dollars				U.S. Dollars				U.S. Dollars			

65. Excluding the quantity reported in question 63, did this establishment receive any additional material from another establishment that was not purchased? (If you answer "Yes" to any of the alternatives below, please answer question 66. Otherwise, skip to question 67.)

031 Anthracite (40)	Bituminous and Subbituminous (41)	Lignite (42)
<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
<input type="checkbox"/> No	<input type="checkbox"/> No	<input type="checkbox"/> No

66. How much of this additional material was received from the other establishment?

030 Anthracite (40)	Bituminous and Subbituminous (41)	Lignite (42)
<input style="width: 100%; height: 30px;" type="text"/>	<input style="width: 100%; height: 30px;" type="text"/>	<input style="width: 100%; height: 30px;" type="text"/>
Short tons	Short tons	Short tons

67. Enter the quantity produced on-site during 2018.

040 Anthracite (40)	Bituminous and Subbituminous (41)	Lignite (42)
<input style="width: 100%; height: 30px;" type="text"/>	<input style="width: 100%; height: 30px;" type="text"/>	<input style="width: 100%; height: 30px;" type="text"/>
Short tons	Short tons	Short tons

68. Enter the total quantity consumed as a fuel at this establishment during 2018.

Include all uses that were used for the heat, power, and electricity generation.

060 Anthracite (40)	Bituminous and Subbituminous (41)	Lignite (42)
<input style="width: 100%; height: 30px;" type="text"/>	<input style="width: 100%; height: 30px;" type="text"/>	<input style="width: 100%; height: 30px;" type="text"/>
Short tons	Short tons	Short tons



Coal: Estimated End-Use Percent Consumption

The following questions refer to how this establishment consumed the coal that was previously reported in question 68 (please enter as a percentage of total consumption for each end use performed). A plant engineer or someone who is familiar with energy flows at this establishment should report this data.

69. Enter the percentage of total coal (question 68 Anthracite + question 68 Bituminous and Subbituminous + question 68 Lignite) that this establishment consumed as the following:

<i>Boilers: boiler use is the transformation of energy to another usable energy source, as in a boiler, gas turbine, or combustion turbine.</i>	Census Use Only	Total Coal (exclude coal coke and breeze)
<ul style="list-style-type: none"> Boiler fuel in a Combined Heat and Power (CHP) and/or cogeneration process 	46705	<input type="text"/> %
<ul style="list-style-type: none"> Other boiler fuel (not included above) (includes fuels used for thermal outputs only) 	46710	<input type="text"/> %
<i>Process: process use includes usage in motors, ovens, kilns, and strip heaters.</i>		
<ul style="list-style-type: none"> Process heating (e.g., kilns, furnaces, ovens, strip heaters) 	46720	<input type="text"/> %
<ul style="list-style-type: none"> Process cooling and refrigeration 	46730	<input type="text"/> %
<ul style="list-style-type: none"> Machine drive (e.g., motors, pumps, etc. associated with manufacturing process equipment) 	46740	<input type="text"/> %
<ul style="list-style-type: none"> Other process use: Please specify: <input type="text"/> 46761 	46760	<input type="text"/> %
<i>Non-process: non-process use includes usage for facility lighting and space-conditioning equipment (HVAC).</i>		
<ul style="list-style-type: none"> Facility heating, ventilation, and air conditioning 	46770	<input type="text"/> %
<ul style="list-style-type: none"> Facility support other than that reported above (e.g., cooking, water heating, office equipment) 	46790	<input type="text"/> %
<ul style="list-style-type: none"> Conventional electricity generation 	46810	<input type="text"/> %
<ul style="list-style-type: none"> Other non-process use: Please specify: <input type="text"/> 46821 	46820	<input type="text"/> %

TOTAL 100%



Breeze and Coal Coke

70. Enter the total quantity purchased by and delivered to this establishment during 2018, regardless of when payment was made.

010 **Breeze (44)**

Short tons

Coal Coke (43)

Short tons

71. Enter total expenditures; including all applicable taxes and fees for the quantity reported in question 70.

020 **Breeze (44)**

\$Bil.	Mil.	Thou.	Dol.

U.S. Dollars

Coal Coke (43)

\$Bil.	Mil.	Thou.	Dol.

U.S. Dollars

72. Excluding the quantity reported in question 70, did this establishment receive any additional material from another establishment that was not purchased? (If you answer "Yes" to any of the alternatives below, please answer question 73. Otherwise, skip to question 74.)

031 **Breeze (44)**

Yes

No

Coal Coke (43)

Yes

No

73. How much of this additional material was received from the other establishment?

030 **Breeze (44)**

Short tons

Coal Coke (43)

Short tons

74. Enter the quantity produced on-site during 2018.

040 **Breeze (44)**

Short tons

Coal Coke (43)

Short tons

75. Enter the total quantity consumed as a fuel at this establishment during 2018.

Include all uses that were used for the heat, power, and electricity generation.

060 **Breeze (44)**

Short tons

Coal Coke (43)

Short tons



Hydrogen or Wood Fuel and Wood/Paper Refuse

76. Enter the total quantity purchased by and delivered to this establishment during 2018, regardless of when payment was made.

010 **Hydrogen (63)**

Million Btu

Wood Fuel and Wood/Paper Refuse (72)

Million Btu

77. Enter total expenditures; including all applicable taxes and fees, for the quantity reported in question 76.

020 **Hydrogen (63)**

\$Bil.	Mil.	Thou.	Dol.

U.S. Dollars

Wood Fuel and Wood/Paper Refuse (72)

\$Bil.	Mil.	Thou.	Dol.

U.S. Dollars

78. Excluding the quantity reported in question 76, did this establishment receive any additional material from another establishment that was not purchased? (If you answer "Yes" to any of the alternatives below, please answer question 79. Otherwise, skip to question 80.)

031 **Hydrogen (63)**

Yes

No

Wood Fuel and Wood/Paper Refuse (72)

Yes

No

79. How much of this additional material was received from the other establishment?

030 **Hydrogen (63)**

Million Btu

Wood Fuel and Wood/Paper Refuse (72)

Million Btu

80. Enter the quantity of the energy source produced on-site during 2018.

040 **Hydrogen (63)**

Million Btu

Wood Fuel and Wood/Paper Refuse (72)

Million Btu

81. Enter the total quantity consumed as a fuel at this establishment during 2018.

Include all uses that were used for the heat, power, and electricity generation.

060 **Hydrogen (63)**

Million Btu

Wood Fuel and Wood/Paper Refuse (72)

Million Btu



Other Types Used as Energy

82. Specify the name and units (e.g., gallons, million Btu, cubic feet, etc.) of any energy source purchased or consumed in this establishment that has not been previously asked.

* Do not include: oxygen, carbon dioxide, nitrogen, argon, or helium.

980	980	980
Type (97)	Type (98)	Type (99)
981	981	981
Units (97)	Units (98)	Units (99)

83. Enter the total quantity purchased by and delivered to this establishment during 2018, regardless of when payment was made.

010	010	010
Units (97)	Units (98)	Units (99)

84. Enter total expenditures; including all applicable taxes and fees for the quantity reported in question 83.

020	020	020
\$Bil. Mil. Thou. Dol.	\$Bil. Mil. Thou. Dol.	\$Bil. Mil. Thou. Dol.
U.S. Dollars (97)	U.S. Dollars (98)	U.S. Dollars (99)

85. Excluding the quantity reported in question 83, did this establishment receive any additional material from another establishment which was not purchased? (If you answer "Yes" to any of the alternatives below, please answer question 86. Otherwise, skip to question 87.)

031	031	031
<input type="checkbox"/> Yes (97)	<input type="checkbox"/> Yes (98)	<input type="checkbox"/> Yes (99)
<input type="checkbox"/> No	<input type="checkbox"/> No	<input type="checkbox"/> No

86. How much of this additional material was received from the other establishment?

030	030	030
Units (97)	Units (98)	Units (99)

87. Enter the quantity produced on-site during 2018.

040	040	040
Units (97)	Units (98)	Units (99)

88. Does the quantity reported in produced on-site represent the product or byproduct of another energy source consumed on-site?

050	050	050
<input type="checkbox"/> 1. Yes, product or byproduct (97)	<input type="checkbox"/> 1. Yes, product or byproduct (98)	<input type="checkbox"/> 1. Yes, product or byproduct (99)
<input type="checkbox"/> 2. No	<input type="checkbox"/> 2. No	<input type="checkbox"/> 2. No

89. Enter the total quantity consumed as a fuel at this establishment during 2018.

Include all uses for the heat, power, and electricity generation.

060	060	060
Units (97)	Units (98)	Units (99)



Fuel Switching Capability: Electricity, Natural Gas, and Total Coal

- Capability to use substitute energy sources means that this establishment's combustors (for example, boilers, furnaces, ovens, blast furnaces) had the equipment, either in place or available for installation in 2018, so that substitutions could actually have been introduced within 30 days without extensive modifications.
- Include switching capability that could have resulted from the use of redundant and/or standby combustors, and from combustors that were already equipped to fire alternative fuels.
- In addition to the capability of your equipment, when formulating your estimates:
 - Make sure to consider both the equipment limitations of your boilers, heaters, and combustors and any other practical reasons when determining the availability of supply during 2018.

Equipment limitations include:

- The boilers, heaters, or other fuel-consuming equipment are not capable of using anything other than specify fuel for at least part of the operations.
- Although the boilers, heaters, or combustors would allow using another fuel, doing so would adversely affect a product. (e.g., altering the pigment in a paint-drying application).

Practical reasons include:

- There is no ready supply of an alternative energy source.
- Environmental restrictions related to air quality limit the amount of the physically usable alternative fuel that could be used instead.
- A long-term contract in-place that requires the purchase of certain amounts of the energy source in any case.
- Storage of alternative fuels is not available due to potential environmental impact of storage tanks.
- Do not limit your estimated capability by differences in relative prices of energy sources.
- This section is intended to measure your capability to switch, not whether you would switch if you could.
- When estimating your capability to substitute other fuels for electricity receipts, please consider the fuels that could be used to generate electricity onsite, as well as those that could be directly substituted in combustors.
- If records of fuel-switching capability are not regularly maintained, reasonable approximations are acceptable.
- You will be asked to provide your not switchable amount first, then the switchable.
- Enter a zero if the fuel could not be switched for the specific energy source.
- Please proceed through this section column-by-column.



Fuel Switching Capability: Electricity, Natural Gas, and Total Coal

The next set of questions are designed as a worksheet. You will need to refer back to some sections of the form that you have already filled out to record the figures you have reported.

- | | |
|--|---|
| 90. Refer back to the Electricity section, question 7 page 8. Please enter the quantity of reported purchased electricity. | <div style="border: 1px solid black; width: 100%; height: 20px;"></div> |
| 91. Refer back to the Electricity section, question 14 page 8. Please enter the quantity of reported transferred electricity. | <div style="border: 1px solid black; width: 100%; height: 20px;"></div> |
| 92. Add lines from question 90 and 91 (question 90 + question 91). Enter the total in the box. | 10503 <div style="border: 1px solid black; width: 100%; height: 20px;"></div> |
| 93. Refer back to the Natural Gas section, question 51 page 19. Please enter the quantity of reported natural gas consumed. Enter the figure in the box. | 30503 <div style="border: 1px solid black; width: 100%; height: 20px;"></div> |
| 94. Refer back to the Coal section, question 68 page 23. Please add the quantity of any reported anthracite, bituminous and subbituminous and lignite consumed. Enter the total in the box. | 46503 <div style="border: 1px solid black; width: 100%; height: 20px;"></div> |

	Census Use Only	(10)	(30)	(46)
		Total Electricity Received	Total Natural Gas	Total ALL Coal
		Purchases + Transfers		(excluding Coal Coke & Breeze)
		↓	↓	↓
95. Enter the total quantity of the energy source (column) you reported as consumed during 2018. Copy this figure from the above worksheet questions.	500	<div style="border: 1px solid black; width: 100%; height: 20px;"></div> Kilowatthours Enter figure from question 92.	<div style="border: 1px solid black; width: 100%; height: 20px;"></div> Units Enter figure from question 93.	<div style="border: 1px solid black; width: 100%; height: 20px;"></div> Short tons Enter figure from question 94.
96. Is the total quantity reported in question 95 greater than zero?	501	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No: Skip to question 95, next column.	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No: Skip to question 95, next column.	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No: Skip to question 111, page 35.
97. Enter the amount of the total quantity you reported in question 95 that could NOT have been replaced within 30 days by another energy source during 2018. Consider both the equipment limitations of your boilers, heaters, and combustors and any other practical reason. Do not consider differences in energy prices when estimating the amount.	510	<div style="border: 1px solid black; width: 100%; height: 20px;"></div> Kilowatthours	<div style="border: 1px solid black; width: 100%; height: 20px;"></div> Units	<div style="border: 1px solid black; width: 100%; height: 20px;"></div> Short tons



Fuel Switching Capability: Electricity, Natural Gas, and Total Coal

	Census Use Only	(10)	(30)	(46)
		Total Electricity Received Purchases + Transfers ↓	Total Natural Gas ↓	Total ALL Coal (excluding Coal Coke & Breeze) ↓
98. Is the total quantity in question 97 equal to zero?	511	<input type="checkbox"/> 1. Yes: Skip to question 100. <input type="checkbox"/> 2. No	<input type="checkbox"/> 1. Yes: Skip to question 100. <input type="checkbox"/> 2. No	<input type="checkbox"/> 1. Yes: Skip to question 100. <input type="checkbox"/> 2. No
99. Referring to the quantity shown in question 97, please check all the reasons that made this quantity unswitchable.				
The boilers, heaters, or other fuel-consuming equipment are NOT capable of using another fuel for at least part of the operations during the year.	526	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1
Switching to the usable alternatives would adversely affect the products.	528	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Although the heating equipment could use another fuel, there was no readily available supply of it during at least part of the year.	533	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Environmental restrictions related to air quality limit the amount of the physically usable alternative fuel that could be used instead.	534	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
A long-term contract is in-place that requires the purchase of certain amounts of this fuel in any case.	536	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Storage of usable alternative fuels is not available due to potential environmental impact of storage tanks.	537	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Other	999	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Please specify other:	998	<input type="text"/>	<input type="text"/>	<input type="text"/>



Fuel Switching Capability: Electricity, Natural Gas, and Total Coal

	Census Use Only	(10)	(30)	(46)
		Total Electricity Received Purchases + Transfers ↓	Total Natural Gas ↓	Total ALL Coal (excluding Coal Coke & Breeze) ↓
<p>100. Enter the results of subtracting the quantity reported in question 97 from the quantity reported in question 95.</p> <p>This represents the total quantity of energy consumption that could have been replaced in 30 days by one or more alternative energy sources in 2018.</p> <p>Note: the sum of the quantities in question 102 through 109 should equal or exceed this quantity.</p>	520	<input type="text"/> Kilowatthours	<input type="text"/> Units	<input type="text"/> Short tons
<p>101. Is the total quantity reported in question 100 greater than zero?</p>	521	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No: Skip to next column.	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No: Skip to next column.	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No: Skip to question 111, page 35.
<p>102. Of the quantity switchable in question 100 what is the maximum amount that could have been replaced by <u>electricity</u>?</p>	530		<input type="text"/> Units	<input type="text"/> Short tons
<p>103. Of the quantity reported as switchable in question 100 what is the maximum amount that could have been replaced by <u>total coal, excluding coal coke and breeze</u>?</p>	670	<input type="text"/> Kilowatthours	<input type="text"/> Units	
<p>104. Of the quantity reported as switchable in question 100 what is the maximum amount that could have been replaced by <u>total coal coke and breeze, excluding coal</u>?</p>	690	<input type="text"/> Kilowatthours	<input type="text"/> Units	
<p>105. Of the quantity reported as switchable in question 100 what is the maximum amount that could have been replaced by <u>natural gas</u>?</p>	570	<input type="text"/> Kilowatthours		<input type="text"/> Short tons



Fuel Switching Capability: Electricity, Natural Gas, and Total Coal

	Census Use Only	(10)	(30)	(46)
		Total Electricity Received Transfers + Purchases ↓	Total Natural Gas ↓	Total ALL Coal (excluding Coal Coke & Breeze) ↓
106. Of the quantity reported as switchable in question 100 what is the maximum amount that could have been replaced by <u>total diesel fuel and distillate fuel oil</u>?	590	<input type="text"/> Kilowatthours	<input type="text"/> Units	<input type="text"/> Short tons
107. Of the quantity reported as switchable in question 100 what is the maximum amount that could have been replaced by <u>liquefied petroleum gas (LPG)</u>?	610	<input type="text"/> Kilowatthours	<input type="text"/> Units	<input type="text"/> Short tons
108. Of the quantity reported as switchable in question 100 what is the maximum amount that could have been replaced by <u>residual fuel oil</u>?	630	<input type="text"/> Kilowatthours	<input type="text"/> Units	<input type="text"/> Short tons
109. Of the quantity reported as switchable in question 100 what is the maximum amount that could have been replaced by <u>any other energy source not already asked about</u>?	650	<input type="text"/> Kilowatthours	<input type="text"/> Units	<input type="text"/> Short tons
Please Specify:	990	<input type="text"/>	<input type="text"/>	<input type="text"/>



Fuel Switching Capability: Electricity, Natural Gas, and Total Coal

What is the lowest percentage of price difference of the less expensive substitute that would cause your establishment to switch from this fuel, regardless of whether or not your establishment actually switched energy sources during 2018 or did so because of a less expensive substitute? (If you have more than one possible alternative for the energy source, choose the fuel that would be your most preferred alternative.)

The formula for percentage of price difference is:

- Percent of Price Difference = $((PC-PA)/PC) * 100\%$
- Where PC = Price per British thermal unit of current fuel
- PA = Price per British thermal unit of alternative fuel

	Census Use Only	(10)	(30)	(46)
		Total Electricity Received Transfers + Purchases ↓	Total Natural Gas ↓	Total ALL Coal (excluding Coal Coke & Breeze) ↓
Check one for each energy source (column) reported				
110. Would not switch regardless of price difference.	622	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Would switch at price difference 1-10 percent.		<input type="checkbox"/> 2	<input type="checkbox"/> 2	<input type="checkbox"/> 2
Would switch at price difference 11-25 percent.		<input type="checkbox"/> 3	<input type="checkbox"/> 3	<input type="checkbox"/> 3
Would switch at price difference 26-50 percent.		<input type="checkbox"/> 4	<input type="checkbox"/> 4	<input type="checkbox"/> 4
Would switch at price difference over 50 percent.		<input type="checkbox"/> 5	<input type="checkbox"/> 5	<input type="checkbox"/> 5
Reasonable estimates cannot be provided.		<input type="checkbox"/> 6	<input type="checkbox"/> 6	<input type="checkbox"/> 6
Would switch to the more expensive substitute if price premium were reasonable.		<input type="checkbox"/> 7	<input type="checkbox"/> 7	<input type="checkbox"/> 7



Fuel Switching Capability: Total LPG & NGL, Diesel & Distillate and Residual

- Capability to use substitute energy sources means that this establishment's combustors (for example, boilers, furnaces, ovens, blast furnaces) had the equipment, either in place or available for installation in 2018, so that substitutions could actually have been introduced within 30 days without extensive modifications.
- Include switching capability that could have resulted from the use of redundant and/or standby combustors, and from combustors that were already equipped to fire alternative fuels.
- In addition to the capability of your equipment, when formulating your estimates:
 - Make sure to consider both the equipment limitations of your boilers, heaters, and combustors and any other practical reasons when determining the availability of supply during 2018.

Equipment limitations include:

- The boilers, heaters, or other fuel-consuming equipment are not capable of using anything other than specify fuel for at least part of the operations.
- Although the boilers, heaters, or combustors would allow using another fuel, doing so would adversely affect a product. (e.g., altering the pigment in a paint-drying application).

Practical reasons include:

- There is no ready supply of an alternative energy source.
- Environmental restrictions related to air quality limit the amount of the physically usable alternative fuel that could be used instead.
- A long-term contract in-place that requires the purchase of certain amounts of the energy source in any case.
- Storage of alternative fuels is not available due to potential environmental impact of storage tanks.
- Do not limit your estimated capability by differences in relative prices of energy sources.
- This section is intended to measure your capability to switch, not whether you would switch if you could.
- When estimating your capability to substitute other fuels for electricity receipts, please consider the fuels that could be used to generate electricity onsite, as well as those that could be directly substituted in combustors.
- If records of fuel-switching capability are not regularly maintained, reasonable approximations are acceptable.
- You will be asked to provide your not switchable amount first, then the switchable.
- Enter a zero if the fuel could not be switched for the specific energy source.
- Please proceed through this section column-by-column.



Fuel Switching Capability: Total LPG & NGL, Diesel & Distillate and Residual

The next three questions are designed as a worksheet. You will need to refer back to some sections of the form that you have already filled out to record the figures you have reported.

- | | | |
|--|-------|--|
| 111. Refer back to the Petroleum-based Energy Sources section, question 25 page 11. Please add the quantity of reported LPG & NGL consumed. | 24503 | |
| 112. Refer back to the Petroleum-based Energy Sources section, question 29 page 13. Please enter the reported quantity of diesel and distillate fuel. | 22503 | |
| 113. Refer back to the Petroleum-based Energy Sources section, question 32 page 15. Please enter the reported quantity of residual fuel. | 21503 | |

	Census Use Only	(24)	(22)	(21)
		Total LPG & NGL	Total Diesel Fuel & Distillate Fuel Oil	Residual Fuel Oil
		↓	↓	↓
114. Enter the total quantity of the energy source (column) you reported as consumed during 2018. Copy this figure from the above worksheet questions.	500	<input style="width: 100%; height: 20px;" type="text"/> Gallons Enter figure from question 111.	<input style="width: 100%; height: 20px;" type="text"/> Barrels Enter figure from question 112.	<input style="width: 100%; height: 20px;" type="text"/> Barrels Enter figure from question 113.
115. Is the total quantity reported in question 114 greater than zero?	501	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No: Skip to question 114, next column.	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No: Skip to question 114, next column.	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No: Skip to question 130, page 40.
116. Enter the amount of the total quantity you reported in question 114 that could NOT have been replaced within 30 days by another energy source during 2018. Consider both the equipment limitations of your boilers, heaters, and combustors and any other practical reason. Do not consider differences in energy prices when estimating the amount.	510	<input style="width: 100%; height: 20px;" type="text"/> Gallons	<input style="width: 100%; height: 20px;" type="text"/> Barrels	<input style="width: 100%; height: 20px;" type="text"/> Barrels



Fuel Switching Capability: Total LPG & NGL, Diesel & Distillate and Residual

	Census Use Only	(24)	(22)	(21)
		Total LPG & NGL	Total Diesel Fuel & Distillate Fuel Oil	Residual Fuel Oil
		↓	↓	↓
117. Is the total quantity in question 116 equal to zero?	511	<input type="checkbox"/> 1. Yes: Skip to question 119. <input type="checkbox"/> 2. No	<input type="checkbox"/> 1. Yes: Skip to question 119. <input type="checkbox"/> 2. No	<input type="checkbox"/> 1. Yes: Skip to question 119. <input type="checkbox"/> 2. No
118. Referring to the quantity shown in question 116, please check all the reasons that made this quantity unswitchable.				
The boilers, heaters, or other fuel-consuming equipment are NOT capable of using another fuel for at least part of the operations during the year.	526	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1
Switching to the usable alternatives would adversely affect the products.	528	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Although the heating equipment could use another fuel, there was no readily available supply of it during at least part of the year.	533	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Environmental restrictions related to air quality limit the amount of the physically usable alternative fuel that could be used instead.	534	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
A long-term contract is in-place that requires the purchase of certain amounts of this fuel in any case.	536	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Storage of usable alternative fuels is not available due to potential environmental impact of storage tanks.	537	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Other	999	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Please specify other:	998	<input style="width: 100px; height: 20px;" type="text"/>	<input style="width: 100px; height: 20px;" type="text"/>	<input style="width: 100px; height: 20px;" type="text"/>



Fuel Switching Capability: Total LPG & NGL, Diesel & Distillate and Residual

	Census Use Only	(24)	(22)	(21)
		Total LPG & NGL	Total Diesel Fuel & Distillate Fuel Oil	Residual Fuel Oil
		↓	↓	↓
<p>119. Enter the results of subtracting the quantity reported in question 116 from the quantity reported in question 114.</p> <p>This represents the total quantity of energy consumption that could have been replaced in 30 days by one or more alternative energy sources in 2018.</p> <p>Note: the sum of the quantities in question 121 through 128 should equal or exceed this quantity.</p>	520	<input type="text"/> Gallons	<input type="text"/> Barrels	<input type="text"/> Barrels
<p>120. Is the total quantity reported in question 119 greater than zero?</p>	521	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No: Skip to next column.	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No: Skip to next column.	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No: Skip to question 130, page 40.
<p>121. Of the quantity switchable in question 119 what is the maximum amount that could have been replaced by <u>electricity</u>?</p>	530	<input type="text"/> Gallons	<input type="text"/> Barrels	<input type="text"/> Barrels
<p>122. Of the quantity reported as switchable in question 119 what is the maximum amount that could have been replaced by <u>total coal, excluding coal coke and breeze</u>?</p>	670	<input type="text"/> Gallons	<input type="text"/> Barrels	<input type="text"/> Barrels
<p>123. Of the quantity reported as switchable in question 119 what is the maximum amount that could have been replaced by <u>total coal coke and breeze, excluding coal</u>?</p>	690	<input type="text"/> Gallons	<input type="text"/> Barrels	<input type="text"/> Barrels
<p>124. Of the quantity reported as switchable in question 119 what is the maximum amount that could have been replaced by <u>natural gas</u>?</p>	570	<input type="text"/> Gallons	<input type="text"/> Barrels	<input type="text"/> Barrels



Fuel Switching Capability: Total LPG & NGL, Diesel & Distillate and Residual

	Census Use Only	(24)	(22)	(21)
		Total LPG & NGL	Total Diesel Fuel & Distillate Fuel Oil	Residual Fuel Oil
		↓	↓	↓
125. Of the quantity reported as switchable in question 119 what is the maximum amount that could have been replaced by <u>total diesel fuel and distillate fuel oil</u> ?	590	<input type="text"/> Gallons		<input type="text"/> Barrels
126. Of the quantity reported as switchable in question 119 what is the maximum amount that could have been replaced by <u>liquefied petroleum gas (LPG)</u> ?	610		<input type="text"/> Barrels	<input type="text"/> Barrels
127. Of the quantity reported as switchable in question 119 what is the maximum amount that could have been replaced by <u>residual fuel oil</u> ?	630	<input type="text"/> Gallons	<input type="text"/> Barrels	
128. Of the quantity reported as switchable in question 119 what is the maximum amount that could have been replaced by <u>any other energy source not already asked about</u> ?	650	<input type="text"/> Gallons	<input type="text"/> Barrels	<input type="text"/> Barrels
Please Specify:	990	<input type="text"/>	<input type="text"/>	<input type="text"/>



Fuel Switching Capability: Total LPG & NGL, Diesel & Distillate and Residual

What is the lowest percentage of price difference of the less expensive substitute that would cause your establishment to switch from this fuel, regardless of whether or not your establishment actually switched energy sources during 2018 or did so because of a less expensive substitute? (If you have more than one possible alternative for the energy source, choose the fuel that would be your most preferred alternative.)

The formula for percentage of price difference is:

- Percent of Price Difference = $((PC-PA)/PC) * 100\%$
- Where PC = Price per British thermal unit of current fuel
- PA = Price per British thermal unit of alternative fuel

	Census Use Only	(24)	(22)	(21)
		Total LPG & NGL	Total Diesel Fuel & Distillate Fuel Oil	Residual Fuel Oil
	622	↓	↓	↓
(Check one for each energy source (column) reported)				
129. Would not switch regardless of price difference.		<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Would switch at price difference 1-10 percent.		<input type="checkbox"/> 2	<input type="checkbox"/> 2	<input type="checkbox"/> 2
Would switch at price difference 11-25 percent.		<input type="checkbox"/> 3	<input type="checkbox"/> 3	<input type="checkbox"/> 3
Would switch at price difference 26-50 percent.		<input type="checkbox"/> 4	<input type="checkbox"/> 4	<input type="checkbox"/> 4
Would switch at price difference over 50 percent.		<input type="checkbox"/> 5	<input type="checkbox"/> 5	<input type="checkbox"/> 5
Reasonable estimates cannot be provided.		<input type="checkbox"/> 6	<input type="checkbox"/> 6	<input type="checkbox"/> 6
Would switch to the more expensive substitute if price premium were reasonable.		<input type="checkbox"/> 7	<input type="checkbox"/> 7	<input type="checkbox"/> 7



Energy-Management Activities

For questions 130 through 134:

Indicate with a “yes” or a “no” under the “Participate?” column whether your establishment participated in or used the specified type of energy-management assistance between January 1, 2018 and December 31, 2018.

For any assistance for which you marked “yes”, please mark the source(s) of assistance.

“In-house” means your establishment or company provided the energy-management assistance.

“Utility/Energy Supplier” refers to either your electricity, natural gas, or other energy supplier/provider.

“Product or Service Provider” includes any other third party product or service provider/supplier such as an equipment vendor, energy service company, or maintenance service company.

“Federal Program” includes assistance provided by federal government programs or agencies such as the Department of Energy (DOE), the Environmental Protection Agency (EPA), and the National Institute of Standards and Technology (NIST) Manufacturing Extension Partnership (MEP).

“State or Local Program” includes all assistance provided by a state, city, or county government program or agency.

Type of Energy-Management Assistance	Participate? (13)	Source of Assistance (check all that apply)				
		In-house (15)	Utility/ Energy Supplier (16)	Product or Service Provider (17)	Federal Program (18)	State or Local Program (19)
130. Energy audit or assessment	1 <input type="checkbox"/> Yes → 2 <input type="checkbox"/> No (060)	3 <input type="checkbox"/>	4 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
131. Technical assistance (e.g., consultation, demonstrations, engineering design or analysis)	1 <input type="checkbox"/> Yes → 2 <input type="checkbox"/> No (070)	3 <input type="checkbox"/>	4 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
132. Technical information (e.g., software, reference material)	1 <input type="checkbox"/> Yes → 2 <input type="checkbox"/> No (072)	3 <input type="checkbox"/>	4 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
133. Training (e.g., workshops, seminars, presentations)	1 <input type="checkbox"/> Yes → 2 <input type="checkbox"/> No (074)	3 <input type="checkbox"/>	4 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
134. Financial assistance (e.g., loans, tax credits, rebates, subsidies)	1 <input type="checkbox"/> Yes → 2 <input type="checkbox"/> No (076)	3 <input type="checkbox"/>	4 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>



Energy-Management Activities

For Questions 135 through 141:

Indicate with a “Yes” or a “No” under the “Installed Equipment or Retrofit?” column whether your establishment installed equipment or any retrofits for the primary purpose of improving energy efficiency for the indicated system between January 1, 2018 and December 31, 2018. For any activity for which you marked “Yes” please mark the source(s) of financial support for the activity. Please use sources defined above question 130.

System	Installed Equipment or Retrofit? (13)	Source of Assistance (check all that apply)				
		In-house (15)	Utility/ Energy Supplier (16)	Product or Service Provider (17)	Federal Program (18)	State or Local Program (19)
135. Steam systems (e.g., boilers, burners, insulation, piping, steam traps)	1 <input type="checkbox"/> Yes → 2 <input type="checkbox"/> No (120)	3 <input type="checkbox"/>	4 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
136. Compressed air systems (e.g., compressor controls, drain traps, leak management, compressor or treatment equipment replacement)	1 <input type="checkbox"/> Yes → 2 <input type="checkbox"/> No (450)	3 <input type="checkbox"/>	4 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
137. Process heating systems (e.g., insulation repair, burner controls, furnace repair, refractory replacement)	1 <input type="checkbox"/> Yes → 2 <input type="checkbox"/> No (140)	3 <input type="checkbox"/>	4 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
138. Process cooling and refrigeration systems (e.g., insulation repair, use of free cooling, implementation of VSDs, refrigerant pressure balancing)	1 <input type="checkbox"/> Yes → 2 <input type="checkbox"/> No (160)	3 <input type="checkbox"/>	4 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
139. Machine drive (e.g., variable speed drives, ramp speeds, motors, pumps, fans)	1 <input type="checkbox"/> Yes → 2 <input type="checkbox"/> No (180)	3 <input type="checkbox"/>	4 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
140. Facility HVAC system (e.g., check filters, belts, duct maintenance, setback controls, equipment replacement and upgrade.)	1 <input type="checkbox"/> Yes → 2 <input type="checkbox"/> No (200)	3 <input type="checkbox"/>	4 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>
141. Facility lighting (e.g., occupancy controls, daylight harvesting, efficient lamp upgrade)	1 <input type="checkbox"/> Yes → 2 <input type="checkbox"/> No (220)	3 <input type="checkbox"/>	4 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>



Energy-Management Activities

For Questions 142 through 163:

These questions are intended to assess the awareness and implementation of energy management activities at your establishment. Please answer the following questions with respect to any activities implemented between January 1, 2018 and December 31, 2018.

	Census Use Only	
<p>142. Which statement best describes this establishment's management decision-making process. (Choose one)</p> <p>1. Energy use and consumption is increasingly becoming a higher priority for the company</p> <p>2. Management from time to time has supported projects to improve use and consumption</p> <p>3. Energy use and consumption are rarely a part of management decision making</p>	13561	<p>1. <input type="checkbox"/></p> <p>2. <input type="checkbox"/></p> <p>3. <input type="checkbox"/></p>
<p>143. Is establishment management aware of programs (i.e., public or utility) dedicated to improving energy use and consumption? (Check all that apply)</p> <p>1. Superior Energy Performance</p> <p>2. Better Buildings, Better Plants</p> <p>3. ENERGY STAR</p> <p>4. Other - Specify ¹³⁰¹⁶ <input style="width: 200px; height: 20px;" type="text"/></p> <p>5. None of the above</p>	13561 13562 13563 13564 13565	<p>1. <input type="checkbox"/></p> <p>2. <input type="checkbox"/></p> <p>3. <input type="checkbox"/></p> <p>4. <input type="checkbox"/></p> <p>5. <input type="checkbox"/></p>
<p>144. Is this establishment aware of ISO 50001?</p>	13503	<p>1 <input type="checkbox"/> Yes</p> <p>2 <input type="checkbox"/> No, Skip to question 146</p>
<p>145. Is this establishment implementing ISO 50001?</p>	13504	<p>1 <input type="checkbox"/> Yes</p> <p>2 <input type="checkbox"/> No</p>
<p>146. Is energy efficiency a part of this establishment's purchasing decision?</p>	13506	<p>1 <input type="checkbox"/> Yes</p> <p>2 <input type="checkbox"/> No</p> <p>3 <input type="checkbox"/> Don't Know</p>
<p>147. Does this establishment have an energy use baseline for comparing energy use in future years?</p>	13507	<p>1 <input type="checkbox"/> Yes</p> <p>2 <input type="checkbox"/> No</p> <p>3 <input type="checkbox"/> Don't Know</p>



Energy-Management Activities

<p>148. Does this establishment set goals for improving energy use?</p>	<p>Census Use Only 13508</p>	<p>1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No, Skip to question 151 3 <input type="checkbox"/> Don't Know, Skip to question 151</p>
<p>149. Are these goals quantitative (e.g., 10% improvement)?</p>	<p>13509</p>	<p>1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't Know</p>
<p>150. Which of the following policies influenced energy usage goals set for this establishment (check all that apply):</p>	<p>13566 13567 13568 13569 13570</p>	<p>1. <input type="checkbox"/> Legal requirement 2. <input checked="" type="checkbox"/> Voluntary programs 3. <input type="checkbox"/> Corporate policy 4. <input type="checkbox"/> Customer requirements 5. <input type="checkbox"/> Government incentives</p>
<p>151. Does management at this establishment assign a representative(s) to be responsible for energy management?</p>	<p>13512</p>	<p>1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No, Skip to question 153 3 <input type="checkbox"/> Don't Know, Skip to question 153</p>
<p>152. What percentage of the designated representative(s) job responsibilities are related to managing energy (if more than one person responsible, use average across all persons)?</p>	<p>13513</p>	<p>1 <input type="checkbox"/> < 25% 2 <input type="checkbox"/> 25% - 49% 3 <input type="checkbox"/> 50% - 74% 4 <input type="checkbox"/> >75%</p>
<p>153. Does this establishment have submetering (metering beyond the main utility, revenue or supplier meter)?</p>	<p>13514</p>	<p>1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No, Skip to question 155</p>
<p>154. For which energy source(s) does this establishment use submetering?</p>	<p>13515 13580 13581 13017</p>	<p>1 <input type="checkbox"/> Electric 2 <input type="checkbox"/> Natural Gas 3 <input type="checkbox"/> Other - Specify ↘ <input type="text"/></p>



Energy-Management Activities

	Census Use Only	
155. Between January 1, 2018 and December 31, 2018, has the establishment conducted an audit on any energy system to identify potential energy saving opportunities?	13518	1 <input type="checkbox"/> Yes
		2 <input type="checkbox"/> No, Skip to question 157
		3 <input type="checkbox"/> Don't Know, Skip to question 157
156. Which systems (check all that apply)?	13571	1. <input type="checkbox"/> Compressed air systems
	13572	2. <input type="checkbox"/> Process heating systems
	13573	3. <input type="checkbox"/> Steam systems
	13574	4. <input type="checkbox"/> Process cooling and refrigeration systems
	13575	5. <input checked="" type="checkbox"/> Computing systems
	13576	6. <input type="checkbox"/> Facility HVAC
	13577	7. <input type="checkbox"/> Facility lighting
	13578	8. <input type="checkbox"/> Machine drives (e.g., motors, pumps, fans)
	13579	9. <input type="checkbox"/> Plant wide
157. For capital investment projects, what is the establishment's maximum simple payback (time period in years typically calculated as implementation cost divided by annual cost savings) that is currently allowed?	13520	1 <input type="checkbox"/> < 1 year
		2 <input type="checkbox"/> 1-2 years
		3 <input type="checkbox"/> 2-3 years
		4 <input type="checkbox"/> 3-4 years
		5 <input type="checkbox"/> > 4 years
		6 <input type="checkbox"/> Have no such requirement
		7 <input type="checkbox"/> Do not know



Energy-Management Activities

	Census Use Only	
<p>158. Does your establishment measure oxygen and carbon dioxide (or combustible) levels in boiler and other fuel fired heating equipment flue gases to “tune” the burners?</p>	13476	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't Know
<p>159. Does your establishment use the flue gases from fuel fired heating equipment to preheat combustion air, preheat charge equipment/material, or provide heat for other processes in your establishment?</p>	13477	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't Know
<p>160. Does your establishment's process heating system maintenance program include the following activities?</p>		
<p>a. Furnace inspections to seal openings and repair cracks and damaged insulation in furnace walls, doors, etc.</p>	13478	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't Know
<p>b. Cleaning of heat transfer surfaces to avoid build up of soot, scale, or other material.</p>	13479	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't Know
<p>c. Inspecting, calibrating, and adjusting temperature/pressure sensors, controllers, valve operators, etc.</p>	13480	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't Know
<p>161. Do you keep an inventory of all motors in your establishment?</p>	13481	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't Know
<p>162. Does your establishment have staff or equipment dedicated to detecting and controlling compressed air system leaks?</p>	13483	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't Know
<p>163. Does your establishment track the amount of energy spent in compressed air systems?</p>	13484	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't Know



Energy Technologies

	Census Use Only	
<p>164. Were any of the following technologies in use at your establishment anytime during 2018?</p> <p>a. Computer control of building-wide environment (e.g., space-heating equipment, cooling equipment, lights).</p>	14010	<p>1 <input type="checkbox"/> Yes</p> <p>2 <input type="checkbox"/> No</p> <p>3 <input type="checkbox"/> Don't know</p>
<p>b. Computer control of processes or major energy-using equipment (e.g., boilers, furnaces, conveyors used in the manufacturing process).</p>	14020	<p>1 <input type="checkbox"/> Yes</p> <p>2 <input type="checkbox"/> No</p> <p>3 <input type="checkbox"/> Don't know</p>
<p>c. Waste heat recovery.</p>	14030	<p>1 <input type="checkbox"/> Yes</p> <p>2 <input type="checkbox"/> No</p> <p>3 <input type="checkbox"/> Don't know</p>
<p>d. Adjustable-speed motors.</p>	14040	<p>1 <input type="checkbox"/> Yes</p> <p>2 <input type="checkbox"/> No</p> <p>3 <input type="checkbox"/> Don't know</p>
<p>e. Oxy-fuel firing.</p>	14950	<p>1 <input type="checkbox"/> Yes</p> <p>2 <input type="checkbox"/> No</p> <p>3 <input type="checkbox"/> Don't know</p>
<p>165. Does your establishment have procedures in place to temporarily reduce electricity consumption in times of critical grid conditions (i.e., when the electric utility has indicated a need to reduce electric demand)?</p>	13516	<p>1 <input type="checkbox"/> Yes</p> <p>2 <input type="checkbox"/> No</p> <p>3 <input type="checkbox"/> Don't know</p>
<p>166. Are there controls in place to automate any procedures for reducing electricity demand in times of critical grid conditions (i.e., when the electric utility has indicated a need to reduce demand)?</p>	13517	<p>1 <input type="checkbox"/> Yes</p> <p>2 <input type="checkbox"/> No</p> <p>3 <input type="checkbox"/> Don't know</p>



Energy Technologies

		Census Use Only	
167. Were any of the following technologies associated with cogeneration in use at your establishment anytime during 2018?	a. Steam turbines supplied by either conventional or fluidized bed boilers.	14042	1 <input type="checkbox"/> Yes
			2 <input type="checkbox"/> No
			3 <input type="checkbox"/> Don't know
b. Conventional combustion turbines with heat recovery.		14043	1 <input type="checkbox"/> Yes
			2 <input type="checkbox"/> No
			3 <input type="checkbox"/> Don't know
c. Combined-cycle combustion turbines.		14044	1 <input type="checkbox"/> Yes
			2 <input type="checkbox"/> No
			3 <input type="checkbox"/> Don't know
d. Internal combustion engines with heat recovery.		14045	1 <input type="checkbox"/> Yes
			2 <input type="checkbox"/> No
			3 <input type="checkbox"/> Don't know
e. Steam turbines supplied by heat recovered from high-temperatures processes.		14046	1 <input type="checkbox"/> Yes
			2 <input type="checkbox"/> No
			3 <input type="checkbox"/> Don't know

Establishment Size

168. How many buildings were on this establishment site as of December 31, 2018? Buildings include: structures enclosed by walls extending from the foundation to the roof, parking garages, even if not totally enclosed by walls and a roof, or structures erected on pillars to elevate the first fully enclosed level. Excluded buildings are: structures (other than the exceptions noted above) that are not totally enclosed by walls and a roof, mobile homes and trailers, even if they house manufacturing activity, structures not ordinarily intended to be entered by humans, such as storage tanks, or non-buildings that consume energy (such as pumps and constructions sites).	17010	<input style="width: 150px; height: 20px;" type="text"/> Number of Buildings
169. What was the approximate total enclosed square footage of the buildings located on this establishment site as of December 31, 2018?	13010	<input style="width: 150px; height: 20px;" type="text"/> Total square feet



Remarks

170. Please use this space for any explanations that may be essential in understanding your reported data. If additional space is needed, attach a separate sheet, including the 10-digit Survey ID located on the mailing label on the front of this questionnaire.

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Thank You – Your Response is Important

Accurate and timely statistical information could not be produced without your continued cooperation and goodwill. Thank you.

We estimate that it will take 8 hours to complete this form. This includes time to read instructions, develop or assemble materials, conduct tests, organize and review the information, and maintain and report the information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Energy Information Administration, Office of Survey Development and Statistical Integration, EI-21, Forrestal, 1000 Independence Ave., SW, Washington, DC 20585; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

You may e-mail comments to Paperwork@census.gov; use "Paperwork Project 0607-0912" as the subject.

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