



## **Appendix D**

### **Manufacturing Energy Consumption Survey Forms**

## Appendix D

# 1994 Manufacturing Energy Consumption Survey Form EIA-846A

OMB No. 1905-0169: Approval Expires 04/30/98

<p><b>Form EIA-846A</b> (4-6-95)</p> <p>U.S. Department of Commerce Bureau of the Census Acting as Collecting and Compiling Agent For</p> <p>UNITED STATES DEPARTMENT OF ENERGY ENERGY INFORMATION ADMINISTRATION</p>   <p><b>1994 MANUFACTURING ENERGY CONSUMPTION SURVEY</b></p>	<p>Public reporting burden for this collection of information is estimated to average 9 hours per response, including the time of reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of 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 Statistical Standards, EI-73, 1707 H-Street, NW, Washington, DC 20585; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.</p>	
	<p><b>In correspondence pertaining to this report, please refer to this Census File Number (CFN).</b></p> <p>Please correct errors in name, address, and ZIP Code. ENTER street and number if not shown.</p>	
	<p><b>PLEASE COMPLETE THIS FORM AND RETURN TO</b></p> <p>BUREAU OF THE CENSUS 1201 East 10th Street Jeffersonville, IN 47132-0001</p> <p><b>DUE DATE:</b></p> <p>If you cannot file by the due date, a time extension request should be sent to the above address. Please include your 11-digit Census File Number (CFN).</p>	<p><b>NOTE</b></p> <p><i>Please read the enclosed instructions before filling out this form. Complete each item. If you have any questions, call 1-800-866-6327.</i></p>

▶ **The Manufacturing Energy Consumption Survey** – The Manufacturing Energy Consumption Survey (MECS) was designed, and is being sponsored, by the Energy Information Administration (EIA) of the U.S. Department of Energy (DOE). The survey is administered and compiled by the U.S. Bureau of the Census for the EIA. The previous MECS was conducted covering the year 1991.

▶ **Mandatory Requirement** – This survey is **mandatory** under the Federal Energy Administration Act of 1974, Pub. L. No. 93-275, and under Title 3, Subtitle B, of the Omnibus Budget Reconciliation Act of 1986, Pub. L. No. 99-509, as amended by Title 1, Subtitle G, of the Energy Policy Act of 1992, Pub. L. No. 102-486. Failure to respond may result in criminal fines, civil penalties, and other sanctions as provided by law. Response is required by law from establishments included in the MECS sample and receiving the MECS form.

▶ **Confidentiality of Data** – Under Section 9 of Title 13, U.S. Code, your report to the Census Bureau is **confidential**. It may be seen only by sworn Census Bureau employees and may be used only for statistical purposes. The law also provides that copies retained in your files are immune from legal process.

▶ **Purpose of This Survey** – The MECS will collect data on energy consumption and usage patterns for the manufacturing sector of the U.S. economy. In addition, it will measure the short-term (within 30 days) capability of your establishment to substitute fuels in place of those actually consumed in 1994. The information obtained from the MECS forms will be used to publish aggregate statistics on the following: consumption of energy for fuel and nonfuel uses, energy characteristics of buildings in the manufacturing sector, energy consumption by end use, technologies currently in use by U.S. manufacturers, energy prices, electricity generation onsite, fuel-switching capabilities, and participation in energy-management activities. This information will be used by the DOE to implement policy plans effectively as well as to assist utilities in more accurate demand forecasting and resource planning.

▶ **Form EIA-846A** – This form is addressed to establishments operating primarily in the manufacturing sector in industries as defined by the 1987 Standard Industrial Classification (SIC) Manual. Industries sampled for this form are in SIC 20 through 39, except for SIC 24, 26, 28, 29, 3312, 3321, 3331, and 3339. Establishments in SIC 22 (apparel/jobbers) and SIC 27 (printing/publishing) are manufacturers by definition and should complete this form. **Government-owned establishments that are privately operated are NOT exempt from completing this survey.**

▶ **Due Date** – The questionnaire should be returned no later than the due date specified above. If you need additional time, please call our processing office on 1-800-528-3049. Please use the enclosed return envelope. If the envelope has been misplaced, return the completed questionnaire to us at the above address.

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## Form EIA-846A

### A. General Instructions

- 1. No entries are required in the shaded areas.** All shaded areas are to be left blank.
- Use the indicated units specified on the questionnaire for reporting all quantities. For example:  
 Electricity – Thousands of kilowatthours (1,000 kWh)  
 Steam – Millions of British thermal units (Million Btu)  
 Industrial hot water – Millions of Btu (Million Btu)  
 Coal – Short Tons  
 Natural gas – Thousands of cubic feet (1,000 cu. ft.)  
 Hydrogen – Millions of Btu (Million Btu)  
 Diesel fuel and distillate fuel oil – Barrels  
  
 If you need conversion factors in order to report in the specified units, refer to the detailed instructions for Sections I and II.
- 3. Do not consolidate establishments.** The reporting boundaries for your establishment should correspond to those used in the Annual Survey of Manufactures and/or the Census of Manufactures.
- 4.** If you do not maintain book records for particular items, please use carefully prepared estimates.
- 5.** Please refer to the accompanying instruction guide as you answer the questions.

### B. Operational Status

IF FORM MA-1000 (ANNUAL SURVEY OF MANUFACTURES) WAS COMPLETED FOR THIS ESTABLISHMENT IN 1994, SKIP THIS ITEM AND GO TO SECTION I – NONCOMBUSTIBLE ENERGY SOURCES. Otherwise, please **complete this item** fully to avoid unnecessary correspondence. Mark the box (1–5) that is applicable to the operation of this establishment at the end of 1994. If you check box 3, 4, or 5, please fill in the month, day, and year (numbers only, please) that the action became effective. If box 4 or 5 is checked, also supply the name and address (or location) of the new or former owner or operating company.

**If the ownership of this establishment changed** in 1994, please make certain that the date of the change in ownership is recorded in this item.

- 1. If you sold the establishment during the year,** complete all sections of the report form for activities that occurred in 1994 **prior** to the sale.
- 2. If you bought the establishment during the year,** complete all sections of the report form for activities that occurred in 1994 **after** the sale.

**Mark (X) only ONE box** which best describes this establishment at the end of 1994. If this establishment was not in operation for the full year during 1994, please complete this form for the part of the year that you were in operation.

		Date (Numbers Only)		
		Month	Day	Year
0001	1 <input type="checkbox"/> In operation . . . . .			
	2 <input type="checkbox"/> Temporarily or seasonally inactive . . . . .			
	3 <input type="checkbox"/> Ceased operation (Provide date at right) . . . . .			
	4 <input type="checkbox"/> Sold or leased TO another operator (Provide date at right AND enter name, etc., below) . . . . .			
	5 <input type="checkbox"/> Acquired or leased FROM another operator (Provide date at right AND enter name, etc., below) . . . . .			
Name of new/former owner or operator		Employer Identification (EI) Number (9 digits)		
Number and street	City	State	ZIP Code	

**CONTINUE WITH SECTION I ON PAGE 3**

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Section I - NONCOMBUSTIBLE ENERGY SOURCES									
Item Description (1)	IF ZERO, PLEASE ENTER ZERO (0) IN EACH BOX								
	Electricity			Steam			Industrial Hot Water		
	10	(2)		11	(3)		12	(4)	
<b>1a.</b> During 1994, what amount of each energy source was <b>purchased from utilities</b> by this establishment and delivered to this establishment site? (DO NOT include purchases by a central purchasing agent, quantities delivered from other establishments of your company, or quantities for which payment was made in-kind.)		Kilowatthours			Million Btu		Million Btu		
	Mil	Thou	kWh						
<b>1b.</b> What was the total expenditure, including all applicable taxes, for the purchased energy source(s) reported on line 1a?		Dollars			Dollars		Dollars		
	Mil	Thou	Dol	Mil	Thou	Dol	Mil	Thou	Dol
<b>2a.</b> During 1994, what amount of electricity and steam was <b>purchased from nonutility suppliers</b> by this establishment and delivered to this establishment site?		Kilowatthours			Million Btu				
	Mil	Thou	kWh						
<b>2b.</b> What was the total expenditure, including all applicable taxes, for the purchased energy source(s) reported on line 2a?		Dollars			Dollars				
	Mil	Thou	Dol	Mil	Thou	Dol			
<b>3.</b> During 1994, what amount of each energy source was <b>transferred</b> from outside establishments and delivered to this establishment site? (DO NOT include the purchases reported in lines 1a and 2a. DO include quantities received from a central purchasing agent, quantities delivered from other establishments of your company, and quantities for which payment was made in-kind.)		Kilowatthours			Million Btu		Million Btu		
	Mil	Thou	kWh						
<b>4. TOTAL QUANTITIES OF ELECTRICITY RECEIVED ONSITE</b> (Sum of lines 1a, 2a, and 3.) <b>NOTE</b> - Copy this quantity for electricity to Section III - FUEL SWITCHING, part A, line 1a, column (2) on page 6.									
<b>5.</b> During 1994, how much electricity was generated on this establishment site by cogeneration? (Include ALL cogeneration facilities at this establishment site.)									
<b>6.</b> During 1994, how much of each energy source was generated onsite from each of the following:					Million Btu		Million Btu		
<b>a.</b> Solar power									
<b>b.</b> Wind power									
<b>c.</b> Hydropower									
<b>d.</b> Geothermal power									
<b>7.</b> During 1994, how much electricity was generated onsite by processes other than those covered on lines 5, 6a, 6b, 6c, and 6d?									
<b>8. TOTAL ONSITE GENERATION OF ELECTRICITY</b> (Sum of lines 5, 6a, 6b, 6c, 6d, and 7.)									
<b>9.</b> During 1994, how much electricity was sold or transferred to utilities?									
<b>10.</b> During 1994, how much of each energy source was sold or transferred to any establishments other than utilities?					Million Btu		Million Btu		
<b>11. TOTAL ELECTRICITY SALES AND TRANSFERS OFFSITE</b> (Line 9 plus line 10.)									
<b>12. TOTAL ONSITE CONSUMPTION OF ELECTRICITY.</b> (Line 4 plus line 8 minus line 11.) <b>NOTE</b> - Copy this quantity for electricity consumption to Section IV - ESTIMATED PERCENT CONSUMPTION BY END USE, line 1, column (2) on page 9.									

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846A

Section II – COMBUSTIBLE ENERGY SOURCES									
Energy Sources (1)	Census Use Only (2)	Units used for reporting quantities (3)	Energy sources received onsite in 1994						
			Quantity purchased by and delivered to this establishment (4)	Total expenditures, including taxes and delivery charges, of the quantity in column (4) (5)			Total quantity of transfers in and central purchases (6)		
				02 Mil	Thou	Dol		03	
<b>A. SOLIDS</b>									
1. Anthracite	40	Short Tons							
2. Bituminous and subbituminous coal	41	Short Tons							
3. Lignite	42	Short Tons							
4. Total coal (Sum of lines A1, A2, and A3)	46	Short Tons							
5. Breeze	44	Short Tons							
6. Coal coke	43	Short Tons							
7. Petroleum coke	70	Barrels							
8. Agricultural waste (e.g., bagasse, rice hulls, nut shells, orchard prunings)	90	Million Btu							
9. Wood harvested directly from trees (e.g., roundwood, wood chips, tree bark)	83	Million Btu							
10. Wood residues and byproducts from mill processing (e.g., sawdust, shavings, slabs, bark)	84	Million Btu							
11. Wood/paper-related refuse (e.g., scrap, wastepaper, wood pallets, packing materials)	72	Million Btu							
12. Other solids (Specify solid. Specify units, if not million Btu)									
9198	91	Million Btu							
<b>B. GASES</b> (exclude oxygen, nitrogen, and inert gases)									See Pg. 10, Part B.
1. Total natural gas (Include well production onsite in column (7))	30	1,000 cu. ft.							
In the following parts 1a–1e, please classify natural gas purchases which are reported in line 1.									
<b>UTILITY/LDC</b>									
1a. Natural gas purchased directly from your utilities/local distribution companies (LDC) at a firm service rate	48	1,000 cu. ft.							
1b. Natural gas purchased directly from LDC at an interruptible service rate	49	1,000 cu. ft.							
1c. Natural gas purchased directly from LDC at other service rates (Specify type of service rate)									
5098	50	1,000 cu. ft.							
Did this establishment purchase natural gas in 1994 from sources other than utilities/LDC?									
50981 1 <input type="checkbox"/> Yes – Go to Line 1d.									
2 <input type="checkbox"/> No – Skip to line 2, Acetylene, on this page.									
<b>NONUTILITY/NON-LDC</b>									
1d. Natural gas purchased from non-LDC sources (e.g., producers, brokers, marketers, and other non-LDC sources including fees for transportation and storage)	51	1,000 cu. ft.							
1e. Of the expenditures given in line 1d, please provide the following: (Please note that the sum of lines e(1), e(2), and e(3) should equal line 1d.)									
(1) Cost of supplies (Include brokers' fees, suppliers' fees)	52								
(2) Cost of transportation – Please mark (X) all the service rates that apply.									
53021 1 <input type="checkbox"/> Firm (e.g., no-notice, bundled firm)									
53022 1 <input type="checkbox"/> Interruptible									
53023 1 <input type="checkbox"/> Don't know									
53024 1 <input type="checkbox"/> Other/Released capacity (Specify type of service rate)									
5398	53								
(3) Other costs (e.g., storage) (Specify)									
5498	54								
2. Acetylene	64	Cu. Ft.							
3. Hydrogen	63	Million Btu							
4. Waste and byproduct gases (e.g., refinery gas, vent gas, plant gas, still gas)	62	Million Btu							
5. Other gases (Specify gas. Specify units, if not million Btu)									
9398	93	Million Btu							

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Section II – COMBUSTIBLE ENERGY SOURCES – Continued					
Energy sources <b>produced</b> onsite in 1994		Energy sources <b>consumed</b> onsite in 1994		Total design storage capacity located onsite as of 12/31/94	Energy Sources
Quantity produced onsite (7)	Does the entry in column (7) represent the product or byproduct of another energy source consumed onsite? (8)	Quantity consumed as a fuel (9)	Quantity consumed for all nonfuel purposes (10)		
04	05	06	07	09	(12)
					<b>A. SOLIDS</b>
					Anthracite
					Bituminous and subbituminous coal
					Lignite
		<i>Copy to Pg. 6, line 1a &amp; Pg. 9, line 1</i>			<b>Total coal</b> (Sum of lines A1, A2, and A3)
	1 <input type="checkbox"/> Yes    2 <input type="checkbox"/> No				Breeze
	1 <input type="checkbox"/> Yes    2 <input type="checkbox"/> No				Coal coke
	1 <input type="checkbox"/> Yes    2 <input type="checkbox"/> No				Petroleum coke
					Agricultural waste
					Wood harvested from trees
					Wood residues and byproducts from mills
					Wood/paper-related refuse
	1 <input type="checkbox"/> Yes    2 <input type="checkbox"/> No				Other solids
		<i>Copy to Pg. 7, line 1a &amp; Pg. 9, line 1</i>			<b>B. GASES</b>
					<b>Total natural gas</b>
					Natural gas purchased from utilities/LDC at a firm rate
					Natural gas purchased from LDC at an interruptible rate
					Natural gas purchased from LDC at other rates
					Natural gas purchased from non-LDC sources
					Cost of supplies
					Cost of transportation
					Other costs
					Acetylene
	1 <input type="checkbox"/> Yes    2 <input type="checkbox"/> No				Hydrogen
	1 <input type="checkbox"/> Yes    2 <input type="checkbox"/> No				Waste and byproduct gases
	1 <input type="checkbox"/> Yes    2 <input type="checkbox"/> No				Other gases

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846A

Section II – COMBUSTIBLE ENERGY SOURCES – Continued									
Energy Sources  (1)	Census Use Only  (2)	Units used for reporting quantities  (3)	Energy sources received onsite in 1994						
			Quantity purchased by and delivered to this establishment  01 (4)	Total expenditures, including taxes and delivery charges, of the quantity in column (4) (5)			Total quantity of transfers in and central purchases  03 (6)		
				02	Mill	Thou			Dol
<b>C. LIQUIDS</b> (42 gallons = 1 barrel)									
1. Diesel fuel, excluding highway usage	28	Barrels							
2. Distillate fuel oil (numbers 1, 2, and 4 fuel oils – <i>exclude</i> diesel fuel reported on line C1 above.)	29	Barrels							
3. Total diesel fuel and distillate fuel oil (Sum of lines C1 and C2)	22	Barrels							
4. LPG (liquid petroleum gas) (e.g., butane, ethane, propane, butylene, ethylene, propylene, and mixtures)	24	Gallons							
5. Kerosene	27	Barrels							
6. Motor gasoline, excluding highway usage	23	Gallons							
7. Residual fuel oil (numbers 5, 6, Navy Special, and Bunker C)	21	Barrels							
8. Waste oils and tars	71	Million Btu							
9. Other liquids (Specify liquid. Specify units, if not million Btu)									
9598	95	Million Btu							
Section III – FUEL SWITCHING									
<b>A. BASIC CAPABILITY</b> <b>The purpose of this part is to determine this establishment's potential to switch from one type of fuel to another, regardless of whether or not any fuel switching was actually done.</b>									
Item Description (1)	10 (2)	46 (3)							
<b>1a. Quantity Consumed</b> – Copy data into line 1a as instructed in the column headings. <b>1b.</b> Does line 1a contain any nonzero entries? 1 <input type="checkbox"/> Yes – Answer lines 2 and 3 for that column. 2 <input type="checkbox"/> No – Skip to Section IV – ESTIMATED PERCENT CONSUMPTION BY END USE, on page 9.	50	46	Copy from Section I, line 4, column (2) 1,000 Kilowatthours Short Tons						
Do not consider differences in energy prices when estimating amounts. <b>2. Quantity Nonswitchable</b> – Enter the amount of the quantity in line 1a that could NOT have been replaced within 30 days by another energy source in 1994.	51		1,000 Kilowatthours Short Tons						
<b>3a. Quantity Switchable</b> – Subtract line 2 from line 1a and enter the results. This represents the total quantity of energy consumption that COULD HAVE BEEN replaced within 30 days by one or more alternative energy sources in 1994. <b>3b.</b> Does line 3a contain any nonzero entries? 1 <input type="checkbox"/> Yes – Answer lines 4 through 11, as appropriate, for that column. 2 <input type="checkbox"/> No – Skip to Section IV – ESTIMATED PERCENT CONSUMPTION BY END USE, on page 9.	52		1,000 Kilowatthours Short Tons						
<b>PLEASE COMPLETE ONE COLUMN BEFORE STARTING ANOTHER</b>									
<b>4.</b> Of the amount shown in line 3a, what is the maximum amount that could have been replaced by electricity?	53		Short Tons						
<b>5.</b> Of the amount shown in line 3a, what is the maximum amount that could have been replaced by coal, excluding coal coke and breeze?	57		1,000 Kilowatthours						
<b>6.</b> Of the amount shown in line 3a, what is the maximum amount that could have been replaced by total coal coke and breeze, excluding coal included in line 5 above?	59		1,000 Kilowatthours						
<b>7.</b> Of the amount shown in line 3a, what is the maximum amount that could have been replaced by natural gas from any supplier(s)?	57		1,000 Kilowatthours Short Tons						
<b>8.</b> Of the amount shown in line 3a, what is the maximum amount that could have been replaced by total diesel fuel and distillate fuel oil?	59		1,000 Kilowatthours Short Tons						
<b>9.</b> Of the amount shown in line 3a, what is the maximum amount that could have been replaced by LPG?	61		1,000 Kilowatthours Short Tons						
<b>10.</b> Of the amount shown in line 3a, what is the maximum amount that could have been replaced by residual fuel oil?	63		1,000 Kilowatthours Short Tons						
<b>11.</b> Of the amount shown in line 3a, what is the maximum amount that could have been replaced by any other energy source? (Specify the energy source)	65		1,000 Kilowatthours Short Tons						

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Section II – COMBUSTIBLE ENERGY SOURCES – Continued						
Energy sources <b>produced</b> onsite in 1994			Energy sources <b>consumed</b> onsite in 1994		Total design storage capacity located onsite as of 12/31/94	Energy Sources
Quantity produced onsite	Does the entry in column (7) represent the product or byproduct of another energy source consumed onsite?	Quantity consumed as a fuel	Quantity consumed for all nonfuel purposes			
04 (7)	05 (8)	06 (9)	07 (10)	09 (11)	(12)	
				Barrels	<b>C. LIQUIDS</b>	
				Barrels	Diesel fuel	
		Copy to line 1a below & on pg. 9			Distillate fuel oil	
		Copy to line 1a below & on pg. 9			<b>Total diesel fuel and distillate fuel oil (Sum of lines C1 and C2)</b>	
	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No				LPG	
				Gallons	Kerosene	
		Copy to line 1a below & on pg. 9		Barrels	Motor gasoline	
	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No				Residual fuel oil	
					Waste oils and tars	
					Other liquids	

Section III – FUEL SWITCHING – Continued			
Total Natural Gas	Total Diesel Fuel and Distillate Fuel Oil	LPG	Residual Fuel Oil
30 (4)	22 (5)	24 (6)	21 (7)
Copy from Section II, part B, line 1, column (9) 1,000 cu. ft.	Copy from Section II, part C, line 3, column (9) Barrels	Copy from Section II, part C, line 4, column (9) Gallons	Copy from Section II, part C, line 7, column (9) Barrels
1,000 cu. ft.	Barrels	Gallons	Barrels
1,000 cu. ft.	Barrels	Gallons	Barrels
<b>PLEASE COMPLETE ONE COLUMN BEFORE STARTING ANOTHER</b>			
1,000 cu. ft.	Barrels	Gallons	Barrels
1,000 cu. ft.	Barrels	Gallons	Barrels
1,000 cu. ft.	Barrels	Gallons	Barrels
	Barrels	Gallons	Copy to line 1a on page 8 Barrels
1,000 cu. ft.		Gallons	Barrels
1,000 cu. ft.	Barrels		Barrels
Copy to line 1a on page 8 1,000 cu. ft.	Barrels	Gallons	
1,000 cu. ft.	Barrels	Gallons	Barrels

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Section III – FUEL SWITCHING – Continued			
B. SWITCHING BETWEEN NATURAL GAS AND RESIDUAL FUEL OIL			
The purpose of this part is to determine, for this establishment, if any actual switching took place between two specific fuels, namely natural gas and residual fuel oil; if so, the primary reasons for the switching and at what price difference would switching be a viable option.			
Item Description (1)	Total Natural Gas (2)	Residual Fuel Oil (3)	
	30	21	
	Copy from Section III, part A, line 10, column (4) 1,000 cu. ft.	Copy from Section III, part A, line 7, column (7) Barrels	
<b>1a. Replaceable amount</b> – Copy data into line 1a as instructed in the column headings. <b>1b.</b> Does line 1a contain any nonzero entries? 1501 1 <input type="checkbox"/> Yes – Answer lines 2a, 2b, and 2c, as appropriate, for that column. 2 <input type="checkbox"/> No – Skip to Section IV – ESTIMATED PERCENT CONSUMPTION BY END USE, on page 9.	90		
<b>2.</b> At any time during the full year 1994, did this establishment . . . <b>2a.</b> SWITCH FROM natural gas TO residual fuel oil? 1502 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No			
<b>2b.</b> SWITCH FROM residual fuel oil TO natural gas? 1503 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No			
<b>2c.</b> Do lines 2a or 2b contain any "YES" responses? 1504 1 <input type="checkbox"/> Yes – Answer lines 3 and 4, as appropriate, for that column. 2 <input type="checkbox"/> No – Skip to line 4 on this page.			
<b>3.</b> What is the primary reason(s) that this establishment SWITCHED FROM this fuel TO the other fuel?	Total Natural Gas	Residual Fuel Oil	
	Mark (X) all that apply	Mark (X) all that apply	
a. Supply shortage or curtailment of this fuel . . . . .	1505 1 <input type="checkbox"/>	1506 1 <input type="checkbox"/>	
b. Down-time caused by maintenance . . . . .	1507 1 <input type="checkbox"/>	1508 1 <input type="checkbox"/>	
c. Less expensive substitute . . . . .	1509 1 <input type="checkbox"/>	1510 1 <input type="checkbox"/>	
d. Environmental restriction on emissions or waste . . . . .	1511 1 <input type="checkbox"/>	1512 1 <input type="checkbox"/>	
e. Other (Specify and mark appropriate box(es))			
15121 (1) _____	1513 1 <input type="checkbox"/>	1514 1 <input type="checkbox"/>	
15122 (2) _____	1515 1 <input type="checkbox"/>	1516 1 <input type="checkbox"/>	
<b>Please answer line 4 as appropriate for the columns with nonzero entries in line 1a.</b> <b>4.</b> Regardless of whether or not your establishment actually SWITCHED FROM this fuel during 1994, or did so because of a less expensive substitute, is there a LOWEST PERCENTAGE of price difference of the less expensive substitute that would cause your establishment to SWITCH FROM this fuel?  The formula for percentage of price difference is: $\text{Percentage of Price Difference} = \frac{(\text{PC} - \text{PA})}{\text{PC}} \times 100\%$ Where PC = Price per British thermal unit of current fuel PA = Price per British thermal unit of alternative fuel	Total Natural Gas	Residual Fuel Oil	
	Mark (X) only one box	Mark (X) only one box	
	1517	1518	
a. Would not switch regardless of percentage of price difference . . . . .	1 <input type="checkbox"/>	1 <input type="checkbox"/>	
b. Would switch at price difference of 1 – 5 percent . . . . .	2 <input type="checkbox"/>	2 <input type="checkbox"/>	
c. Would switch at price difference of 6 – 10 percent . . . . .	3 <input type="checkbox"/>	3 <input type="checkbox"/>	
d. Would switch at price difference of 11 – 15 percent . . . . .	4 <input type="checkbox"/>	4 <input type="checkbox"/>	
e. Would switch at price difference of 16 – 20 percent . . . . .	5 <input type="checkbox"/>	5 <input type="checkbox"/>	
f. Would switch at price difference of 21 – 30 percent . . . . .	6 <input type="checkbox"/>	6 <input type="checkbox"/>	
g. Would switch at price difference of 31 – 40 percent . . . . .	7 <input type="checkbox"/>	7 <input type="checkbox"/>	
h. Would switch at price difference of 41 – 50 percent . . . . .	8 <input type="checkbox"/>	8 <input type="checkbox"/>	
i. Would switch at price difference over 50 percent . . . . .	9 <input type="checkbox"/>	9 <input type="checkbox"/>	
j. Reasonable estimate cannot be provided . . . . .	10 <input type="checkbox"/>	10 <input type="checkbox"/>	
k. Would switch to the more expensive substitute if price premium were reasonable . . . . .	11 <input type="checkbox"/>	11 <input type="checkbox"/>	

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Section IV – ESTIMATED PERCENT CONSUMPTION BY END USE									
End Uses (1)	Total Electricity Consumption 10 (2)	Total Coal Excluding Coal Coke and Breeze 46 (3)	Total Natural Gas 30 (4)	Total Diesel Fuel and Distillate Fuel Oil 22 (5)	LPG 24 (6)	Residual Fuel Oil 21 (7)			
1. Quantity consumed – Copy data into line 1 as instructed in the column headings. 70	Copy from Section I, line 12, column (2) 1,000 kWh	Copy from Section II, part A, line 4, column (9) Short Tons	Copy from Section II, part B, line 1, column (9) 1,000 cu. ft.	Copy from Section II, part C, line 3, column (9) Barrels	Copy from Section II, part C, line 4, column (9) Gallons	Copy from Section II, part C, line 7, column (9) Barrels			
<p>Energy sources can be consumed in three major end-use classes: indirect use (boiler fuel), direct process use, and direct nonprocess use. <b>Indirect use is the transformation of energy to another usable energy source, as in a boiler for example.</b> Direct process use includes usage in motors, ovens, kilns, and strip heaters. Direct nonprocess use includes usage for facility lighting and conditioning equipment.</p> <p>For each energy source, the sum of the elements in these three classes equals 100 percent.</p> <p>For columns with nonzero entries in line 1 above, please report the approximate percentage of each energy source used for the purposes listed below.</p>									
PLEASE COMPLETE ONE COLUMN BEFORE STARTING ANOTHER. REASONABLE APPROXIMATIONS ARE ACCEPTABLE – SEE INSTRUCTIONS.									
End Uses (1)	Total Electricity Consumption 10 (2)	Total Coal Excluding Coal Coke and Breeze 46 (3)	Total Natural Gas 30 (4)	Total Diesel Fuel and Distillate Fuel Oil 22 (5)	LPG 24 (6)	Residual Fuel Oil 21 (7)			
<b>INDIRECT USES – BOILERS</b>									
2. Boiler fuel (e.g., fuel for boilers, gas turbines) 71	%	%	%	%	%	%			
<b>DIRECT USES – PROCESS</b>									
3. Process heating (e.g., kilns, furnaces, ovens, strip heaters) 72	%	%	%	%	%	%			
4. Process cooling and refrigeration 73	%	%	%	%	%	%			
5. Machine drive (e.g., motors, pumps, etc. associated with manufacturing process equipment) 74	%	%	%	%	%	%			
6. Electro-chemical processes (e.g., reduction process) 75	%								
7. Other (Please specify any other uses of energy) 10761 76	%	%	%	%	%	%			
<b>DIRECT USES – NONPROCESS</b>									
8. Facility heating, ventilation, and air conditioning 77	%	%	%	%	%	%			
9. Facility lighting 78	%								
10. Facility support other than lines 8 and 9 above (e.g., cooking, water heating, office equipment) 79	%	%	%	%	%	%			
11. Onsite transportation, excluding highway usage 80	%		%	%	%				
12. Conventional electricity generation 81		%	%	%	%	%			
13. Other (Please specify any other uses of energy) 10821 82	%	%	%	%	%	%			
<b>TOTAL for all purposes</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>			

# 1994 Manufacturing Energy Consumption Survey

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Section V – ESTABLISHMENT CHECKLIST										
This section is divided into eight parts. All establishments are to complete Parts A, B, C1, C2, and C3.										
<b>Part A – ESTIMATED SQUARE FOOTAGE OF BUILDINGS</b>										
1. What was the <b>approximate</b> total enclosed square footage of the buildings located on this establishment site as of December 31, 1994?										
1301	<table border="1"><thead><tr><th colspan="3">Square Feet</th></tr><tr><th>Mil</th><th>Thou</th><th>Feet</th></tr></thead><tbody><tr><td></td><td></td><td></td></tr></tbody></table>	Square Feet			Mil	Thou	Feet			
Square Feet										
Mil	Thou	Feet								
2. Of the square footage indicated above, what percentage had controlled heating or cooling, using equipment designed to modify the internal building temperature, during 1994? <b>Please provide the approximate percentage to the nearest multiple of 5 percent.</b>										
1302	_____ %									
<b>Part B – ENERGY PURCHASING AND ENERGY-MANAGEMENT ACTIVITIES</b>										
1. Please refer to Section II, Part B, line 1, column (6) on page 4 for the quantity of <b>total natural gas that was transferred in and centrally purchased</b> . Does column (6) of line B1 on page 4 contain a nonzero entry?										
30031	1 <input type="checkbox"/> Yes – Answer lines 1a and 1b below. 2 <input type="checkbox"/> No – Skip to line 2 below.									
1a. Enter the total expenditures, including all applicable taxes and delivery charges, for the quantity of <b>total natural gas that was transferred in and centrally purchased</b> . If no expenditure was made, please enter zero.										
30032	<table border="1"><thead><tr><th>Mil</th><th>Thou</th><th>Dol</th></tr></thead><tbody><tr><td></td><td></td><td></td></tr></tbody></table>	Mil	Thou	Dol						
Mil	Thou	Dol								
1b. What is the best description of the expenditure amount in line 1a above? <b>Mark (X) only one box.</b>										
30033	1 <input type="checkbox"/> Market price 2 <input type="checkbox"/> Internal price based on this establishment's accounting principles 3 <input type="checkbox"/> Don't know 4 <input type="checkbox"/> Other (Specify) _____									
30034	_____									
2. At any time between January 1, 1992 and December 31, 1994, did your <b>electric utility</b> sponsor any type of programs designed for the purposes listed below, regardless of whether or not your establishment participated: • to lower your energy consumption or costs, or • to shift the timing of your electricity demand, or • to promote your use of electricity instead of another energy source? (Often these programs are referred to as Demand-Side Management (DSM)) <b>Mark (X) only one box.</b>										
1303	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't know									
3. At any time between January 1, 1992 and December 31, 1994, did your <b>natural gas utility</b> sponsor any type of programs designed for the purposes listed below, regardless of whether or not your establishment participated: • to lower your energy consumption or costs, or • to shift the timing of your natural gas demand, or • to promote your use of natural gas instead of another energy source? (Often these programs are referred to as Demand-Side Management (DSM)) <b>Mark (X) only one box.</b>										
1304	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't know									
4a. For the period between January 1, 1992 and December 31, 1994, was the natural gas utility/local distribution company (LDC) for your establishment the <b>same entity</b> as your electric utility? <b>Mark (X) only one box.</b>										
1305	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't know									
4b. At any time between January 1, 1992 and December 31, 1994, was your establishment involved in any type of energy-management activity?										
13051	1 <input type="checkbox"/> Yes – Go to line 5 on page 11. 2 <input type="checkbox"/> No – Skip to Part C1 on page 11.									

# 1994 Manufacturing Energy Consumption Survey

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Section V – ESTABLISHMENT CHECKLIST – Continued							
Part B – ENERGY PURCHASING AND ENERGY-MANAGEMENT ACTIVITIES – Continued							
5. In what type(s) of energy-management activity(ies) was your establishment involved between January 1, 1992 and December 31, 1994? Mark (X) all that apply. Note that it is possible to have marks in all four columns for any of the activities listed.							
Energy-Management Activities (1)	Involvement Through Electric Utility Sponsorship (2)	Involvement Through Self-Sponsorship (3)	Involvement Through Federal, State, Local Government Sponsorship, Excluding Utilities (4)	Involvement Through Other (3rd Party) Sponsorship (5)			
a. Energy audits	1306 <input type="checkbox"/>	1307 <input type="checkbox"/>	13072 <input type="checkbox"/>	13073 <input type="checkbox"/>			
b. Electricity load control	1308 <input type="checkbox"/>	1309 <input type="checkbox"/>	13092 <input type="checkbox"/>	13093 <input type="checkbox"/>			
c. Special rate schedule (e.g., interruptible or time-of-use)	1310 <input type="checkbox"/>						
d. Standby generation program	1326 <input type="checkbox"/>	1327 <input type="checkbox"/>	13272 <input type="checkbox"/>	13273 <input type="checkbox"/>			
e. Equipment rebates	1328 <input type="checkbox"/>	1329 <input type="checkbox"/>	13292 <input type="checkbox"/>	13293 <input type="checkbox"/>			
f. Power factor correction or improvement	1338 <input type="checkbox"/>	1339 <input type="checkbox"/>	1340 <input type="checkbox"/>	1341 <input type="checkbox"/>			
g. U.S. Environmental Protection Agency's Energy Star Program			1342 <input type="checkbox"/>				
h. U.S. Environmental Protection Agency's Green Lights Program			1343 <input type="checkbox"/>				
i. U.S. Department of Energy's Motor Challenge Program			1344 <input type="checkbox"/>				
j. Equipment installation or retrofit for the <b>primary</b> purpose of improving energy efficiency affecting:							
(1) Steam production (e.g., boilers, burners)	1312 <input type="checkbox"/>	1313 <input type="checkbox"/>	13132 <input type="checkbox"/>	13133 <input type="checkbox"/>			
(2) Direct/indirect process heating	1314 <input type="checkbox"/>	1315 <input type="checkbox"/>	13152 <input type="checkbox"/>	13153 <input type="checkbox"/>			
(3) Direct process cooling, refrigeration	1316 <input type="checkbox"/>	1317 <input type="checkbox"/>	13172 <input type="checkbox"/>	13173 <input type="checkbox"/>			
(4) Direct machine drive (e.g., adjustable-speed drives, motors, pumps) excluding Motor Challenge Program	1318 <input type="checkbox"/>	1319 <input type="checkbox"/>	13192 <input type="checkbox"/>	13193 <input type="checkbox"/>			
(5) Facility heating, ventilation, and air conditioning, excluding Energy Star Program	1320 <input type="checkbox"/>	1321 <input type="checkbox"/>	13212 <input type="checkbox"/>	13213 <input type="checkbox"/>			
(6) Facility lighting, excluding Green Lights Program	1322 <input type="checkbox"/>	1323 <input type="checkbox"/>	13232 <input type="checkbox"/>	13233 <input type="checkbox"/>			
k. Equipment installation or retrofit for the <b>primary</b> purpose of using a different energy source (e.g., electrification). (Exclude modifications made principally for energy efficiency)	1324 <input type="checkbox"/>	1325 <input type="checkbox"/>	13252 <input type="checkbox"/>	13253 <input type="checkbox"/>			
l. Other, including other government programs (Specify)							
1396 (1)	1330 <input type="checkbox"/>	1331 <input type="checkbox"/>	1332 <input type="checkbox"/>	1333 <input type="checkbox"/>			
1397 (2)	1334 <input type="checkbox"/>	1335 <input type="checkbox"/>	1336 <input type="checkbox"/>	1337 <input type="checkbox"/>			
All establishments are to complete Parts C1, C2, and C3.							
Part C1 – GENERAL TECHNOLOGIES							
Mark (X) all technologies that were in place at your establishment during 1994.							
1401 <input type="checkbox"/> Computer control of building environment (e.g., space-heating equipment, cooling equipment, lights)	1403 <input type="checkbox"/>	1403 <input type="checkbox"/> Waste heat recovery					
1402 <input type="checkbox"/> Computer control of processes or major energy-using equipment (e.g., boilers, furnaces, conveyers) used in the manufacturing process	1404 <input type="checkbox"/>	1404 <input type="checkbox"/> Adjustable-speed motors					
	14041 <input type="checkbox"/>	14041 <input type="checkbox"/> None of the above					
Part C2 – COGENERATION TECHNOLOGIES							
Mark (X) all technologies that were in place at your establishment during 1994.							
14042 <input type="checkbox"/> Steam turbines supplied by either conventional or fluidized bed boilers	14045 <input type="checkbox"/>	14045 <input type="checkbox"/> Internal combustion engines with heat recovery					
14043 <input type="checkbox"/> Conventional combustion turbines with heat recovery	14046 <input type="checkbox"/>	14046 <input type="checkbox"/> Steam turbines supplied by heat recovered from high-temperature processes					
14044 <input type="checkbox"/> Combined-cycle combustion turbines	14047 <input type="checkbox"/>	14047 <input type="checkbox"/> None of the above					
Part C3 – ONE-TIME COLLECTION OF ESTABLISHMENT ACTIVITIES							
Your CORPORATE energy manager has the option of completing this part for EACH individual establishment site. Otherwise, your energy manager at the establishment site is the best source for this information. Please respond using best-guess estimates from respondents' own knowledge. A search for these items is not necessary.							
1. What is your establishment's most commonly used method of evaluation for purchases of, and modifications to, electric motor systems? Mark (X) only one box.							
1601 <input type="checkbox"/> An evaluation is based primarily on all expected costs over the projected lifetime of the system.	4 <input type="checkbox"/> An evaluation is done but not certain how it is done.						
2 <input type="checkbox"/> An evaluation is based primarily on initial purchase prices of competing systems.	5 <input type="checkbox"/> No evaluation is done.						
3 <input type="checkbox"/> Another type of evaluation is used.	6 <input type="checkbox"/> Not certain if any type of evaluation is done.						
2. What kind of listing do you keep regarding your operating electric motors at this establishment? Mark (X) only one box.							
1602 <input type="checkbox"/> A listing is kept of all operating electric motors at this establishment – Go to line 3 below.	3 <input type="checkbox"/> No listing at all is kept – Skip to page 12.						
2 <input type="checkbox"/> A listing is kept of some operating electric motors at this establishment – Go to line 3 below.	4 <input type="checkbox"/> The existence of a listing is not known – Skip to page 12.						
3. Does your listing contain information on age of your motors? Mark (X) only one box.							
1603 <input type="checkbox"/> Yes	2 <input type="checkbox"/> No	3 <input type="checkbox"/> Don't know					
4. Does your listing contain information on horsepower (wattage) of your motors? Mark (X) only one box.							
1604 <input type="checkbox"/> Yes	2 <input type="checkbox"/> No	3 <input type="checkbox"/> Don't know					

# 1994 Manufacturing Energy Consumption Survey

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<b>Section V – ESTABLISHMENT CHECKLIST – Continued</b>																																												
<p>There is one additional part to complete for specific SIC codes. This establishment's four-digit SIC code is included as part of the address mailing label on page 1 of this survey.</p> <p>If the first two digits of your establishment's SIC code are:</p> <p style="margin-left: 40px;">"20" (food industries), then complete Part D.</p> <p style="margin-left: 40px;">or "22" (textile industries), then complete Part E.</p> <p style="margin-left: 40px;">or "32" (stone, clay, and glass industries), then complete Part F.</p> <p>Otherwise, skip to Section VI – REMARKS.</p>																																												
<b>Part D – SPECIFIC TECHNOLOGIES FOR FOOD INDUSTRIES (SIC 20 ONLY)</b>																																												
<p><b>Mark (X) all technologies that were in place at your establishment during 1994.</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1405</div> <input type="checkbox"/> Infrared heating                 </div> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1409</div> <input type="checkbox"/> Gas-driven rotary engines and/or turbines                 </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1406</div> <input type="checkbox"/> Microwave drying                 </div> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1410</div> <input type="checkbox"/> Membrane separation                 </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1407</div> <input type="checkbox"/> Closed-cycle heat pump system used to recover heat                 </div> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1411</div> <input type="checkbox"/> Irradiation                 </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1408</div> <input type="checkbox"/> Open-cycle heat pump system used to produce steam                 </div> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1412</div> <input type="checkbox"/> Freeze concentration                 </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"></div> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">14121</div> <input type="checkbox"/> None of the above                 </div> </div> </td> <td style="width: 50%;"></td> </tr> </table>				<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1405</div> <input type="checkbox"/> Infrared heating                 </div> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1409</div> <input type="checkbox"/> Gas-driven rotary engines and/or turbines                 </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1406</div> <input type="checkbox"/> Microwave drying                 </div> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1410</div> <input type="checkbox"/> Membrane separation                 </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1407</div> <input type="checkbox"/> Closed-cycle heat pump system used to recover heat                 </div> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1411</div> <input type="checkbox"/> Irradiation                 </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1408</div> <input type="checkbox"/> Open-cycle heat pump system used to produce steam                 </div> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1412</div> <input type="checkbox"/> Freeze concentration                 </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"></div> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">14121</div> <input type="checkbox"/> None of the above                 </div> </div>																																								
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<b>Part E – SPECIFIC TECHNOLOGIES FOR TEXTILE INDUSTRIES (SIC 22 ONLY)</b>																																												
<p><b>Mark (X) all technologies that were in place at your establishment during 1994.</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1413</div> <input type="checkbox"/> Open-end spinning                 </div> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1418</div> <input type="checkbox"/> Dye bath reuse                 </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1414</div> <input type="checkbox"/> Water-jet weaving                 </div> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1419</div> <input type="checkbox"/> Foam dyeing                 </div> </div> <div style="display: flex; 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padding: 2px; margin-bottom: 2px;">1422</div> <input type="checkbox"/> Low-add-on finishing                 </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"></div> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">14221</div> <input type="checkbox"/> None of the above                 </div> </div> </td> <td style="width: 50%;"></td> </tr> </table>				<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1413</div> <input type="checkbox"/> Open-end spinning                 </div> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">1418</div> <input type="checkbox"/> Dye bath reuse                 </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <div style="border: 1px solid black; padding: 2px; 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# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846B

### Petroleum Refineries

OMB No. 1905-0169: Approval Expires 04/30/98

<p><b>EIA-846B</b> (4-13-95)</p> <p>U.S. Department of Commerce Bureau of the Census Acting as Collecting and Compiling Agent For</p> <p>UNITED STATES DEPARTMENT OF ENERGY ENERGY INFORMATION ADMINISTRATION</p>   <p><b>Petroleum Refineries</b></p> <p><b>1994 MANUFACTURING ENERGY CONSUMPTION SURVEY</b></p>	<p>Public reporting burden for this collection of information is estimated to average 9 hours per response, including the time of reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of 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 Statistical Standards, EI-73, 1707 H-Street, NW, Washington, DC 20585; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.</p> <p><b>In correspondence pertaining to this report, please refer to this Census File Number (CFN).</b></p> <p>Please correct errors in name, address, and ZIP Code. ENTER street and number if not shown.</p> <table border="1"> <tr> <td data-bbox="550 953 753 999"> <p><b>PLEASE COMPLETE THIS FORM AND RETURN TO</b></p> </td> <td data-bbox="753 953 972 999"> <p>BUREAU OF THE CENSUS 1201 East 10th Street Jeffersonville, IN 47132-0001</p> </td> <td data-bbox="972 953 1289 1083"> <p><b>NOTE</b></p> <p>Please read the enclosed instructions before filling out this form. Complete each item. If you have any questions, call 1-800-866-6327.</p> </td> </tr> <tr> <td colspan="2" data-bbox="550 1016 972 1083"> <p><b>DUE DATE:</b></p> <p>If you cannot file by the due date, a time extension request should be sent to the above address. Please include your 11-digit Census File Number (CFN).</p> </td> </tr> </table>	<p><b>PLEASE COMPLETE THIS FORM AND RETURN TO</b></p>	<p>BUREAU OF THE CENSUS 1201 East 10th Street Jeffersonville, IN 47132-0001</p>	<p><b>NOTE</b></p> <p>Please read the enclosed instructions before filling out this form. Complete each item. If you have any questions, call 1-800-866-6327.</p>	<p><b>DUE DATE:</b></p> <p>If you cannot file by the due date, a time extension request should be sent to the above address. Please include your 11-digit Census File Number (CFN).</p>	
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<p>▶ <b>The Manufacturing Energy Consumption Survey</b> – The Manufacturing Energy Consumption Survey (MECS) was designed, and is being sponsored, by the Energy Information Administration (EIA) of the U.S. Department of Energy (DOE). The survey is administered and compiled by the U.S. Bureau of the Census for the EIA. The previous MECS was conducted covering the year 1991.</p> <p>▶ <b>Mandatory Requirement</b> – This survey is <b>mandatory</b> under the Federal Energy Administration Act of 1974, Pub. L. No. 93-275, and under Title 3, Subtitle B, of the Omnibus Budget Reconciliation Act of 1986, Pub. L. No. 99-509, as amended by Title 1, Subtitle G, of the Energy Policy Act of 1992, Pub. L. No. 102-486. Failure to respond may result in criminal fines, civil penalties, and other sanctions as provided by law. Response is required by law from establishments included in the MECS sample and receiving the MECS form.</p> <p>▶ <b>Confidentiality of Data</b> – Under Section 9 of Title 13, U.S. Code, your report to the Census Bureau is <b>confidential</b>. It may be seen only by sworn Census Bureau employees and may be used only for statistical purposes. The law also provides that copies retained in your files are immune from legal process.</p> <p>▶ <b>Purpose of This Survey</b> – The MECS will collect data on energy consumption and usage patterns for the manufacturing sector of the U.S. economy. In addition, it will measure the short-term (within 30 days) capability of your establishment to substitute fuels in place of those actually consumed in 1994. The information obtained from the MECS forms will be used to publish aggregate statistics on the following: consumption of energy for fuel and nonfuel uses, energy characteristics of buildings in the manufacturing sector, energy consumption by end use, technologies currently in use by U.S. manufacturers, energy prices, electricity generation onsite, fuel-switching capabilities, and participation in energy-management activities. This information will be used by the DOE to implement policy plans effectively as well as to assist utilities in more accurate demand forecasting and resource planning.</p> <p>▶ <b>Form EIA-846B</b> – This form is addressed to establishments operating primarily in the manufacturing sector in industries as defined by the 1987 Standard Industrial Classification (SIC) Manual. Form EIA-846B is addressed to establishments operating primarily in the Petroleum Refining Industry (SIC 2911). If your establishment has received form EIA-846B but is not a petroleum refinery, call the Census Bureau, MECS staff, on 1-800-866-6327 to report this information. Government-owned establishments that are privately operated are NOT exempt from completing this survey.</p> <p>▶ <b>Due Date</b> – The questionnaire should be returned no later than the due date specified above. If you need additional time, please call our processing office on 1-800-528-3049. Please use the enclosed return envelope. If the envelope has been misplaced, return the completed questionnaire to us at the above address.</p>						

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846B

### Petroleum Refineries

#### A. General Instructions

1. **No entries are required in the shaded areas.** All shaded areas are to be left blank.
2. Use the indicated units specified on the questionnaire for reporting all quantities. For example:  
 Electricity – Thousands of kilowatthours (1,000 kWh)  
 Steam – Millions of British thermal units (Million Btu)  
 Industrial hot water – Millions of Btu (Million Btu)  
 Coal – Short Tons  
 Natural gas – Thousands of cubic feet (1,000 cu. ft.)  
 Hydrogen – Millions of Btu (Million Btu)  
 Diesel fuel and distillate fuel oil – Barrels  
 Liquid petroleum gas – Gallons  
 Natural gas liquids – Gallons  
  
 If you need conversion factors in order to report in the specified units, refer to the detailed instructions for Sections I and II.
3. **Do not consolidate establishments.** The reporting boundaries for your establishment should correspond to those used in the Annual Survey of Manufactures and/or the Census of Manufactures.
4. Be sure to mark (X) the appropriate box at the top of page 4 to classify your establishment. If the establishment consists of **refinery operations only**, do not make any entries in Section II, columns (9) and (10).
5. If you do not maintain book records for particular items, please use carefully prepared estimates.
6. Please refer to the accompanying instruction guide as you answer the questions.

#### B. Operational Status

IF FORM MA-1000 (ANNUAL SURVEY OF MANUFACTURES) WAS COMPLETED FOR THIS ESTABLISHMENT IN 1994, SKIP THIS ITEM AND GO TO SECTION I – NONCOMBUSTIBLE ENERGY SOURCES. Otherwise, please **complete this item** fully to avoid unnecessary correspondence. Mark the box (1–5) that is applicable to the operation of this establishment at the end of 1994. If you check box 3, 4, or 5, please fill in the month, day, and year (numbers only, please) that the action became effective. If box 4 or 5 is checked, also supply the name and address (or location) of the new or former owner or operating company.

**If the ownership of this establishment changed** in 1994, please make certain that the date of the change in ownership is recorded in this item.

1. **If you sold the establishment during the year**, complete all sections of the report form for activities that occurred in 1994 **prior** to the sale.
2. **If you bought the establishment during the year**, complete all sections of the report form for activities that occurred in 1994 **after** the sale.

**Mark (X) only ONE box** which best describes this establishment at the end of 1994. If this establishment was not in operation for the full year during 1994, please complete this form for the part of the year that you were in operation.

		Date (Numbers Only)		
		Month	Day	Year
0001	1 <input type="checkbox"/> In operation . . . . .			
	2 <input type="checkbox"/> Temporarily or seasonally inactive . . . . .			
	3 <input type="checkbox"/> Ceased operation (Provide date at right) . . . . .			
	4 <input type="checkbox"/> Sold or leased TO another operator (Provide date at right AND enter name, etc., below) . . . . .			
	5 <input type="checkbox"/> Acquired or leased FROM another operator (Provide date at right AND enter name, etc., below) . . . . .			
Name of new/former owner or operator		Employer Identification (EI) Number (9 digits)		
Number and street		City	State	ZIP Code

**CONTINUE WITH SECTION I ON PAGE 3**

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846B

### Petroleum Refineries

Section I – NONCOMBUSTIBLE ENERGY SOURCES									
Item Description (1)	IF ZERO, PLEASE ENTER ZERO (0) IN EACH BOX								
	Electricity			Steam			Industrial Hot Water		
	10	(2)		11	(3)		12	(4)	
<b>1a.</b> During 1994, what amount of each energy source was <b>purchased from utilities</b> by this establishment and delivered to this establishment site? ( <i>DO NOT include purchases by a central purchasing agent, quantities delivered from other establishments of your company, or quantities for which payment was made in-kind.</i> )		Kilowatthours			Million Btu			Million Btu	
	Mil	Thou	kWh						
<b>1b.</b> What was the total expenditure, including all applicable taxes, for the purchased energy source(s) reported on line 1a?		Dollars			Dollars			Dollars	
	Mil	Thou	Dol	Mil	Thou	Dol	Mil	Thou	Dol
<b>2a.</b> During 1994, what amount of electricity and steam was <b>purchased from nonutility suppliers</b> by this establishment and delivered to this establishment site?		Kilowatthours			Million Btu				
	Mil	Thou	kWh						
<b>2b.</b> What was the total expenditure, including all applicable taxes, for the purchased energy source(s) reported on line 2a?		Dollars			Dollars				
	Mil	Thou	Dol	Mil	Thou	Dol			
<b>3.</b> During 1994, what amount of each energy source was <b>transferred</b> from outside establishments and delivered to this establishment site? ( <i>DO NOT include the purchases reported in lines 1a and 2a. DO include quantities received from a central purchasing agent, quantities delivered from other establishments of your company, and quantities for which payment was made in-kind.</i> )		Kilowatthours			Million Btu			Million Btu	
	Mil	Thou	kWh						
<b>4. TOTAL QUANTITIES OF ELECTRICITY RECEIVED ONSITE</b> (Sum of lines 1a, 2a, and 3.) <b>NOTE</b> – Copy this quantity for electricity to Section III – FUEL SWITCHING, part A, line 1a, column (2) on page 6.									
<b>5.</b> During 1994, how much electricity was generated on this establishment site by cogeneration? ( <i>Include ALL cogeneration facilities at this establishment site.</i> )									
<b>6.</b> During 1994, how much of each energy source was generated onsite from each of the following:					Million Btu			Million Btu	
<b>a.</b> Solar power									
<b>b.</b> Wind power									
<b>c.</b> Hydropower									
<b>d.</b> Geothermal power									
<b>7.</b> During 1994, how much electricity was generated onsite by processes other than those covered on lines 5, 6a, 6b, 6c, and 6d?									
<b>8. TOTAL ONSITE GENERATION OF ELECTRICITY</b> (Sum of lines 5, 6a, 6b, 6c, 6d, and 7.)									
<b>9.</b> During 1994, how much electricity was sold or transferred to utilities?									
<b>10.</b> During 1994, how much of each energy source was sold or transferred to any establishments other than utilities?					Million Btu			Million Btu	
<b>11. TOTAL ELECTRICITY SALES AND TRANSFERS OFFSITE</b> (Line 9 plus line 10.)									
<b>12. TOTAL ONSITE CONSUMPTION OF ELECTRICITY.</b> (Line 4 plus line 8 minus line 11.) <b>NOTE</b> – Copy this quantity for electricity consumption to Section IV – ESTIMATED PERCENT CONSUMPTION BY END USE, line 1, column (2) on page 9.									



# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846B

### Petroleum Refineries

Section II – COMBUSTIBLE ENERGY SOURCES									
IMPORTANT – HOW TO REPORT									
<b>Mark (X) the box</b> next to the correct description of the establishment identified on the address label. Then supply data for Section II according to the instructions for that description.									
1801	<input type="checkbox"/> Establishment consists of REFINERY operations ONLY. (There may be nonrefinery (petrochemical) operations collocated, but those operations are identified as a separate establishment for purposes of the Annual Survey of Manufactures, Census Form MA-1000.) – <i>Complete Section II but do NOT make any entries in columns (9) and (10).</i> <input type="checkbox"/> Establishment consists of both REFINERY and NONREFINERY operations. – <i>Complete Section II including columns (9) and (10).</i> <input type="checkbox"/> None of the above – Call the MECS staff on 1-800-866-6327 IF NOT A REFINERY.								
Energy Sources (1)		Census Use Only (2)	Units used for reporting quantities (3)	Energy sources <b>received</b> onsite in 1994					
				Quantity purchased by and delivered to this establishment (4)	Total expenditures, including taxes and delivery charges, of the quantity in column (4) (5)			Total quantity of transfers in and central purchases (6)	
				01	02			03	
					Mil	Thou	Dol		
<b>A. PETROLEUM BASED</b>									
1. Butane as liquid petroleum gas (LPG) or natural gas liquids (NGL)		36	Gallons						
2. Ethane as liquid petroleum gas (LPG) or natural gas liquids (NGL)		37	Gallons						
3. Propane as liquid petroleum gas (LPG) or natural gas liquids (NGL)		38	Gallons						
4. Mixtures of ethane, butane, and propane		34	Gallons						
5. Other LPG and NGL (e.g., butylene, ethylene, propylene)		35	Gallons						
6. <b>Total LPG and NGL</b> (Sum of lines A1, A2, A3, A4 and A5)		24	Gallons						
7. Diesel fuel, excluding highway usage		28	Barrels						
8. Distillate fuel oil (numbers 1, 2, and 4 fuel oils)		29	Barrels						
9. <b>Total diesel fuel and distillate fuel oil</b> (Sum of lines A7 and A8)		22	Barrels						
10. Crude oil/lease condensate		20	Barrels						
11. Motor gasoline, excluding highway usage		23	Gallons						
12. Residual fuel oil (numbers 5, 6, Navy Special, and Bunker C)		21	Barrels						
13. Waste and byproduct gases (e.g., refinery offgas, vent gas, plant gas, still gas)		62	Million Btu						
14. Fluid catalytic cracking unit coke		77	Barrels						
15. Marketable petroleum coke – unrefined or green		78	Barrels						
16. Marketable petroleum coke – calcined		79	Barrels						
17. Waste oils and tars		71	Barrels						
18. Other (Specify. Specify units, if <b>not</b> million Btu)									
9598	(1)	95	Million Btu						
9698	(2)	96	Million Btu						
<b>B. NONPETROLEUM BASED</b>									
1. Anthracite		40	Short Tons						
2. Bituminous and subbituminous coal		41	Short Tons						
3. Lignite		42	Short Tons						
4. <b>Total coal</b> (Sum of lines B1, B2, and B3)		46	Short Tons						
5. Coal coke		43	Short Tons						
6. Breeze		44	Short Tons						
7. <b>Total natural gas</b> (Include well production onsite in column (7)) <i>In the following parts 7a–7e please classify natural gas purchases which are reported in line 7.</i>		30	1,000 cu. ft.						See Pg. 10, Part B
<b>UTILITY/LDC</b>									
7a. Natural gas purchased directly from your utilities/local distribution companies (LDC) at a <b>firm</b> service rate		48	1,000 cu. ft.						
7b. Natural gas purchased directly from LDC at an <b>interruptible</b> service rate		49	1,000 cu. ft.						
7c. Natural gas purchased directly from LDC at <b>other</b> service rates (Specify type of service rate)									
5098		50	1,000 cu. ft.						
Did this establishment purchase natural gas in 1994 from sources other than utilities/LDC?									
50981	<input type="checkbox"/> YES – Go to line 7d on page 6 <input type="checkbox"/> NO – Skip to line B8, Hydrogen, on page 6								

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846B

### Petroleum Refineries

<b>Section II – COMBUSTIBLE ENERGY SOURCES – Continued</b>				
Enter amounts for <b>entire establishment</b>		Enter amounts for <b>nonrefinery operations only</b> . Complete if box 2 at top of page 4 is marked (X).		<b>Energy Sources</b>
<b>Quantity produced onsite</b>	<b>Quantity consumed as a fuel</b>	<b>Quantity consumed for all nonfuel purposes</b>	<b>Quantity shipped offsite to other establishments in 1994</b>	
04 (7)	06 (8)	07 (9)	08 (10)	(11)
				<b>A. PETROLEUM BASED</b>
				1. Butane as liquid petroleum gas (LPG) or natural gas liquids (NGL)
				2. Ethane as liquid petroleum gas (LPG) or natural gas liquids (NGL)
				3. Propane as liquid petroleum gas (LPG) or natural gas liquids (NGL)
				4. Mixtures of ethane, butane, and propane
				5. Other LPG and NGL (e.g., butylene, ethylene, propylene)
	Copy to Pg. 7, line 1a & Pg. 9, line 1			6. <b>Total LPG and NGL</b> (Sum of lines A1, A2, A3, A4 and A5)
				7. Diesel fuel, excluding highway usage
				8. Distillate fuel oil (numbers 1, 2, and 4 fuel oils)
	Copy to Pg. 7, line 1a & Pg. 9, line 1			9. <b>Total diesel fuel and distillate fuel oil</b> (Sum of lines A7 and A8)
				10. Crude oil/lease condensate
				11. Motor gasoline, excluding highway usage
	Copy to Pg. 7, line 1a & Pg. 9, line 1			12. Residual fuel oil (numbers 5, 6, Navy Special, and Bunker C)
				13. Waste and byproduct gases (e.g., refinery offgas, vent gas, plant gas, still gas)
				14. Fluid catalytic cracking unit coke
				15. Marketable petroleum coke – unrefined or green
				16. Marketable petroleum coke – calcined
				17. Waste oils and tars
				18. Other (Specify)
				(1)
				(2)
				<b>B. NONPETROLEUM BASED</b>
				1. Anthracite
				2. Bituminous and subbituminous coal
				3. Lignite
	Copy to Pg. 6, line 1a & Pg. 9, line 1			4. <b>Total coal</b> (Sum of lines B1, B2, and B3)
				5. Coal coke
				6. Breeze
	Copy to Pg. 7, line 1a & Pg. 9, line 1			7. <b>Total natural gas</b>
				7a. Natural gas purchased from utilities/LDC at a <b>firm</b> service rate
				7b. Natural gas purchased from LDC at an <b>interruptible</b> service rate
				7c. Natural gas purchased from LDC at <b>other service</b> rates

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846B

### Petroleum Refineries

Section II – COMBUSTIBLE ENERGY SOURCES – Continued									
Energy Sources (1)	Census Use Only (2)	Units used for reporting quantities (3)	Energy sources received onsite in 1994						
			Quantity purchased by and delivered to this establishment (4)	Total expenditures, including taxes and delivery charges, of the quantity in column (4) (5)			Total quantity of transfers in and central purchases (6)		
				01	02	03			
				Mil	Thou	Dol			
<b>B. NONPETROLEUM BASED – Continued</b>									
<b>NONUTILITY/NON-LDC</b>									
7d. Natural gas purchased from non-LDC sources (e.g., producers, brokers, marketers, and other non-LDC sources including fees for transportation and storage)	51	1,000 cu. ft.							
7e. Of the expenditures given in line 7d, please provide the following: (Please note that the sum of lines e(1), e(2), and e(3) should equal line 7d.)									
(1) Cost of supplies (Include brokers' fees, suppliers' fees)	52								
(2) Cost of transportation – Please mark (X) all the service rates that apply.									
53021 1 <input type="checkbox"/> Firm (e.g., no-notice, bundled firm)									
53022 1 <input type="checkbox"/> Interruptible									
53023 1 <input type="checkbox"/> Don't know									
53024 1 <input type="checkbox"/> Other/Released capacity (Specify type of service rate)									
5398 (3) Other costs (e.g., storage) (Specify)	53								
5498	54								
8. Hydrogen	63	Million Btu							
9. Wood fuel and wood/paper refuse (e.g., packing materials, roundwood, wood chips, pallets)	72	Million Btu							
10. Other (Specify. Specify units, if not million Btu.)									
9798 (1)	97	Million Btu							
9898 (2)	98	Million Btu							
<b>Section III – FUEL SWITCHING</b>									
<b>A. BASIC CAPABILITY – The purpose of this part is to determine this establishment's potential to switch from one type of fuel to another, regardless of whether or not any fuel switching was actually done.</b>									
Item Description (1)	Total Electricity Received (2)		Total Coal Excluding Coal Coke and Breeze (3)						
1a. Quantity Consumed – Copy data into line 1a as instructed in the column headings.	10	46							
1b. Does line 1a contain any nonzero entries?									
10501 1 <input type="checkbox"/> Yes – Answer lines 2 and 3 for that column.									
2 <input type="checkbox"/> No – Skip to Section IV – ESTIMATED PERCENT CONSUMPTION BY END USE, on page 9.									
Do not consider differences in energy prices when estimating amounts.	1,000 Kilowatthours	Short Tons							
2. Quantity Nonswitchable – Enter the amount of the quantity in line 1a that could NOT have been replaced within 30 days by another energy source in 1994.	51								
3a. Quantity Switchable – Subtract line 2 from line 1a and enter the results. This represents the total quantity of energy consumption that COULD HAVE BEEN replaced within 30 days by one or more alternative energy sources in 1994.	52								
3b. Does line 3a contain any nonzero entries?									
10521 1 <input type="checkbox"/> Yes – Answer lines 4 through 11, as appropriate, for that column.									
2 <input type="checkbox"/> No – Skip to Section IV – ESTIMATED PERCENT CONSUMPTION BY END USE, on page 9.									
<b>PLEASE COMPLETE ONE COLUMN BEFORE STARTING ANOTHER</b>									
4. Of the amount shown in line 3a, what is the maximum amount that could have been replaced by electricity?	53		Short Tons						
5. Of the amount shown in line 3a, what is the maximum amount that could have been replaced by coal, excluding coal coke and breeze?	67	1,000 Kilowatthours							
6. Of the amount shown in line 3a, what is the maximum amount that could have been replaced by total coal coke and breeze, excluding coal included in line 5 above?	69	1,000 Kilowatthours							
7. Of the amount shown in line 3a, what is the maximum amount that could have been replaced by natural gas from any supplier(s)?	57	1,000 Kilowatthours	Short Tons						
8. Of the amount shown in line 3a, what is the maximum amount that could have been replaced by total diesel fuel and distillate fuel oil?	59	1,000 Kilowatthours	Short Tons						
9. Of the amount shown in line 3a, what is the maximum amount that could have been replaced by total LPG and NGL?	61	1,000 Kilowatthours	Short Tons						
10. Of the amount shown in line 3a, what is the maximum amount that could have been replaced by residual fuel oil?	63	1,000 Kilowatthours	Short Tons						
11. Of the amount shown in line 3a, what is the maximum amount that could have been replaced by any other energy source? (Specify the energy source)	65	1,000 Kilowatthours	Short Tons						
1099									

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846B

### Petroleum Refineries

<b>Section II – COMBUSTIBLE ENERGY SOURCES – Continued</b>							
Enter amounts for <b>entire establishment</b>		Enter amounts for <b>nonrefinery operations only.</b> Complete if box 2 at top of page 4 is marked (X).		Energy Sources  (11)			
Quantity produced onsite	Quantity consumed as a fuel	Quantity consumed for all nonfuel purposes	Quantity shipped offsite to other establishments in 1994				
04 (7)	06 (8)	07 (9)	08 (10)				
				<b>7d.</b> Natural gas purchased from non-LDC sources			
				<b>7e(1).</b> Cost of supplies			
				<b>7e(2).</b> Cost of transportation			
				<b>7e(3).</b> Other costs			
				<b>8.</b> Hydrogen			
				<b>9.</b> Wood fuel and wood/paper refuse			
				<b>10.</b> Other ( <i>Specify</i> )			
				(1)			
				(2)			
<b>Section III – FUEL SWITCHING – Continued</b>							
Total Natural Gas (4)		Total Diesel Fuel and Distillate Fuel Oil (5)		Total LPG and NGL (6)		Residual Fuel Oil (7)	
30	(4)	22	(5)	24	(6)	21	(7)
<i>Copy from Section II, part B, line 7, column (8)</i> 1,000 cu. ft.		<i>Copy from Section II, part A, line 9, column (8)</i> Barrels		<i>Copy from Section II, part A, line 6, column (8)</i> Gallons		<i>Copy from Section II, part A, line 12, column (8)</i> Barrels	
	1,000 cu. ft.		Barrels		Gallons		Barrels
	1,000 cu. ft.		Barrels		Gallons		Barrels
PLEASE COMPLETE ONE COLUMN BEFORE STARTING ANOTHER							
	1,000 cu. ft.		Barrels		Gallons		Barrels
	1,000 cu. ft.		Barrels		Gallons		Barrels
	1,000 cu. ft.		Barrels		Gallons		Barrels
			Barrels		Gallons		<i>Copy to line 1a on page 8</i> Barrels
	1,000 cu. ft.				Gallons		Barrels
	1,000 cu. ft.		Barrels				Barrels
	<i>Copy to line 1a on page 8</i> 1,000 cu. ft.		Barrels		Gallons		
	1,000 cu. ft.		Barrels		Gallons		Barrels

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846B

### Petroleum Refineries

Section III – FUEL SWITCHING – Continued			
<b>B. SWITCHING BETWEEN NATURAL GAS AND RESIDUAL FUEL OIL</b>			
The purpose of this part is to determine, for this establishment, if any actual switching took place between two specific fuels, namely natural gas and residual fuel oil; if so, the primary reasons for the switching and at what price difference would switching be a viable option.			
<b>Item Description</b> (1)	30	<b>Total Natural Gas</b> (2)	<b>Residual Fuel Oil</b> (3)
Copy from Section III, part A, line 10, column (4) 1,000 cu ft.		Copy from Section III, part A, line 7, column (7) Barrels	
<b>1a. Replaceable amount</b> – Copy data into line 1a as instructed in the column headings.		90	
<b>1b.</b> Does line 1a contain any nonzero entries?			
1501 <input type="checkbox"/> Yes – Answer lines 2a, 2b, and 2c, as appropriate, for that column. 2 <input type="checkbox"/> No – Skip to Section IV – ESTIMATED PERCENT CONSUMPTION BY END USE, on page 9.			
<b>2.</b> At any time during the full year 1994, did this establishment . . .			
<b>2a.</b> SWITCH FROM natural gas TO residual fuel oil?			
1502 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No			
<b>2b.</b> SWITCH FROM residual fuel oil TO natural gas?			
1503 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No			
<b>2c.</b> Do lines 2a or 2b contain any "YES" responses?			
1504 <input type="checkbox"/> Yes – Answer lines 3 and 4, as appropriate, for that column. 2 <input type="checkbox"/> No – Skip to line 4 on this page.			
<b>3.</b> What is the primary reason(s) that this establishment SWITCHED FROM this fuel TO the other fuel?		<b>Total Natural Gas</b>	<b>Residual Fuel Oil</b>
		<b>Mark (X) all that apply</b>	<b>Mark (X) all that apply</b>
<b>a.</b> Supply shortage or curtailment of this fuel . . . . .	1505 <input type="checkbox"/>	1506 <input type="checkbox"/>	1 <input type="checkbox"/>
<b>b.</b> Down-time caused by maintenance . . . . .	1507 <input type="checkbox"/>	1508 <input type="checkbox"/>	1 <input type="checkbox"/>
<b>c.</b> Less expensive substitute . . . . .	1509 <input type="checkbox"/>	1510 <input type="checkbox"/>	1 <input type="checkbox"/>
<b>d.</b> Environmental restriction on emissions or waste . . . . .	1511 <input type="checkbox"/>	1512 <input type="checkbox"/>	1 <input type="checkbox"/>
<b>e.</b> Other (Specify and mark appropriate box(es))			
15121 (1) _____	1513 <input type="checkbox"/>	1514 <input type="checkbox"/>	1 <input type="checkbox"/>
15122 (2) _____	1515 <input type="checkbox"/>	1516 <input type="checkbox"/>	1 <input type="checkbox"/>
<b>Please answer line 4 as appropriate for the columns with nonzero entries in line 1a.</b>		<b>Total Natural Gas</b>	<b>Residual Fuel Oil</b>
<b>4.</b> Regardless of whether or not your establishment actually SWITCHED FROM this fuel during 1994, or did so because of a less expensive substitute, is there a LOWEST PERCENTAGE of price difference of the less expensive substitute that would cause your establishment to SWITCH FROM this fuel?			
The formula for percentage of price difference is: Percentage of Price Difference = $\frac{(PC - PA)}{PC} \times 100\%$ Where PC = Price per British thermal unit of current fuel PA = Price per British thermal unit of alternative fuel			
		<b>Mark (X) only one box</b>	<b>Mark (X) only one box</b>
		1517	1518
<b>a.</b> Would not switch regardless of percentage of price difference . . . . .	1 <input type="checkbox"/>	1 <input type="checkbox"/>	1 <input type="checkbox"/>
<b>b.</b> Would switch at price difference of 1 – 5 percent . . . . .	2 <input type="checkbox"/>	2 <input type="checkbox"/>	2 <input type="checkbox"/>
<b>c.</b> Would switch at price difference of 6 – 10 percent . . . . .	3 <input type="checkbox"/>	3 <input type="checkbox"/>	3 <input type="checkbox"/>
<b>d.</b> Would switch at price difference of 11 – 15 percent . . . . .	4 <input type="checkbox"/>	4 <input type="checkbox"/>	4 <input type="checkbox"/>
<b>e.</b> Would switch at price difference of 16 – 20 percent . . . . .	5 <input type="checkbox"/>	5 <input type="checkbox"/>	5 <input type="checkbox"/>
<b>f.</b> Would switch at price difference of 21 – 30 percent . . . . .	6 <input type="checkbox"/>	6 <input type="checkbox"/>	6 <input type="checkbox"/>
<b>g.</b> Would switch at price difference of 31 – 40 percent . . . . .	7 <input type="checkbox"/>	7 <input type="checkbox"/>	7 <input type="checkbox"/>
<b>h.</b> Would switch at price difference of 41 – 50 percent . . . . .	8 <input type="checkbox"/>	8 <input type="checkbox"/>	8 <input type="checkbox"/>
<b>i.</b> Would switch at price difference over 50 percent . . . . .	9 <input type="checkbox"/>	9 <input type="checkbox"/>	9 <input type="checkbox"/>
<b>j.</b> Reasonable estimate cannot be provided . . . . .	10 <input type="checkbox"/>	10 <input type="checkbox"/>	10 <input type="checkbox"/>
<b>k.</b> Would switch to the <b>more expensive substitute</b> if price premium were reasonable . . . . .	11 <input type="checkbox"/>	11 <input type="checkbox"/>	11 <input type="checkbox"/>

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846B

### Petroleum Refineries

Section IV – ESTIMATED PERCENT CONSUMPTION BY END USE												
End Uses (1)	Total Electricity Consumption (2)		Total Coal Excluding Coal Coke and Breeze (3)		Total Natural Gas (4)		Total Diesel Fuel and Distillate Fuel Oil (5)		Total LPG and NGL (6)		Residual Fuel Oil (7)	
1. Quantity consumed – Copy data into line 1 as instructed in the column headings.	10	70	46	30	22	24	21					
	Copy from Section I, line 12, column (2) 1,000 kWh		Copy from Section II, part B, line 4, column (8) Short Tons		Copy from Section II, part B, line 7, column (8) 1,000 cu. ft.		Copy from Section II, part A, line 9, column (8) Barrels		Copy from Section II, part A, line 6, column (8) Gallons		Copy from Section II, part A, line 12, column (8) Barrels	
<p>Energy sources can be consumed in three major end-use classes: indirect use (boiler fuel), direct process use, and direct nonprocess use. <b>Indirect use is the transformation of energy to another usable energy source, as in a boiler for example.</b> Direct process use includes usage in motors, ovens, kilns, and strip heaters. Direct nonprocess use includes usage for facility lighting and conditioning equipment.</p> <p>For each energy source, the sum of the elements in these three classes equals 100 percent.</p> <p>For columns with nonzero entries in line 1 above, please report the approximate percentage of each energy source used for the purposes listed below.</p>												
<p><b>PLEASE COMPLETE ONE COLUMN BEFORE STARTING ANOTHER. REASONABLE APPROXIMATIONS ARE ACCEPTABLE – SEE INSTRUCTIONS.</b></p>												
End Uses (1)	10	(2)	46	(3)	30	(4)	22	(5)	24	(6)	21	(7)
<b>INDIRECT USES – BOILERS</b>												
2. Boiler fuel (e.g., fuel for boilers, gas turbines)	71	%	%	%	%	%	%	%	%	%	%	%
<b>DIRECT USES – PROCESS</b>												
3. Process heating (e.g., kilns, furnaces, ovens, strip heaters)	72	%	%	%	%	%	%	%	%	%	%	%
4. Process cooling and refrigeration	73	%	%	%	%	%	%	%	%	%	%	%
5. Machine drive (e.g., motors, pumps, etc. associated with manufacturing process equipment)	74	%	%	%	%	%	%	%	%	%	%	%
6. Electro-chemical processes (e.g., reduction process)	75	%										
7. Other (Please specify any other uses of energy)												
10761	76	%	%	%	%	%	%	%	%	%	%	%
<b>DIRECT USES – NONPROCESS</b>												
8. Facility heating, ventilation, and air conditioning	77	%	%	%	%	%	%	%	%	%	%	%
9. Facility lighting	78	%										
10. Facility support other than lines 8 and 9 above (e.g., cooking, water heating, office equipment)	79	%	%	%	%	%	%	%	%	%	%	%
11. Onsite transportation, excluding highway usage	80	%				%	%	%	%	%	%	%
12. Conventional electricity generation	81		%		%	%	%	%	%	%	%	%
13. Other (Please specify any other uses of energy)												
10821	82	%	%	%	%	%	%	%	%	%	%	%
<b>TOTAL for all purposes</b>		<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846B

### Petroleum Refineries

Section V - ESTABLISHMENT CHECKLIST													
This section is divided into five parts. All establishments are to complete Parts A, B, C1, C2, and C3.													
Part A - ESTIMATED SQUARE FOOTAGE OF BUILDINGS													
1. What was the <b>approximate</b> total enclosed square footage of the buildings located on this establishment site as of December 31, 1994?													
1301	<table border="1"><thead><tr><th colspan="3">Square Feet</th></tr><tr><th>Mil</th><th>Thou</th><th>Feet</th></tr></thead><tbody><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></tbody></table>	Square Feet			Mil	Thou	Feet						
Square Feet													
Mil	Thou	Feet											
2. Of the square footage indicated above, what percentage had controlled heating or cooling, using equipment designed to modify the internal building temperature, during 1994? <b>Please provide the approximate percentage to the nearest multiple of 5 percent.</b>													
1302	_____ %												
Part B - ENERGY PURCHASING AND ENERGY-MANAGEMENT ACTIVITIES													
1. Please refer to Section II, Part B, line 7, column (6) on page 4 for the quantity of <b>total natural gas that was transferred in and centrally purchased</b> . Does column (6) of line B7 on page 4 contain a nonzero entry?													
30031	1 <input type="checkbox"/> Yes - Answer lines 1a and 1b below. 2 <input type="checkbox"/> No - Skip to line 2 below.												
1a. Enter the total expenditures, including all applicable taxes and delivery charges, for the quantity of <b>total natural gas that was transferred in and centrally purchased</b> . If no expenditure was made, please enter zero.													
30032	<table border="1"><thead><tr><th>Mil</th><th>Thou</th><th>Dol</th></tr></thead><tbody><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></tbody></table>	Mil	Thou	Dol									
Mil	Thou	Dol											
1b. What is the best description of the expenditure amount in line 1a above? <b>Mark (X) only one box.</b>													
30033	1 <input type="checkbox"/> Market price 2 <input type="checkbox"/> Internal price based on this establishment's accounting principles 3 <input type="checkbox"/> Don't know 4 <input type="checkbox"/> Other (Specify) _____												
30034	_____												
2. At any time between January 1, 1992 and December 31, 1994, did your <b>electric utility</b> sponsor any type of programs designed for the purposes listed below, regardless of whether or not your establishment participated: • to lower your energy consumption or costs, or • to shift the timing of your electricity demand, or • to promote your use of electricity instead of another energy source? (Often these programs are referred to as Demand-Side Management (DSM)) <b>Mark (X) only one box.</b>													
1303	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't know												
3. At any time between January 1, 1992 and December 31, 1994, did your <b>natural gas utility</b> sponsor any type of programs designed for the purposes listed below, regardless of whether or not your establishment participated: • to lower your energy consumption or costs, or • to shift the timing of your natural gas demand, or • to promote your use of natural gas instead of another energy source? (Often these programs are referred to as Demand-Side Management (DSM)) <b>Mark (X) only one box.</b>													
1304	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't know												
4a. For the period between January 1, 1992 and December 31, 1994, was the natural gas utility/local distribution company (LDC) for your establishment the <b>same entity</b> as your electric utility? <b>Mark (X) only one box.</b>													
1305	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 3 <input type="checkbox"/> Don't know												
4b. At any time between January 1, 1992 and December 31, 1994, was your establishment involved in any type of energy-management activity?													
13051	1 <input type="checkbox"/> Yes - Go to line 5 on page 11. 2 <input type="checkbox"/> No - Skip to Part C1 on page 11.												

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846B

### Petroleum Refineries

Section V – ESTABLISHMENT CHECKLIST – Continued							
Part B – ENERGY PURCHASING AND ENERGY-MANAGEMENT ACTIVITIES – Continued							
5. In what type(s) of energy-management activity(ies) was your establishment involved between January 1, 1992 and December 31, 1994? Mark (X) all that apply. Note that it is possible to have marks in all four columns for any of the activities listed.							
Energy-Management Activities (1)	Involvement Through Electric Utility Sponsorship (2)	Involvement Through Self-Sponsorship (3)	Involvement Through Federal, State, Local Government Sponsorship, Excluding Utilities (4)	Involvement Through Other (3rd Party) Sponsorship (5)			
a. Energy audits	1306 <input type="checkbox"/>	1307 <input type="checkbox"/>	13072 <input type="checkbox"/>	13073 <input type="checkbox"/>			
b. Electricity load control	1308 <input type="checkbox"/>	1309 <input type="checkbox"/>	13092 <input type="checkbox"/>	13093 <input type="checkbox"/>			
c. Special rate schedule (e.g., interruptible or time-of-use)	1310 <input type="checkbox"/>						
d. Standby generation program	1326 <input type="checkbox"/>	1327 <input type="checkbox"/>	13272 <input type="checkbox"/>	13273 <input type="checkbox"/>			
e. Equipment rebates	1328 <input type="checkbox"/>	1329 <input type="checkbox"/>	13292 <input type="checkbox"/>	13293 <input type="checkbox"/>			
f. Power factor correction or improvement	1338 <input type="checkbox"/>	1339 <input type="checkbox"/>	1340 <input type="checkbox"/>	1341 <input type="checkbox"/>			
g. U.S. Environmental Protection Agency's Energy Star Program			1342 <input type="checkbox"/>				
h. U.S. Environmental Protection Agency's Green Lights Program			1343 <input type="checkbox"/>				
i. U.S. Department of Energy's Motor Challenge Program			1344 <input type="checkbox"/>				
j. Equipment installation or retrofit for the <b>primary</b> purpose of improving energy efficiency affecting:							
(1) Steam production (e.g., boilers, burners)	1312 <input type="checkbox"/>	1313 <input type="checkbox"/>	13132 <input type="checkbox"/>	13133 <input type="checkbox"/>			
(2) Direct/indirect process heating	1314 <input type="checkbox"/>	1315 <input type="checkbox"/>	13152 <input type="checkbox"/>	13153 <input type="checkbox"/>			
(3) Direct process cooling, refrigeration	1316 <input type="checkbox"/>	1317 <input type="checkbox"/>	13172 <input type="checkbox"/>	13173 <input type="checkbox"/>			
(4) Direct machine drive (e.g., adjustable-speed drives, motors, pumps) excluding Motor Challenge Program	1318 <input type="checkbox"/>	1319 <input type="checkbox"/>	13192 <input type="checkbox"/>	13193 <input type="checkbox"/>			
(5) Facility heating, ventilation, and air conditioning, excluding Energy Star Program	1320 <input type="checkbox"/>	1321 <input type="checkbox"/>	13212 <input type="checkbox"/>	13213 <input type="checkbox"/>			
(6) Facility lighting, excluding Green Lights Program	1322 <input type="checkbox"/>	1323 <input type="checkbox"/>	13232 <input type="checkbox"/>	13233 <input type="checkbox"/>			
k. Equipment installation or retrofit for the <b>primary</b> purpose of using a different energy source (e.g., electrification). (Exclude modifications made principally for energy efficiency)	1324 <input type="checkbox"/>	1325 <input type="checkbox"/>	13252 <input type="checkbox"/>	13253 <input type="checkbox"/>			
l. Other, including other government programs (Specify)							
1396 (1)	1330 <input type="checkbox"/>	1331 <input type="checkbox"/>	1332 <input type="checkbox"/>	1333 <input type="checkbox"/>			
1397 (2)	1334 <input type="checkbox"/>	1335 <input type="checkbox"/>	1336 <input type="checkbox"/>	1337 <input type="checkbox"/>			
All establishments are to complete Parts C1, C2, and C3.							
Part C1 – GENERAL TECHNOLOGIES							
Mark (X) all technologies that were in place at your establishment during 1994.							
1401 <input type="checkbox"/> Computer control of building environment (e.g., space-heating equipment, cooling equipment, lights)	1403 <input type="checkbox"/> Waste heat recovery						
1402 <input type="checkbox"/> Computer control of processes or major energy-using equipment (e.g., boilers, furnaces, conveyers) used in the manufacturing process	1404 <input type="checkbox"/> Adjustable-speed motors						
	14041 <input type="checkbox"/> None of the above						
Part C2 – COGENERATION TECHNOLOGIES							
Mark (X) all technologies that were in place at your establishment during 1994.							
14042 <input type="checkbox"/> Steam turbines supplied by either conventional or fluidized bed boilers	14045 <input type="checkbox"/> Internal combustion engines with heat recovery						
14043 <input type="checkbox"/> Conventional combustion turbines with heat recovery	14046 <input type="checkbox"/> Steam turbines supplied by heat recovered from high-temperature processes						
14044 <input type="checkbox"/> Combined-cycle combustion turbines	14047 <input type="checkbox"/> None of the above						
Part C3 – ONE-TIME COLLECTION OF ESTABLISHMENT ACTIVITIES							
Your CORPORATE energy manager has the option of completing this part for EACH individual establishment site. Otherwise, your energy manager at the establishment site is the best source for this information. Please respond using best-guess estimates from respondents' own knowledge. A search for these items is not necessary.							
1. What is your establishment's most commonly used method of evaluation for purchases of, and modifications to, electric motor systems? Mark (X) only one box.							
1601 <input type="checkbox"/> An evaluation is based primarily on all expected costs over the projected lifetime of the system.	4 <input type="checkbox"/> An evaluation is done but not certain <b>how</b> it is done.						
2 <input type="checkbox"/> An evaluation is based primarily on initial purchase prices of competing systems.	5 <input type="checkbox"/> No evaluation is done.						
3 <input type="checkbox"/> Another type of evaluation is used.	6 <input type="checkbox"/> Not certain <b>if</b> any type of evaluation is done.						
2. What kind of listing do you keep regarding your operating electric motors at this establishment? Mark (X) only one box.							
1602 <input type="checkbox"/> A listing is kept of <b>all</b> operating electric motors at this establishment – Go to line 3 below.	3 <input type="checkbox"/> No listing at all is kept – Skip to page 12.						
2 <input type="checkbox"/> A listing is kept of <b>some</b> operating electric motors at this establishment – Go to line 3 below.	4 <input type="checkbox"/> The existence of a listing is not known – Skip to page 12.						
3. Does your listing contain information on age of your motors? Mark (X) only one box.							
1603 <input type="checkbox"/> Yes	2 <input type="checkbox"/> No	3 <input type="checkbox"/> Don't know					
4. Does your listing contain information on horsepower (wattage) of your motors? Mark (X) only one box.							
1604 <input type="checkbox"/> Yes	2 <input type="checkbox"/> No	3 <input type="checkbox"/> Don't know					

FORM EIA-846B (4-13-95)

Page 11





[illegible]

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846C

OMB No. 1905-0169: Approval Expires 04/30/98

<p><b>Form EIA-846C</b> (4-13-95)</p> <p>U.S. Department of Commerce Bureau of the Census Acting as Collecting and Compiling Agent For</p> <p>UNITED STATES DEPARTMENT OF ENERGY ENERGY INFORMATION ADMINISTRATION</p>   <p><b>Lumber and Wood Products; Paper and Allied Products; Chemicals and Allied Products; Petroleum and Coal products; Selected Primary Metal Industries</b></p> <p><b>1994 MANUFACTURING ENERGY CONSUMPTION SURVEY</b></p>	<p>Public reporting burden for this collection of information is estimated to average 9 hours per response, including the time of reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of 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 Statistical Standards, EI-73, 1707 H-Street, NW, Washington, DC 20585; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.</p> <p><b>In correspondence pertaining to this report, please refer to this Census File Number (CFN).</b></p> <p>Please correct errors in name, address, and ZIP Code. ENTER street and number if not shown.</p> <table border="1"> <tr> <td data-bbox="550 884 748 932"> <p><b>PLEASE COMPLETE THIS FORM AND RETURN TO</b></p> </td> <td data-bbox="748 884 967 932"> <p>BUREAU OF THE CENSUS 1201 East 10th Street Jeffersonville, IN 47132-0001</p> </td> <td data-bbox="967 884 1292 932"> <p><b>NOTE</b></p> <p>Please read the enclosed instructions before filling out this form. Complete each item. If you have any questions, call 1-800-866-6327.</p> </td> </tr> </table> <p><b>DUE DATE:</b></p> <p>If you cannot file by the due date, a time extension request should be sent to the above address. Please include your 11-digit Census File Number (CFN).</p>	<p><b>PLEASE COMPLETE THIS FORM AND RETURN TO</b></p>	<p>BUREAU OF THE CENSUS 1201 East 10th Street Jeffersonville, IN 47132-0001</p>	<p><b>NOTE</b></p> <p>Please read the enclosed instructions before filling out this form. Complete each item. If you have any questions, call 1-800-866-6327.</p>
<p><b>PLEASE COMPLETE THIS FORM AND RETURN TO</b></p>	<p>BUREAU OF THE CENSUS 1201 East 10th Street Jeffersonville, IN 47132-0001</p>	<p><b>NOTE</b></p> <p>Please read the enclosed instructions before filling out this form. Complete each item. If you have any questions, call 1-800-866-6327.</p>		

▶ **The Manufacturing Energy Consumption Survey** – The Manufacturing Energy Consumption Survey (MECS) was designed, and is being sponsored, by the Energy Information Administration (EIA) of the U.S. Department of Energy (DOE). The survey is administered and compiled by the U.S. Bureau of the Census for the EIA. The previous MECS was conducted covering the year 1991.

▶ **Mandatory Requirement** – This survey is **mandatory** under the Federal Energy Administration Act of 1974, Pub. L. No. 93-275, and under Title 3, Subtitle B, of the Omnibus Budget Reconciliation Act of 1986, Pub. L. No. 99-509, as amended by Title 1, Subtitle G, of the Energy Policy Act of 1992, Pub. L. No. 102-486. Failure to respond may result in criminal fines, civil penalties, and other sanctions as provided by law. Response is required by law from establishments included in the MECS sample and receiving the MECS form.

▶ **Confidentiality of Data** – Under Section 9 of Title 13, U.S. Code, your report to the Census Bureau is **confidential**. It may be seen only by sworn Census Bureau employees and may be used only for statistical purposes. The law also provides that copies retained in your files are immune from legal process.

▶ **Purpose of This Survey** – The MECS will collect data on energy consumption and usage patterns for the manufacturing sector of the U.S. economy. In addition, it will measure the short-term (within 30 days) capability of your establishment to substitute fuels in place of those actually consumed in 1994. The information obtained from the MECS forms will be used to publish aggregate statistics on the following: consumption of energy for fuel and nonfuel uses, energy characteristics of buildings in the manufacturing sector, energy consumption by end use, technologies currently in use by U.S. manufacturers, energy prices, electricity generation onsite, fuel-switching capabilities, and participation in energy-management activities. This information will be used by the DOE to implement policy plans effectively as well as to assist utilities in more accurate demand forecasting and resource planning.

▶ **Form EIA-846C** – This form is addressed to establishments operating primarily in the manufacturing sector in industries as defined by the 1987 Standard Industrial Classification (SIC) Manual. Industries sampled for this form are in SIC 24, 26, 28, 29, (excluding 2911), 3312, 3321, 3331, and 3339. **Government-owned establishments that are privately operated are NOT exempt from completing this survey.**

▶ **Due Date** – The questionnaire should be returned no later than the due date specified above. If you need additional time, please call our processing office on 1-800-528-3049. Please use the enclosed return envelope. If the envelope has been misplaced, return the completed questionnaire to us at the above address.

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846C

Section I – NONCOMBUSTIBLE ENERGY SOURCES												
Item Description (1)	IF ZERO, PLEASE ENTER ZERO (0) IN EACH BOX											
	Electricity			Steam			Industrial Hot Water					
	10	(2)		11	(3)		12	(4)				
<b>1a.</b> During 1994, what amount of each energy source was <b>purchased from utilities</b> by this establishment and delivered to this establishment site? ( <i>DO NOT include purchases by a central purchasing agent, quantities delivered from other establishments of your company, or quantities for which payment was made in-kind.</i> )	Kilowatthours			Million Btu			Million Btu					
	Mil	Thou	kWh									
01												
<b>1b.</b> What was the total expenditure, including all applicable taxes, for the purchased energy source(s) reported on line 1a?	Dollars			Dollars			Dollars					
	Mil	Thou	Dol	Mil	Thou	Dol	Mil	Thou	Dol			
02												
<b>2a.</b> During 1994, what amount of electricity and steam was <b>purchased from nonutility suppliers</b> by this establishment and delivered to this establishment site?	Kilowatthours			Million Btu								
	Mil	Thou	kWh									
03												
<b>2b.</b> What was the total expenditure, including all applicable taxes, for the purchased energy source(s) reported on line 2a?	Dollars			Dollars								
	Mil	Thou	Dol	Mil	Thou	Dol						
04												
<b>3.</b> During 1994, what amount of each energy source was <b>transferred</b> from outside establishments and delivered to this establishment site? ( <i>DO NOT include the purchases reported in lines 1a and 2a. DO include quantities received from a central purchasing agent, quantities delivered from other establishments of your company, and quantities for which payment was made in-kind.</i> )	Kilowatthours			Million Btu			Million Btu					
	Mil	Thou	kWh									
05												
<b>4. TOTAL QUANTITIES OF ELECTRICITY RECEIVED ONSITE</b> (Sum of lines 1a, 2a, and 3.) <b>NOTE</b> – Copy this quantity for electricity to Section III – FUEL SWITCHING, part A, line 1a, column (2) on page 6.												
06												
<b>5.</b> During 1994, how much electricity was generated on this establishment site by cogeneration? ( <i>Include ALL cogeneration facilities at this establishment site.</i> )												
07												
<b>6.</b> During 1994, how much of each energy source was generated onsite from each of the following:				Million Btu			Million Btu					
<b>a.</b> Solar power												
081												
<b>b.</b> Wind power												
082												
<b>c.</b> Hydropower												
083												
<b>d.</b> Geothermal power												
084												
<b>7.</b> During 1994, how much electricity was generated onsite by processes other than those covered on lines 5, 6a, 6b, 6c, and 6d?												
09												
<b>8. TOTAL ONSITE GENERATION OF ELECTRICITY</b> (Sum of lines 5, 6a, 6b, 6c, 6d, and 7.)												
10												
<b>9.</b> During 1994, how much electricity was sold or transferred to utilities?												
11												
<b>10.</b> During 1994, how much of each energy source was sold or transferred to any establishments other than utilities?				Million Btu			Million Btu					
12												
<b>11. TOTAL ELECTRICITY SALES AND TRANSFERS OFFSITE</b> (Line 9 plus line 10.)												
13												
<b>12. TOTAL ONSITE CONSUMPTION OF ELECTRICITY.</b> (Line 4 plus line 8 minus line 11.) <b>NOTE</b> – Copy this quantity for electricity consumption to Section IV – ESTIMATED PERCENT CONSUMPTION BY END USE, line 1, column (2) on page 9.												
14												

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846C

Section I – NONCOMBUSTIBLE ENERGY SOURCES												
Item Description (1)	IF ZERO, PLEASE ENTER ZERO (0) IN EACH BOX											
	Electricity			Steam			Industrial Hot Water					
	10	(2)		11	(3)		12	(4)				
<b>1a.</b> During 1994, what amount of each energy source was <b>purchased from utilities</b> by this establishment and delivered to this establishment site? ( <i>DO NOT include purchases by a central purchasing agent, quantities delivered from other establishments of your company, or quantities for which payment was made in-kind.</i> )	Kilowatthours Mil   Thou   kWh			Million Btu			Million Btu					
<b>1b.</b> What was the total expenditure, including all applicable taxes, for the purchased energy source(s) reported on line 1a?	Dollars Mil   Thou   Dol			Dollars Mil   Thou   Dol			Dollars Mil   Thou   Dol					
<b>2a.</b> During 1994, what amount of electricity and steam was <b>purchased from nonutility suppliers</b> by this establishment and delivered to this establishment site?	Kilowatthours Mil   Thou   kWh			Million Btu								
<b>2b.</b> What was the total expenditure, including all applicable taxes, for the purchased energy source(s) reported on line 2a?	Dollars Mil   Thou   Dol			Dollars Mil   Thou   Dol								
<b>3.</b> During 1994, what amount of each energy source was <b>transferred</b> from outside establishments and delivered to this establishment site? ( <i>DO NOT include the purchases reported in lines 1a and 2a. DO include quantities received from a central purchasing agent, quantities delivered from other establishments of your company, and quantities for which payment was made in-kind.</i> )	Kilowatthours Mil   Thou   kWh			Million Btu			Million Btu					
<b>4. TOTAL QUANTITIES OF ELECTRICITY RECEIVED ONSITE</b> (Sum of lines 1a, 2a, and 3.) <b>NOTE</b> – Copy this quantity for electricity to Section III – FUEL SWITCHING, part A, line 1a, column (2) on page 6.												
<b>5.</b> During 1994, how much electricity was generated on this establishment site by cogeneration? ( <i>Include ALL cogeneration facilities at this establishment site.</i> )												
<b>6.</b> During 1994, how much of each energy source was generated onsite from each of the following:				Million Btu			Million Btu					
<b>a.</b> Solar power												
<b>b.</b> Wind power												
<b>c.</b> Hydropower												
<b>d.</b> Geothermal power												
<b>7.</b> During 1994, how much electricity was generated onsite by processes other than those covered on lines 5, 6a, 6b, 6c, and 6d?												
<b>8. TOTAL ONSITE GENERATION OF ELECTRICITY</b> (Sum of lines 5, 6a, 6b, 6c, 6d, and 7.)												
<b>9.</b> During 1994, how much electricity was sold or transferred to utilities?												
<b>10.</b> During 1994, how much of each energy source was sold or transferred to any establishments other than utilities?				Million Btu			Million Btu					
<b>11. TOTAL ELECTRICITY SALES AND TRANSFERS OFFSITE</b> (Line 9 plus line 10.)												
<b>12. TOTAL ONSITE CONSUMPTION OF ELECTRICITY.</b> (Line 4 plus line 8 minus line 11.) <b>NOTE</b> – Copy this quantity for electricity consumption to Section IV – ESTIMATED PERCENT CONSUMPTION BY END USE, line 1, column (2) on page 9.												

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846C

Section II – COMBUSTIBLE ENERGY SOURCES									
Energy Sources (1)	Census Use Only (2)	Units used for reporting quantities (3)	Energy sources received onsite in 1994						
			Quantity purchased by and delivered to this establishment		Total expenditures, including taxes and delivery charges, of the quantity in column (4)			Total quantity of transfers in and central purchases (6)	
			01	(4)	02	(5)	03		
<b>A. SOLIDS</b>									
1. Anthracite	40	Short Tons							
2. Bituminous and subbituminous coal	41	Short Tons							
3. Lignite	42	Short Tons							
4. Total coal (Sum of lines A1, A2, and A3)	46	Short Tons							
5. Breeze	44	Short Tons							
6. Coal coke	43	Short Tons							
7. Fluid catalytic cracking unit coke	77	Barrels							
8. Marketable petroleum coke – unrefined or green	78	Barrels							
9. Marketable petroleum coke – calcined	79	Barrels							
10. Agricultural waste (e.g., bagasse, rice hulls, nut shells, orchard prunings)	90	Million Btu							
11. Wood harvested directly from trees (e.g., roundwood, wood chips, tree bark)	83	Million Btu							
12. Wood residues and byproducts from mill processing (e.g., sawdust, shavings, slabs, bark)	84	Million Btu							
13. Wood/paper-related refuse (e.g., scrap, wastepaper, wood pallets, packing materials)	72	Million Btu							
14. Other solids (Specify solid. Specify units, if not million Btu)									
9198	91	Million Btu							
<b>B. GASES</b> (exclude oxygen, nitrogen, and inert gases)									See Pg. 10, Part B.
1. Total natural gas (Include well production onsite in col. (7))	30	1,000 cu. ft.							
In the following parts 1a–1e, please classify natural gas purchases which are reported in line 1.									
<b>UTILITY/LDC</b>									
1a. Natural gas purchased directly from your utilities/local distribution companies (LDC) at a firm service rate	48	1,000 cu. ft.							
1b. Natural gas purchased directly from LDC at an interruptible service rate	49	1,000 cu. ft.							
1c. Natural gas purchased directly from LDC at other service rates (Specify type of service rate)									
5098	50	1,000 cu. ft.							
Did this establishment purchase natural gas in 1994 from sources other than utilities/LDC?									
50981 1 <input type="checkbox"/> Yes – Go to Line 1d.									
2 <input type="checkbox"/> No – Skip to line 2, Acetylene, on this page.									
<b>NONUTILITY/NON-LDC</b>									
1d. Natural gas purchased from non-LDC sources (e.g., producers, brokers, marketers, and other non-LDC sources including fees for transportation and storage)	51	1,000 cu. ft.							
1e. Of the expenditures given in line 1d, please provide the following: (Please note that the sum of lines e(1), e(2), and e(3) should equal line 1d.)									
(1) Cost of supplies (Include brokers' fees, suppliers' fees)	52								
(2) Cost of transportation – Please mark (X) all the service rates that apply.									
53021 1 <input type="checkbox"/> Firm (e.g., no-notice, bundled firm)									
53022 1 <input type="checkbox"/> Interruptible									
53023 1 <input type="checkbox"/> Don't know									
53024 1 <input type="checkbox"/> Other/Released capacity (Specify type of service rate)									
5398	53								
(3) Other costs (e.g., storage) (Specify)									
5498	54								
2. Acetylene	64	Cu. Ft.							
3. Blast furnace gas	60	Million Btu							
4. Coke oven gas	61	Million Btu							
5. Hydrogen	63	Million Btu							
6. Waste and byproduct gases (e.g., refinery gas, vent gas, plant gas, still gas)	62	Million Btu							
7. Other gases (Specify gas. Specify units, if not million Btu)									
9398	93	Million Btu							

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846C

Section II – COMBUSTIBLE ENERGY SOURCES – Continued						
Energy sources <b>produced</b> onsite in 1994		Energy sources <b>consumed</b> onsite in 1994		Quantity shipped offsite to other establishments in 1994	Total design storage capacity located onsite as of 12/31/94	Census Use Only
Quantity produced onsite	Does the entry in column (7) represent the product or byproduct of another energy source consumed onsite?	Quantity consumed as a fuel	Quantity consumed for all nonfuel purposes			
04 (7)	05 (8)	06 (9)	07 (10)	08 (11)	09 (12)	(13)
						40
						41
						42
		Copy to pg. 6, line 1a & pg. 9, line 1				46
	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No					44
	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No					43
						77
	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No					78
	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No					79
						90
						83
						84
						72
	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No					91
		Copy to pg. 7, line 1a & pg. 9, line 1				30
						48
						49
						50
						51
						52
						53
						54
						64
						60
						61
	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No					63
	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No					62
	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No					93

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# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846C

Section II – COMBUSTIBLE ENERGY SOURCES – Continued							
Energy Sources  (1)	Census Use Only  (2)	Units used for reporting quantities  (3)	Energy sources received onsite in 1994				
			Quantity purchased by and delivered to this establishment  01 (4)	Total expenditures, including taxes and delivery charges, of the quantity in column (4)  02 (5)			Total quantity of transfers in and central purchases  03 (6)
				Mil	Thou	Dol	
<b>C. LIQUIDS</b> (42 gallons = 1 barrel)							
1. Butane as liquid petroleum gas (LPG) or natural gas liquids (NGL)	36	Gallons					
2. Ethane as liquid petroleum gas (LPG) or natural gas liquids (NGL)	37	Gallons					
3. Propane as liquid petroleum gas (LPG) or natural gas liquids (NGL)	38	Gallons					
4. Mixtures of ethane, butane, and propane	34	Gallons					
5. Other LPG and NGL (e.g., butylene, ethylene, and propylene)	35	Gallons					
6. Total LPG and NGL (Sum of lines C1, C2, C3, C4, and C5)	24	Gallons					
7. Diesel fuel, excluding highway usage	28	Barrels					
8. Distillate fuel oil (numbers 1, 2, and 4 fuel oils – <b>exclude diesel fuel reported on line C7 above.</b> )	29	Barrels					
9. Total diesel fuel and distillate fuel oil (Sum of lines C7 and C8)	22	Barrels					
10. Kerosene	27	Barrels					
11. Motor gasoline, excluding highway usage	23	Gallons					
12. Pulping or black liquor	73	Million Btu					
13. Residual fuel oil (numbers 5, 6, Navy Special, and Bunker C)	21	Barrels					
14. Waste oils and tars	71	Million Btu					
15. Other liquids (Specify liquid. Specify units, if not million Btu)							
9598	95	Million Btu					
Section III – FUEL SWITCHING							
<b>A. BASIC CAPABILITY – The purpose of this part is to determine this establishment's potential to switch from one type of fuel to another, regardless of whether or not any fuel switching was actually done.</b>							
Item Description (1)	Total Electricity Received 10 (2)	Total Coal Excluding Coal Coke and Breeze 46 (3)					
1a. Quantity Consumed – Copy data into line 1a as instructed in the column headings.	Copy from Section I, line 4, column (2) 1,000 Kilowatthours	Copy from Section II, part A, line 4, column (9) Short Tons					
1b. Does line 1a contain any nonzero entries? 1 <input type="checkbox"/> Yes – Answer lines 2 and 3 for that column. 2 <input type="checkbox"/> No – Skip to Section IV – ESTIMATED PERCENT CONSUMPTION BY END USE on page 9.							
Do not consider differences in energy prices when estimating amounts.							
2. Quantity Nonswitchable – Enter the amount of the quantity in line 1a that could NOT have been replaced within 30 days by another energy source in 1994.	1,000 Kilowatthours	Short Tons					
3a. Quantity Switchable – Subtract line 2 from line 1a and enter the results. This represents the total quantity of energy consumption that COULD HAVE BEEN replaced within 30 days by one or more alternative energy sources in 1994.	1,000 Kilowatthours	Short Tons					
3b. Does line 3a contain any nonzero entries? 1 <input type="checkbox"/> Yes – Answer lines 4 through 11, as appropriate, for that column. 2 <input type="checkbox"/> No – Skip to Section IV – ESTIMATED PERCENT CONSUMPTION BY END USE on page 9.							
<b>PLEASE COMPLETE ONE COLUMN BEFORE STARTING ANOTHER</b>							
4. Of the amount shown in line 3a, what is the maximum amount that could have been replaced by electricity?		Short Tons					
5. Of the amount shown in line 3a, what is the maximum amount that could have been replaced by coal, excluding coal coke and breeze?	1,000 Kilowatthours						
6. Of the amount shown in line 3a, what is the maximum amount that could have been replaced by total coal coke and breeze, excluding coal included in line 5 above?	1,000 Kilowatthours						
7. Of the amount shown in line 3a, what is the maximum amount that could have been replaced by natural gas from any supplier(s)?	1,000 Kilowatthours	Short Tons					
8. Of the amount shown in line 3a, what is the maximum amount that could have been replaced by total diesel fuel and distillate fuel oil?	1,000 Kilowatthours	Short Tons					
9. Of the amount shown in line 3a, what is the maximum amount that could have been replaced by total LPG and NGL?	1,000 Kilowatthours	Short Tons					
10. Of the amount shown in line 3a, what is the maximum amount that could have been replaced by residual fuel oil?	1,000 Kilowatthours	Short Tons					
11. Of the amount shown in line 3a, what is the maximum amount that could have been replaced by any other energy source? (Specify the energy source)	1,000 Kilowatthours	Short Tons					
1099							

# 1994 Manufacturing Energy Consumption Survey

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<b>Section II – COMBUSTIBLE ENERGY SOURCES – Continued</b>							
Energy sources <b>produced</b> onsite in 1994		Energy sources <b>consumed</b> onsite in 1994		Quantity shipped offsite to other establishments in 1994	Total design storage capacity located onsite as of 12/31/94	Census Use Only	
Quantity produced onsite	Does the entry in column (7) represent the product or byproduct of another energy source consumed onsite?	Quantity consumed as a fuel	Quantity consumed for all nonfuel purposes				
04 (7)	05 (8)	06 (9)	07 (10)	08 (11)	09 (12)	(13)	
						36	
						37	
						38	
						34	
						35	
		Copy to line 1a below & on pg. 9				24	
						28	
						29	
		Copy to line 1a below & on pg. 9				22	
	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No					27	
						23	
						73	
		Copy to line 1a below & on pg. 9				21	
	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No					71	
						95	
<b>Section III – FUEL SWITCHING – Continued</b>							
Total Natural Gas		Total Diesel Fuel and Distillate Fuel Oil		Total LPG and NGL		Residual Fuel Oil	
30 (4)	22 (5)	24 (6)	21 (7)				
Copy from Section II, part B, line 1, column (9) 1,000 cu. ft.	Copy from Section II, part C, line 9, column (9) Barrels	Copy from Section II, part C, line 6, column (9) Gallons	Copy from Section II, part C, line 13, column (9) Barrels				
1,000 cu. ft.	Barrels	Gallons	Barrels				
1,000 cu. ft.	Barrels	Gallons	Barrels				
PLEASE COMPLETE ONE COLUMN BEFORE STARTING ANOTHER							
1,000 cu. ft.	Barrels	Gallons	Barrels				
1,000 cu. ft.	Barrels	Gallons	Barrels				
1,000 cu. ft.	Barrels	Gallons	Barrels				
	Barrels	Gallons	Copy to line 1a on page 8 Barrels				
1,000 cu. ft.		Gallons	Barrels				
1,000 cu. ft.	Barrels		Barrels				
Copy to line 1a on page 8 1,000 cu. ft.	Barrels	Gallons					
1,000 cu. ft.	Barrels	Gallons	Barrels				

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# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846C

Section III – FUEL SWITCHING – Continued			
B. SWITCHING BETWEEN NATURAL GAS AND RESIDUAL FUEL OIL			
The purpose of this part is to determine, for this establishment, if any actual switching took place between two specific fuels, namely natural gas and residual fuel oil; if so, the primary reasons for the switching and at what price difference would switching be a viable option.			
Item Description (1)	Total Natural Gas 30 (2)	Residual Fuel Oil 21 (3)	
<b>1a. Replaceable amount</b> – Copy data into line 1a as instructed in the column headings. <b>1b.</b> Does line 1a contain any nonzero entries? 1501 1 <input type="checkbox"/> Yes – Answer lines 2a, 2b, and 2c, as appropriate, for that column. 2 <input type="checkbox"/> No – Skip to Section IV – ESTIMATED PERCENT CONSUMPTION BY END USE, on page 9.	Copy from Section III, part A, line 10, column (4) 1,000 cu. ft.	Copy from Section III, part A, line 7, column (7) Barrels	90
<b>2.</b> At any time during the full year 1994, did this establishment . . . <b>2a.</b> SWITCH FROM natural gas TO residual fuel oil? 1502 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No			
<b>2b.</b> SWITCH FROM residual fuel oil TO natural gas? 1503 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No			
<b>2c.</b> Do lines 2a or 2b contain any "YES" responses? 1504 1 <input type="checkbox"/> Yes – Answer lines 3 and 4, as appropriate, for that column. 2 <input type="checkbox"/> No – Skip to line 4 on this page.			
<b>3.</b> What is the primary reason(s) that this establishment SWITCHED FROM this fuel TO the other fuel?  <b>a.</b> Supply shortage or curtailment of this fuel . . . . . <b>b.</b> Down-time caused by maintenance . . . . . <b>c.</b> Less expensive substitute . . . . . <b>d.</b> Environmental restriction on emissions or waste . . . . . <b>e.</b> Other (Specify and mark appropriate box(es))  15121 (1) _____ 15122 (2) _____	<b>Total Natural Gas</b>  <b>Mark (X) all that apply</b> 1505 1 <input type="checkbox"/> 1507 1 <input type="checkbox"/> 1509 1 <input type="checkbox"/> 1511 1 <input type="checkbox"/>  1513 1 <input type="checkbox"/> 1515 1 <input type="checkbox"/>	<b>Residual Fuel Oil</b>  <b>Mark (X) all that apply</b> 1506 1 <input type="checkbox"/> 1508 1 <input type="checkbox"/> 1510 1 <input type="checkbox"/> 1512 1 <input type="checkbox"/>  1514 1 <input type="checkbox"/> 1516 1 <input type="checkbox"/>	
<b>4.</b> Regardless of whether or not your establishment actually SWITCHED FROM this fuel during 1994, or did so because of a less expensive substitute, is there a LOWEST PERCENTAGE of price difference of the less expensive substitute that would cause your establishment to SWITCH FROM this fuel?  The formula for percentage of price difference is: Percentage of Price Difference = $\frac{(PC - PA)}{PC} \times 100\%$ Where PC = Price per British thermal unit of current fuel PA = Price per British thermal unit of alternative fuel  <b>a.</b> Would not switch regardless of percentage of price difference . . . . . <b>b.</b> Would switch at price difference of 1 – 5 percent . . . . . <b>c.</b> Would switch at price difference of 6 – 10 percent . . . . . <b>d.</b> Would switch at price difference of 11 – 15 percent . . . . . <b>e.</b> Would switch at price difference of 16 – 20 percent . . . . . <b>f.</b> Would switch at price difference of 21 – 30 percent . . . . . <b>g.</b> Would switch at price difference of 31 – 40 percent . . . . . <b>h.</b> Would switch at price difference of 41 – 50 percent . . . . . <b>i.</b> Would switch at price difference over 50 percent . . . . . <b>j.</b> Reasonable estimate cannot be provided . . . . . <b>k.</b> Would switch to the <b>more expensive substitute</b> if price premium were reasonable . . . . .	<b>Total Natural Gas</b>  <b>Mark (X) only one box</b> 1517  1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/>	<b>Residual Fuel Oil</b>  <b>Mark (X) only one box</b> 1518  1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/>	

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846C

Section IV – ESTIMATED PERCENT CONSUMPTION BY END USE						
End Uses (1)	Total Electricity Consumption 10 (2)	Total Coal Excluding Coal Coke and Breeze 46 (3)	Total Natural Gas 30 (4)	Total Diesel Fuel and Distillate Fuel Oil 22 (5)	Total LPG and NGL 24 (6)	Residual Fuel Oil 21 (7)
1. Quantity consumed – Copy data into line 1 as instructed in the column headings. 70	Copy from Section I, line 12, column (2) 1,000 kWh	Copy from Section II, part A, line 4, column (9) Short Tons	Copy from Section II, part B, line 1, column (9) 1,000 cu. ft.	Copy from Section II, part C, line 9, column (9) Barrels	Copy from Section II, part C, line 6, column (9) Gallons	Copy from Section II, part C, line 13, column (9) Barrels
<p>Energy sources can be consumed in three major end-use classes: indirect use (boiler fuel), direct process use, and direct nonprocess use. <b>Indirect use is the transformation of energy to another usable energy source, as in a boiler for example.</b> Direct process use includes usage in motors, ovens, kilns, and strip heaters. Direct nonprocess use includes usage for facility lighting and conditioning equipment.</p> <p>For each energy source, the sum of the elements in these three classes equals 100 percent.</p> <p>For columns with nonzero entries in line 1 above, please report the approximate percentage of each energy source used for the purposes listed below.</p>						
PLEASE COMPLETE ONE COLUMN BEFORE STARTING ANOTHER. REASONABLE APPROXIMATIONS ARE ACCEPTABLE – SEE INSTRUCTIONS.						
End Uses (1)	Total Electricity Consumption 10 (2)	Total Coal Excluding Coal Coke and Breeze 46 (3)	Total Natural Gas 30 (4)	Total Diesel Fuel and Distillate Fuel Oil 22 (5)	Total LPG and NGL 24 (6)	Residual Fuel Oil 21 (7)
<b>INDIRECT USES – BOILERS</b>						
2. Boiler fuel (e.g., fuel for boilers, gas turbines) 71	%	%	%	%	%	%
<b>DIRECT USES – PROCESS</b>						
3. Process heating (e.g., kilns, furnaces, ovens, strip heaters) 72	%	%	%	%	%	%
4. Process cooling and refrigeration 73	%	%	%	%	%	%
5. Machine drive (e.g., motors, pumps, etc. associated with manufacturing process equipment) 74	%	%	%	%	%	%
6. Electro-chemical processes (e.g., reduction process) 75	%					
7. Other (Please specify any other uses of energy) 10761 76	%	%	%	%	%	%
<b>DIRECT USES – NONPROCESS</b>						
8. Facility heating, ventilation, and air conditioning 77	%	%	%	%	%	%
9. Facility lighting 78	%					
10. Facility support other than lines 8 and 9 above (e.g., cooking, water heating, office equipment) 79	%	%	%	%	%	%
11. Onsite transportation, excluding highway usage 80	%		%	%	%	
12. Conventional electricity generation 81		%	%	%	%	%
13. Other (Please specify any other uses of energy) 10821 82	%	%	%	%	%	%
<b>TOTAL for all purposes</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846C

<b>Section V – ESTABLISHMENT CHECKLIST</b>											
<b>This section is divided into eight parts. All establishments are to complete Parts A, B, C1, C2, and C3.</b>											
<b>Part A – ESTIMATED SQUARE FOOTAGE OF BUILDINGS</b>											
<p>1. What was the <b>approximate</b> total enclosed square footage of the buildings located on this establishment site as of December 31, 1994?</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="3">Square Feet</th> </tr> <tr> <th style="padding: 2px 10px;">Mil</th> <th style="padding: 2px 10px;">Thou</th> <th style="padding: 2px 10px;">Feet</th> </tr> </thead> <tbody> <tr> <td style="height: 20px;">1301</td> <td style="height: 20px;"></td> <td style="height: 20px;"></td> </tr> </tbody> </table>		Square Feet			Mil	Thou	Feet	1301			
Square Feet											
Mil	Thou	Feet									
1301											
<p>2. Of the square footage indicated above, what percentage had controlled heating or cooling, using equipment designed to modify the internal building temperature, during 1994?</p> <p><b>Please provide the approximate percentage to the nearest multiple of 5 percent.</b></p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 100px; height: 20px;">1302</td> <td style="width: 100px; height: 20px;"></td> <td style="width: 20px; height: 20px;">%</td> </tr> </table>		1302		%							
1302		%									
<b>Part B – ENERGY PURCHASING AND ENERGY-MANAGEMENT ACTIVITIES</b>											
<p>1. Please refer to Section II, Part B, line 1, column (6) on page 4 for the quantity of <b>total natural gas that was transferred in and centrally purchased</b>.</p> <p>Does column (6) of line B1 on page 4 contain a nonzero entry?</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="width: 100px; height: 20px;">30031</td> <td style="width: 100px; height: 20px;">1 <input type="checkbox"/> Yes – Answer lines 1a and 1b below.</td> </tr> <tr> <td style="width: 100px; height: 20px;"></td> <td style="width: 100px; height: 20px;">2 <input type="checkbox"/> No – Skip to line 2 below.</td> </tr> </table>		30031	1 <input type="checkbox"/> Yes – Answer lines 1a and 1b below.		2 <input type="checkbox"/> No – Skip to line 2 below.						
30031	1 <input type="checkbox"/> Yes – Answer lines 1a and 1b below.										
	2 <input type="checkbox"/> No – Skip to line 2 below.										
<p>1a. Enter the total expenditures, including all applicable taxes and delivery charges, for the quantity of <b>total natural gas that was transferred in and centrally purchased</b>.</p> <p>If no expenditure was made, please enter zero.</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 2px 10px;">Mil</th> <th style="padding: 2px 10px;">Thou</th> <th style="padding: 2px 10px;">Dol</th> </tr> </thead> <tbody> <tr> <td style="height: 20px;">30032</td> <td style="height: 20px;"></td> <td style="height: 20px;"></td> </tr> </tbody> </table>		Mil	Thou	Dol	30032						
Mil	Thou	Dol									
30032											
<p>1b. What is the best description of the expenditure amount in line 1a above?</p> <p><b>Mark (X) only one box.</b></p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="width: 100px; height: 20px;">30033</td> <td style="width: 100px; height: 20px;">1 <input type="checkbox"/> Market price</td> </tr> <tr> <td style="width: 100px; height: 20px;"></td> <td style="width: 100px; height: 20px;">2 <input type="checkbox"/> Internal price based on this establishment's accounting principles</td> </tr> <tr> <td style="width: 100px; height: 20px;"></td> <td style="width: 100px; height: 20px;">3 <input type="checkbox"/> Don't know</td> </tr> <tr> <td style="width: 100px; height: 20px;"></td> <td style="width: 100px; height: 20px;">4 <input type="checkbox"/> Other (Specify) _____</td> </tr> </table> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="width: 100px; height: 20px;">30034</td> <td style="width: 100px; height: 20px;"></td> </tr> </table>		30033	1 <input type="checkbox"/> Market price		2 <input type="checkbox"/> Internal price based on this establishment's accounting principles		3 <input type="checkbox"/> Don't know		4 <input type="checkbox"/> Other (Specify) _____	30034	
30033	1 <input type="checkbox"/> Market price										
	2 <input type="checkbox"/> Internal price based on this establishment's accounting principles										
	3 <input type="checkbox"/> Don't know										
	4 <input type="checkbox"/> Other (Specify) _____										
30034											
<p>2. At any time between January 1, 1992 and December 31, 1994, did your <b>electric utility</b> sponsor any type of programs designed for the purposes listed below, regardless of whether or not your establishment participated:</p> <ul style="list-style-type: none"> <li>• to lower your energy consumption or costs, or</li> <li>• to shift the timing of your electricity demand, or</li> <li>• to promote your use of electricity instead of another energy source?</li> </ul> <p>(Often these programs are referred to as Demand-Side Management (DSM))</p> <p><b>Mark (X) only one box.</b></p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="width: 100px; height: 20px;">1303</td> <td style="width: 100px; height: 20px;">1 <input type="checkbox"/> Yes</td> </tr> <tr> <td style="width: 100px; height: 20px;"></td> <td style="width: 100px; height: 20px;">2 <input type="checkbox"/> No</td> </tr> <tr> <td style="width: 100px; height: 20px;"></td> <td style="width: 100px; height: 20px;">3 <input type="checkbox"/> Don't know</td> </tr> </table>		1303	1 <input type="checkbox"/> Yes		2 <input type="checkbox"/> No		3 <input type="checkbox"/> Don't know				
1303	1 <input type="checkbox"/> Yes										
	2 <input type="checkbox"/> No										
	3 <input type="checkbox"/> Don't know										
<p>3. At any time between January 1, 1992 and December 31, 1994, did your <b>natural gas utility</b> sponsor any type of programs designed for the purposes listed below, regardless of whether or not your establishment participated:</p> <ul style="list-style-type: none"> <li>• to lower your energy consumption or costs, or</li> <li>• to shift the timing of your natural gas demand, or</li> <li>• to promote your use of natural gas instead of another energy source?</li> </ul> <p>(Often these programs are referred to as Demand-Side Management (DSM))</p> <p><b>Mark (X) only one box.</b></p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="width: 100px; height: 20px;">1304</td> <td style="width: 100px; height: 20px;">1 <input type="checkbox"/> Yes</td> </tr> <tr> <td style="width: 100px; height: 20px;"></td> <td style="width: 100px; height: 20px;">2 <input type="checkbox"/> No</td> </tr> <tr> <td style="width: 100px; height: 20px;"></td> <td style="width: 100px; height: 20px;">3 <input type="checkbox"/> Don't know</td> </tr> </table>		1304	1 <input type="checkbox"/> Yes		2 <input type="checkbox"/> No		3 <input type="checkbox"/> Don't know				
1304	1 <input type="checkbox"/> Yes										
	2 <input type="checkbox"/> No										
	3 <input type="checkbox"/> Don't know										
<p>4a. For the period between January 1, 1992 and December 31, 1994, was the natural gas utility/local distribution company (LDC) for your establishment the <b>same entity</b> as your electric utility?</p> <p><b>Mark (X) only one box.</b></p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="width: 100px; height: 20px;">1305</td> <td style="width: 100px; height: 20px;">1 <input type="checkbox"/> Yes</td> </tr> <tr> <td style="width: 100px; height: 20px;"></td> <td style="width: 100px; height: 20px;">2 <input type="checkbox"/> No</td> </tr> <tr> <td style="width: 100px; height: 20px;"></td> <td style="width: 100px; height: 20px;">3 <input type="checkbox"/> Don't know</td> </tr> </table>		1305	1 <input type="checkbox"/> Yes		2 <input type="checkbox"/> No		3 <input type="checkbox"/> Don't know				
1305	1 <input type="checkbox"/> Yes										
	2 <input type="checkbox"/> No										
	3 <input type="checkbox"/> Don't know										
<p>4b. At any time between January 1, 1992 and December 31, 1994, was your establishment involved in any type of energy-management activity?</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="width: 100px; height: 20px;">13051</td> <td style="width: 100px; height: 20px;">1 <input type="checkbox"/> Yes – Go to line 5 on page 11.</td> </tr> <tr> <td style="width: 100px; height: 20px;"></td> <td style="width: 100px; height: 20px;">2 <input type="checkbox"/> No – Skip to Part C1 on page 11.</td> </tr> </table>		13051	1 <input type="checkbox"/> Yes – Go to line 5 on page 11.		2 <input type="checkbox"/> No – Skip to Part C1 on page 11.						
13051	1 <input type="checkbox"/> Yes – Go to line 5 on page 11.										
	2 <input type="checkbox"/> No – Skip to Part C1 on page 11.										

# 1994 Manufacturing Energy Consumption Survey

## Form EIA-846A

Section V – ESTABLISHMENT CHECKLIST – Continued						
Part B – ENERGY PURCHASING AND ENERGY-MANAGEMENT ACTIVITIES – Continued						
5. In what type(s) of energy-management activity(ies) was your establishment involved between January 1, 1992 and December 31, 1994? Mark (X) all that apply. Note that it is possible to have marks in all four columns for any of the activities listed.						
Energy-Management Activities (1)	Involvement Through Electric Utility Sponsorship (2)	Involvement Through Self-Sponsorship (3)	Involvement Through Federal, State, Local Government Sponsorship, Excluding Utilities (4)	Involvement Through Other (3rd Party) Sponsorship (5)		
a. Energy audits	1306 <input type="checkbox"/>	1307 <input type="checkbox"/>	1302 <input type="checkbox"/>	1303 <input type="checkbox"/>		
b. Electricity load control	1308 <input type="checkbox"/>	1309 <input type="checkbox"/>	1302 <input type="checkbox"/>	1303 <input type="checkbox"/>		
c. Special rate schedule (e.g., interruptible or time-of-use)	1310 <input type="checkbox"/>					
d. Standby generation program	1326 <input type="checkbox"/>	1327 <input type="checkbox"/>	1322 <input type="checkbox"/>	1323 <input type="checkbox"/>		
e. Equipment rebates	1328 <input type="checkbox"/>	1329 <input type="checkbox"/>	1322 <input type="checkbox"/>	1323 <input type="checkbox"/>		
f. Power factor correction or improvement	1338 <input type="checkbox"/>	1339 <input type="checkbox"/>	1340 <input type="checkbox"/>	1341 <input type="checkbox"/>		
g. U.S. Environmental Protection Agency's Energy Star Program			1342 <input type="checkbox"/>			
h. U.S. Environmental Protection Agency's Green Lights Program			1343 <input type="checkbox"/>			
i. U.S. Department of Energy's Motor Challenge Program			1344 <input type="checkbox"/>			
j. Equipment installation or retrofit for the <b>primary</b> purpose of improving energy efficiency affecting:						
(1) Steam production (e.g., boilers, burners)	1312 <input type="checkbox"/>	1313 <input type="checkbox"/>	1312 <input type="checkbox"/>	1313 <input type="checkbox"/>		
(2) Direct/indirect process heating	1314 <input type="checkbox"/>	1315 <input type="checkbox"/>	1312 <input type="checkbox"/>	1313 <input type="checkbox"/>		
(3) Direct process cooling, refrigeration	1316 <input type="checkbox"/>	1317 <input type="checkbox"/>	1312 <input type="checkbox"/>	1313 <input type="checkbox"/>		
(4) Direct machine drive (e.g., adjustable-speed drives, motors, pumps) excluding Motor Challenge Program	1318 <input type="checkbox"/>	1319 <input type="checkbox"/>	1312 <input type="checkbox"/>	1313 <input type="checkbox"/>		
(5) Facility heating, ventilation, and air conditioning, excluding Energy Star Program	1320 <input type="checkbox"/>	1321 <input type="checkbox"/>	1322 <input type="checkbox"/>	1323 <input type="checkbox"/>		
(6) Facility lighting, excluding Green Lights Program	1322 <input type="checkbox"/>	1323 <input type="checkbox"/>	1322 <input type="checkbox"/>	1323 <input type="checkbox"/>		
k. Equipment installation or retrofit for the <b>primary</b> purpose of using a different energy source (e.g., electrification). (Exclude modifications made principally for energy efficiency)	1324 <input type="checkbox"/>	1325 <input type="checkbox"/>	1322 <input type="checkbox"/>	1323 <input type="checkbox"/>		
l. Other, including other government programs (Specify)						
1396 (1)	1330 <input type="checkbox"/>	1331 <input type="checkbox"/>	1332 <input type="checkbox"/>	1333 <input type="checkbox"/>		
1397 (2)	1334 <input type="checkbox"/>	1335 <input type="checkbox"/>	1336 <input type="checkbox"/>	1337 <input type="checkbox"/>		
All establishments are to complete Parts C1, C2, and C3.						
Part C1 – GENERAL TECHNOLOGIES						
Mark (X) all technologies that were in place at your establishment during 1994.						
1401 <input type="checkbox"/>	Computer control of building environment (e.g., space-heating equipment, cooling equipment, lights)	1403 <input type="checkbox"/>	Waste heat recovery			
1402 <input type="checkbox"/>	Computer control of processes or major energy-using equipment (e.g., boilers, furnaces, conveyers) used in the manufacturing process	1404 <input type="checkbox"/>	Adjustable-speed motors			
		14041 <input type="checkbox"/>	None of the above			
Part C2 – COGENERATION TECHNOLOGIES						
Mark (X) all technologies that were in place at your establishment during 1994.						
14042 <input type="checkbox"/>	Steam turbines supplied by either conventional or fluidized bed boilers	14045 <input type="checkbox"/>	Internal combustion engines with heat recovery			
14043 <input type="checkbox"/>	Conventional combustion turbines with heat recovery	14046 <input type="checkbox"/>	Steam turbines supplied by heat recovered from high-temperature processes			
14044 <input type="checkbox"/>	Combined-cycle combustion turbines	14047 <input type="checkbox"/>	None of the above			
Part C3 – ONE-TIME COLLECTION OF ESTABLISHMENT ACTIVITIES						
Your CORPORATE energy manager has the option of completing this part for EACH individual establishment site. Otherwise, your energy manager at the establishment site is the best source for this information. Please respond using best-guess estimates from respondents' own knowledge. A search for these items is not necessary.						
1. What is your establishment's most commonly used method of evaluation for purchases of, and modifications to, electric motor systems? Mark (X) only one box.						
1601 <input type="checkbox"/>	An evaluation is based primarily on all expected costs over the projected lifetime of the system.	4 <input type="checkbox"/>	An evaluation is done but not certain <b>how</b> it is done.			
2 <input type="checkbox"/>	An evaluation is based primarily on initial purchase prices of competing systems.	5 <input type="checkbox"/>	No evaluation is done.			
3 <input type="checkbox"/>	Another type of evaluation is used.	6 <input type="checkbox"/>	Not certain <b>if</b> any type of evaluation is done.			
2. What kind of listing do you keep regarding your operating electric motors at this establishment? Mark (X) only one box.						
1602 <input type="checkbox"/>	A listing is kept of <b>all</b> operating electric motors at this establishment – Go to line 3 below.	3 <input type="checkbox"/>	No listing at all is kept – Skip to page 12.			
2 <input type="checkbox"/>	A listing is kept of <b>some</b> operating electric motors at this establishment – Go to line 3 below.	4 <input type="checkbox"/>	The existence of a listing is not known – Skip to page 12.			
3. Does your listing contain information on age of your motors? Mark (X) only one box.						
1603 <input type="checkbox"/>	Yes	2 <input type="checkbox"/>	No	3 <input type="checkbox"/>	Don't know	
4. Does your listing contain information on horsepower (wattage) of your motors? Mark (X) only one box.						
1604 <input type="checkbox"/>	Yes	2 <input type="checkbox"/>	No	3 <input type="checkbox"/>	Don't know	

# 1994 Manufacturing Energy Consumption Survey

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<b>Section V – ESTABLISHMENT CHECKLIST – Continued</b>						
There is one additional part to complete for specific SIC codes. This establishment's four-digit SIC code is included as part of the address mailing label on page 1 of this survey. If the first two digits of your establishment's SIC code are: "26" (paper industries), then complete Part D. or "28" (chemical industries), then complete Part E. or "33" (primary metal industries), then complete Part F. Otherwise, skip to Section VI – REMARKS.						
<b>Part D – SPECIFIC TECHNOLOGIES FOR PAPER INDUSTRIES (SIC 26 ONLY)</b>						
<b>Mark (X) all technologies that were in place at your establishment during 1994.</b>						
1436	<input type="checkbox"/>	Continuous digesters	1442	<input type="checkbox"/>	Multi-effect falling-film evaporators for black liquor evaporation and concentration	
1437	<input type="checkbox"/>	Displacement bleaching process	1443	<input type="checkbox"/>	Vapor recompression evaporation of black liquor	
1438	<input type="checkbox"/>	Top-wire (hybrid) paper forming	1444	<input type="checkbox"/>	Waste-heat recovery technologies in lime kilns	
1439	<input type="checkbox"/>	Extended nip press	1445	<input type="checkbox"/>	Improved filtration technologies allowing flexibility in the selection of fuel other than natural gas and distillate fuel oil for lime calcination.	
1440	<input type="checkbox"/>	Higher nip pressures	14451	<input type="checkbox"/>	None of the above	
1441	<input type="checkbox"/>	Extended deliquescence displacement heating processes				
<b>Part E – SPECIFIC TECHNOLOGIES FOR CHEMICAL INDUSTRIES (SIC 28 ONLY)</b>						
<b>Mark (X) all technologies that were in place at your establishment during 1994.</b>						
1446	<input type="checkbox"/>	Replacement of electrically heated platens in the thermoset molding process with a gas-fired central thermal fluid system.	1448	<input type="checkbox"/>	Biomass materials (e.g., lignocellulosics, food crops, food wastes) used as alternative feedstocks	
1447	<input type="checkbox"/>	Processing residuals as alternative feedstocks	1449	<input type="checkbox"/>	Bioprocessing of petroleum, natural gas, coal, or other fossil-based feedstocks	
<b>The following technologies are innovative processing and separations that (1) substitute use of fossil-based feedstocks with biomass materials, (2) increase overall process efficiency, or (3) reduce environmental impacts and waste processing:</b>						
1450	<input type="checkbox"/>	Direct microbial	1457	<input type="checkbox"/>	Hydrolysis of biomass materials	
1451	<input type="checkbox"/>	Bioprocessing	1458	<input type="checkbox"/>	Enhanced bioprocessing with genetically engineered feedstocks or organisms	
1452	<input type="checkbox"/>	Gasification of biomass feedstocks	1459	<input type="checkbox"/>	Fermentation	
1453	<input type="checkbox"/>	Fast pyrolysis of biomass feedstocks	1460	<input type="checkbox"/>	Fractionation of biomass	
1454	<input type="checkbox"/>	Immobilized enzyme processes	1461	<input type="checkbox"/>	Distillation process improvements	
1455	<input type="checkbox"/>	Innovative catalytic processes	1462	<input type="checkbox"/>	Hydrocarbon cracking enhancements	
1456	<input type="checkbox"/>	Recycling of materials	14621	<input type="checkbox"/>	None of the above	
<b>Part F – SPECIFIC TECHNOLOGIES FOR PRIMARY METAL INDUSTRIES (SIC 33 ONLY)</b>						
<b>Mark (X) all technologies that were in place at your establishment during 1994.</b>						
1463	<input type="checkbox"/>	Dry quenching during the coking process	1475	<input type="checkbox"/>	Cold bonding (COBO) pelletizing technique	
1464	<input type="checkbox"/>	External desulfurization of the charge for ironmaking	1476	<input type="checkbox"/>	Preheating combustion air	
1465	<input type="checkbox"/>	Hydrocarbon injection to maintain blast furnace temperatures	1477	<input type="checkbox"/>	Preheating raw materials	
1466	<input type="checkbox"/>	Direct reduction ironmaking – sponge iron produced directly from iron ore	1478	<input type="checkbox"/>	Top gas pressure recovery from the blast furnace	
1467	<input type="checkbox"/>	Continuous casting	1479	<input type="checkbox"/>	Slab heat recovery	
1468	<input type="checkbox"/>	Thin slab/strip casting	1480	<input type="checkbox"/>	Continuous annealing	
1469	<input type="checkbox"/>	Waste heat boilers/heat exchangers in combination with rehear furnaces	1481	<input type="checkbox"/>	Continuous cold rolling	
1470	<input type="checkbox"/>	Evaporative cooling of skid rails	1482	<input type="checkbox"/>	Bottom tap vessels	
1471	<input type="checkbox"/>	Electric induction rehear furnaces	1483	<input type="checkbox"/>	Injection steelmaking	
1472	<input type="checkbox"/>	Hot charging – moving steel directly from the caster to the rehear furnace	1484	<input type="checkbox"/>	Electroslag remelting	
1473	<input type="checkbox"/>	Direct rolling required no reheating	1485	<input type="checkbox"/>	Vacuum arc remelting	
1474	<input type="checkbox"/>	Plasmas melt smelting of partially reduced iron powder with pulverized coal	1486	<input type="checkbox"/>	Oxygen injection to blast furnace	
			1487	<input type="checkbox"/>	Coal injection to blast furnace	
			1488	<input type="checkbox"/>	Steel ladle metallurgy with rehear furnace	
			14881	<input type="checkbox"/>	None of the above	
<b>Section VI – REMARKS</b>						
Please use this space or attach a separate sheet for any explanations that may be essential in understanding your reported data.						
1599						
<b>Section VII – CERTIFICATION</b>						
Name of person to contact regarding this report – (Print or type)			Telephone number	Area code	Number	Extension
Address – Number and street			City		State	ZIP Code
Period covered by this report: →	From			To		
	Month	Day	Year	Month	Day	Year
Signature of authorized person			Internet number or E-Mail (if available)		Date	
			@			