VOLUNTARY INDUSTRIAL ENERGY CONSERVATION

PROGRESS REPORT 3
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OFFICE OF ENERGY POLICY AND PROGRAMS
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OFFICE OF INDUSTRIAL PROGRAMS
FEDERAL ENERGY ADMINISTRATION

SUMMARY

Energy efficiency has continued to show improvement according to the data reported by most of the industries participating in the joint Commerce-FEA voluntary industrial energy conservation program. For some, this was achieved despite lower production levels and reduced capacity utilization. Data for the last half of 1975 indicates that production levels are beginning to rise and, as the economic upturn continues, even greater improvements in energy efficiency can be anticipated. New data on energy use and savings for the full year 1975 have been received from most of the energy-intensive industries--Aluminum, Biscuit and Cracker, Cement, Chemicals, all three segments of the Glass industry, Iron and Steel, Meat Packing, Paper and Petroleum. The Primary Copper industry and the Business Equipment industry have submitted their first comprehensive reports. Other groups, including the Beet and Cane Sugar Refiners, the Refractories manufacturers, the Die Casting and Metal Treating groups, which have not previously reported, have made preliminary reports. 52 groups are participating or have been invited to participate in the government's voluntary industrial energy conservation program. The 30 detailed reports following represent the information submitted by 31 industry representative groups.

This is the third in a series of reports issued showing progress in energy conservation made by industry, and the first report since the Department of Commerce began conducting the day-to-day operation of the voluntary industrial energy conservation program, including the collection of data on energy use and savings from all participating industries. The reports are arranged alphabetically by representative group. 1980 goals referred to in the reports are specific goals voluntarily agreed to by these groups. Where none is stated, a goal of a 15 percent reduction in energy consumption per unit of production by 1980 is considered to apply. These goals are not the energy efficiency targets required by P.L. 94-163, the Energy Policy and Conservation Act of 1975.

The basic information for this report is that submitted by the industry representatives. In a few cases this information has been modified slightly in the calculations and rounding employed to prepare the overall report. The reports submitted by the industry representatives are available for inspection in the Office of Energy Policy and Programs of the Department of Commerce.

Based on the data reported, the most current measures of energy efficiency improvement as of March 31, 1976, are as follows:

Industry Representative	Energy Efficiency Improvement (%) 1 /		Page
Aluminum Association	5.0	2 /	4
American Bakers Association	2.6	3 /	6
American Feed Manufacturers Association	22.9	4 /	8
American Foundrymen's Society	25.6		9
American Iron and Steel Institute	(2.9)	5 /	10
American Meat Institute National Independent Meat Packers Association	6.9	6 /	11
American Mining Congress	(21.1)	5 / 7 /	13
American Paper Institute	4.1		16
American Petroleum Institute	10.3	2 /	18
American Textile Manufacturers Institute	6.6	8 /	20
Biscuit and Cracker Manufacturers Association	5.8		21
Brick Institute of America	6.6		23
Can Manufacturers Institute	17.2	9 /	25
Computer and Business Equipment Manufacturers Association	30.5		26
Glass Container Manufacturers Institute	0.5		27
Glass-Flat Glass (Third Party)	12.2		28
Glass-Pressed and Blown (Third Party)	12.6		30
Gypsum Association	3.9		32
Manufacturing Chemists Association	4.0		33
National Canners Association	7.8	9 /	35
Portland Cement Association	1.4		36
Tile Council of America	16.6		38

This report is in three parts. Part I includes 22 industry reports from 23 groups based on comprehensive data. These reports show industrial progress toward energy efficiency goals. Part II (page 40) includes those eight industries which have provided us with preliminary data on energy use and savings. The decision of these industries to participate in the substance of the program and to report within the limits of their data reflects an important new stage in the development of their programs. Part III (page 51) sets forth the balance of those industries which are considering participation with Commerce and FEA in the voluntary program.

1/ Expressed as decline in ratio of Btu's required to process a given amount of material or produce a given unit of output using 1975 vs. 1972 as a baseline.

2/ Calculation is based on a comparison of data for the last half of 1975 vs. the full year 1972.

3/ Calculation is based on a comparison of data for the first half of 1975 vs. the first half of 1972.

4/ Calculation is based on a comparison of data for the first three quarters of 1975 vs. 1972.

5/ Parentheses indicate a negative result.

6/ Calculation is based on a comparison of data for the last half of 1975 vs. the last half of 1972.

7/ Calculation is based on a comparison of data for the first half of 1975 vs. the full year 1972.

8/ Calculation is based on a comparison of data for the last half of 1975 vs. the last half of 1973.

9/ Calculation is based on a comparison of data for the full year 1974 vs. the full year 1972.

THE ALUMINUM ASSOCIATION, INC.

Energy Efficiency Table	1972	1973	1974	1975 1st Half	1975 2nd Half
Btu's (10^{12}) - Energy Base, 1972 Efficiencies (See Step 2, page 5)	935.3r	1039.4	1118.2	448.4	428.9
Btu's (10^{12}) - Energy Consumed During Period Shown	935.3r	1025.0	1057.6	414.8	386.7
Percent Improvement	Base Year	2.1r	5.7r	4.0r	5.0

(NOTE: The percent improvement is calculated by each process as shown on Page 5. The percent improvement cannot be calculated from the data in this table.)

1980 Goal is 10 Percent

Recent Energy Trends

The industry consumed less energy and fuel in the second half of 1975 than in prior comparable periods, due primarily to a reduction in demand for aluminum.

The energy conservation analysis shows a 5.0 percent improvement in energy efficiency through the second half of 1975. The figure reported previously for the first half of 1975 (6.5 percent) has been revised to 4.0 percent. Industry analysis of the earlier method of energy efficiency calculation disclosed a distortion that reflected a change in the mix of hydropower and fossil fuel-generated electricity rather than changes in efficiency. This mix is significant because, as reported by the aluminum industry, electricity generated by hydropower has a lower Btu value tha that generated by fossil fuels. To remove this distortion, energy consumption was converted by the Aluminum Association to the 1972 electricity pattern. The converted values are as follows:

1972	1973	1974	1975 1st Half	1975 2nd Half
935.3r	1017.9	1054.1	430.3	407.3

r - Indicates revised data.

The percent improvement for 1975 is the net effect of process-by-process improvement as reflected in the following table:

Process (Btu's 10^{12})	1972	1st Half '75	2nd Half '75
Bauxite	.3	.2	.1
Alumina	122.0r	54.6	51.3
Hot Metal	633.1	308.5	285.3
Hold, Cast and Melt	58.7	23.3	24.8
Fabrication	121.2	43.7	45.7
Total	935.3r	430.3	407.3

The percent improvement for each process is determined as follows:

STEP 1. $\frac{\text{1972 Btu's}}{\text{1972 lbs}}$ = 1972 Btu/lb

STEP 2. 1972 Btu/lb X 1975 lbs = 1975 Btu's at 1972 efficiencies

STEP 3. 1975 Btu's at 1972 efficiencies - 1975 Btu's = 1975 Btu's saved as a result of new conservation efforts

STEP 4. 1975 Btu's saved ÷ 1975 Btu's at 1972 efficiencies = Percent Improvement

Background Information

The aluminum industry is already half way toward meeting its goal of reducing the energy required per pound of production by 10 percent by 1980 as compared with 1972. Among the first six industries to participate in the voluntary energy conservation program, the aluminum industry has expanded its participation from 14 to 39 companies. This report represents over 95 percent of energy used in the domestic aluminum industry.

Energy usage by the aluminum industry covers domestic U. S. bauxite and alumina operations, smelting and fabrication of mill products. The data reported is based on energy consumption for a combination of five different processes in the production of aluminum. Energy use associated with the mining of bauxite ore is minimal since the industry imports a large percentage of its raw feedstock material. Smelting constitutes the largest energy-using process in aluminum manufacturing.

AMERICAN BAKERS ASSOCIATION

Energy Efficiency Table	1972 *	1973	1974	1975*
Production (10^6 lbs)	2759.0			2845.6
Btu's (10^9)	7713.4			7748.6
Ratio (Btu/lb)	2795.7			2723.0
Percent Improvement Over Base Year	Base Year			2.6
1980 Goal is 15 Percent				

FORM AND PRECENTAGE OF ENERGY USE

	1972	1975*
	%	%
Natural Gas	46.1	47.3
Gasoline	22.7	20.8
Diesel Fuel	16.7	16.7
Electricity	8.6	9.2
Fuel Oil	5.5	5.5
Propane	0.4	0.5
Steam	--	--
	100.0	100.0

Recent Energy Trends

The American Bakers Association in its first report shows improvement of 2.6 percent in energy efficiency, comparing data collected for the first half of 1975 with that for the first half of 1972. The association indicates that the effect of energy conservation efforts has been minimized by low production rates. While production for the period exceeds that for the

* Data for January - June 1972 and 1975. Data for 1975 is that published in the previous DOC and FEA industry reports.

comparable period in 1972, plant capacity, which had been expanded since 1972, was not fully utilized. Preliminary indications are that production rates were higher in the second half of 1975 and this is expected to be reflected in better energy efficiency.

Background Information

The American Bakers Association represents 206 wholesale bakers who account for approximately 85 percent of the production in their industry segment. This report includes data from 53 member companies, accounting for approximately 40 percent of the total wholesale baking industry production.

AMERICAN FEED MANUFACTURERS ASSOCIATION

Energy Efficiency Table	1972	1973	1974	1975*
Production (10^6 tons)	5.5	11.6	11.8	9.5
Btu's (10^9)				
Ratio (10^3 Btu/ton)	354	307	284	273
Percent Improvement Over Base Year	Base Year	13.3	19.8	22.9

Recent Energy Trends

The most recent report submitted by American Feed Manufacturers Association (AFMA), which covered the first three quarters of 1975, showed a continued improvement in energy efficiency for the industry comparing the energy efficiency for three quarters of 1975 with that for the full year of 1972. Quarterly data submitted by the Association for the past three years shows that energy efficiency is usually better in the first and fourth quarters of the year. Therefore, we anticipate that energy efficiency for the full year 1975 will exceed that for the first three quarters of the year.

Background Information

The energy data presented is for the animal feed industry, which includes both prepared feeds and food. The ten reporting companies represent 25 percent of total industry production of commercially manufactured feed. The industry consists of upwards of 7,000 establishments in the United States (e.g., the largest company may have up to 50 or 60 establishments where feed is manufactured). The statistical collection problem in a widely distributed and complex industry is a difficult one.

* Data is for period January - September 1975.

AMERICAN FOUNDRYMEN'S SOCIETY

Energy Efficiency Table	1972	1973	1974	1975
Production (10^3 tons)	5760	6672	6351	3943
Btu's (10^9)	90764	99209	97054	46271
Ratio (10^6 Btu/ton)	15.76	14.87	15.28	11.73
Percent Improvement Over Base Year	Base Year	5.6	3.0	25.6 *

Recent Energy Trends

The aggressive energy conservation program directed by the American Foundrymen's Society (AFS) has contributed to significant and continued energy savings within the industry. AFS figures show that low volume foundries are more energy-intensive than high volume foundries. During 1975, a large number of the smaller, less efficient foundries dropped out of the program. As a result, the energy efficiency numbers reported are higher than they would have been had these foundries been included. Many of these foundries have rejoined the program and will be included in the 1976 reports.

Background Information

The foundry industry is the sixth largest in the United States. It has sales exceeding 13 billion dollars per year and employs over 800,000 people. The American Foundry Society (AFS) has initiated a rather complete energy management program. Individual company data is collected by fuel type and the various types of fuels used are reported in both conventional units (tons, kWh, gallons, mcf, etc.) and in Btu's.

* As noted under Recent Energy Trends, data for 1975 has been affected by a change, anticipated to be temporary, in the composition of the reporting group.

AMERICAN IRON AND STEEL INSTITUTE

Energy Efficiency Trends	1972	1973	1974	1975
Production (10^6 tons)	84.05	95.52	96.92	78.40
Btu's (10^{12})	2742	3031	3073	2633
Ratio (10^6 Btu/ton)	32.62	31.73	31.71	33.58
Percent Improvement Over Base Year	Base Year	2.7	2.8	(2.9)
1980 Goal is 10 Percent				

Recent Energy Trends

The most recent report submitted by the American Iron and Steel Institute covers calendar year 1975 and shows that the low level of steel plant operations adversely affects the energy efficiency as measured by millions of Btu's per ton of steel shipped. The first factor contributing to reduced efficiency was the sharp drop in production (tons shipped).

A second factor affecting efficiency was the greater percentage of alloy steel made during 1975; production of alloy steels was up 24 percent in 1975 over 1972. These steels require more energy to produce than do carbon steels since their higher quality requires additional refining.

Another factor affecting efficiency was the need to convert furnaces from natural gas to oil and coal. These fuels are less efficient than natural gas. However, with curtailment of natural gas, the steel industry found conversion necessary to meet the demand for steel.

Increased alloy production and the continued shortage of natural gas, together with the increasing burden of pollution control, are among problems confronting the industry which affect future improvement in energy efficiency.

Background Information

The American Iron and Steel Institute (AISI) has a membership of 63 companies. A total of 52 companies, some of which are not members of AISI, submitted data on energy consumption in steel manufacturing to AISI. The data submitted for 1975 represents 94 percent of the total industry shipments.

AMERICAN MEAT INSTITUTE AND

NATIONAL INDEPENDENT MEAT PACKERS ASSOCIATION

(Combined Report)

Energy Efficiency Table	1972*	1973	1974	1975*
Production (10^6 lbs)	11140			11260
Btu's (10^{12})	21.32			20.06
Ratio (Btu/lb)	1914			1782
Percent Improvement Over Base Year	Base Year			6.9
1980 Goal is 10 Percent				

Recent Energy Trends

The Meat Packing Industry continues to reflect a positive trend concerning efficiency--i.e., increasing total production while decreasing energy use per unit of production. The most recent reporting period, July - December 1975, shows a 6.9 percent improvement when compared with data for July - December 1972. This is the same percentage improvement reported for the first half of 1975. The industry anticipates meeting its voluntary 1980 goal.

Natural gas continues to be the primary fuel for the industry with electricity second. Fuel type and percentage breakdowns for the two six month periods of 1975 were as follows:

FORM AND PERCENTAGE OF ENERGY USE

Energy Form	January - June	July - December
	%	%
Natural Gas	50.0	56.0
Electricity	16.1	21.4
Fuel Oil	16.1	13.0
Coal	13.7	7.0
Propane	1.0	.3
Other	3.1	2.3
	100.0	100.0

* Data is for the period July - December 1972 and 1975.

Background Information

The two primary trade associations in this industry, the American Meat Institute and the National Independent Meat Packers Association, submit a combined report for this program. The latest report included information from 40 of their combined membership of 519. While this is a relatively small number of firms reporting, they represent 50 percent of the industry's total production for 1975.

AMERICAN MINING CONGRESS

(Primary Copper Industry)

Energy Efficiency Table	1972	1973	1974	1975*
Production (10^6 tons)	1.434			.598
Btu's (10^{12})	120.8			60.95
Ratio (10^6 Btu/ton)	84.2			102
Percent Improvement Over Base Year	Base Year			(21.1)

Recent Energy Trends

The copper industry has submitted their first report on energy conservation through the American Mining Congress (AMC). Energy consumption in this industry is expected to increase as a result of a number of factors which are described below. However, the efforts of the voluntary program within the industry are expected to reduce the anticipated increase. An appropriate goal for that reduction is currently being considered by the industry and will be set soon.

The following are factors which contributed to the increased consumption of energy in the production of copper:

1. The average ore grade for the tonnage reported decreased from 0.653 percent to 0.567 percent from 1972 to 1975. This decreasing ore grade alone accounted for a 7 percent increase in unit energy consumption, or about one-third of the total increase.

* Data is for the period January - June 1975.

2. Lower production rates in 1975 caused increased unit energy consumption in two major ways:

    a. Energy required to carry out continuing overhead items remain constant even with a reduction of about 10 percent in production.

    b. The lower production rate is characterized by a series of shut-down and start-up periods. Furnaces are kept hot during shut-downs, and facilities are flushed and recharged. While this would not produce a proportionate increase in unit energy consumption (in this case 10 percent), the total effect of poor energy efficiency with a production loss of 10 percent could account for a 3 to 5 percent increase.

3. Regulatory changes, both environmental and safety, are having an effect on energy consumption. While the AMC data collection for this report did not call for specific information, one company has computed that overall regulatory changes have increased their unit energy consumption by about 7 percent between 1972 and 1975. Another estimates the effect of emission controls alone to vary from 6 to 10 percent of total unit energy consumption for refined copper produced.

4. Other miscellaneous factors include:

    a. Changes in distance in transporting ore.

    b. Increases in stripping ratio (overburden to ore).

    c. Colder weather in first half of 1975 than for average of full year.

On the basis of the above factors, the observed increase of 21.1 percent in Btu's per ton of recoverable refined copper produced is perhaps less than what would have been expected.

American Mining Congress Cont'd.

On the positive side, the Noranda Smelting Process offers a potential for significant energy savings in one step of copper production. 1/

Background Information

AMC membership includes some 17 companies that mine, concentrate, smelt and/or refine primary copper domestically. The 8 companies reporting at this time represent 66 percent of the primary new copper production, 95 percent of the smelting production and 100 percent of the refined production in this country.

This report states unit energy consumption in each process, and for the whole industry, in terms of Btu's per ton of recoverable refined copper produced.

Companies were contacted via the Subcommittee on Energy Conservation in the nonferrous metals industry of the AMC. The information contained in the report was compiled for AMC by the American Bureau of Metal Statistics.

1/ However, with current environmental regulations, it appears that the savings this process offers may not be realized. The industry is seeking ways to improve energy efficiency in the face of strict environmental standards.

AMERICAN PAPER INSTITUTE

Energy Efficiency Table	1972	1973	1974	1975
Production (10^6 tons)	66.925			58.445
Btu's (10^{15} fossil fuel and purchased energy)	1.273			1.066
Ratio (10^6 Btu's/ton)	19.021			18.239
Percent Improvement Over Base Year	Base Year			4.1
1980 Goal is 10 Percent				

FORM AND PERCENTAGE OF ENERGY USE

Form	1972 %	1975 %
Fossil Fuel and Purchased Energy		
Fuel Oils	22.7	23.6
Natural Gas	20.3	18.1
Coal	10.5	9.1
Purchased Electricity	3.9	4.8
Purchased Steam	0.8	0.8
Liquid Propane	0.1	0.1
Other Purchased	--	0.1
Sub-Total	58.3	56.6

Form	1972 %	1975 %
Self-generated Energy		
Spent Pulping Liquors	34.3	35.3
Bark	4.9	4.3
Hogged Fuels	1.9	3.0
Self-generated Hydropower	0.4	0.5
Other Self-generated	0.2	0.3
Sub-Total	41.7	43.4
Total Energy	100.0	100.0

Recent Energy Trends

Despite reduced production and lower capacity utilization in 1975 as compared to 1972, the American Paper Institute reported a 4.1 percent increase in energy efficiency for its reporting firms during 1975 over the 1972 period. Although the increase in efficiency appears to be small, it represents a substantial achievement in the given circumstances. Industry figures also show increased reliance on self-generated fuels. During 1975, except for the month of March, a higher percentage of self-generatedfuels--hogged fuel, bark, spent liquor, hydro-electric and others--was used than in the comparable months of 1972. Correspondingly, a smaller amount of purchased energy was used.

Background Information

The American Paper Institute has a membership of 200 companies. 115 pulp, paper and paperboard companies participate in the Institute's monthly fuel and energy monitoring system, reporting production in terms of dried pulp, integrated paper and paperboard, and non-integrated paper and paperboard. The reporting companies account for about 80 percent of total U.S. production of dried pulp, paper and paperboard.

AMERICAN PETROLEUM INSTITUTE

Energy Efficiency Table	1972	1973	1974	1975 1st Half	1975 2nd Half
Production (Total Refinery Input) (mm bbl/d)	12.3/12.6*			12.3	13.4
Weighted Average Ratio (m Btu/bbl Input)	(666.7/658)**			609	590
Percent Improvement Over Base Year	Base Year			8.7	10.3
1980 Goal is 15 Percent					

Form and Percentage of Energy Use in Petroleum Processing Operations
(Weighted Average)

Fuel	January 1 - June 30, 1975 %	July 1 - December 31, 1975 %
Crude Oil	0	0
Distillate Oil	1.1	1.0
Residual Oil	11.4	10.0
Liquified Petroleum Gas	2.0	1.0
Natural Gas	27.1	29.0
Refinery Gas	36.2	37.0
Petroleum Coke	14.7	15.0
Coal	0.1	0
Purchased Steam	0.4	0
Purchased Electricity	7.0	7.0
Total	100.0	100.0

* 1972 input for the 50 refineries reporting in the first half of 1975 and for 56 refineries reporting in the second half of 1975.

** Adjusted to current operations in first and second halves of 1975, respectively.

Recent Energy Trends

The second industry survey, conducted by the American Petroleum Institute (API) for the 6 month period ending December 31, showed continued improvement in the efficient use of energy by the petroleum refining industry. The API's report, based upon responses from 56 refinery companies that constitute 92.9 percent of U. S. refinery capacity, revealed that the industry had achieved an improvement of 10.3 percent in energy use efficiency measured against the base period of 1972. These savings were accomplished at refinery processing levels 6.3 percent higher in 1975 than in 1972 (13.4 mm bbl/d versus 12.6 mm bbl/d).

Background Information

The industry's first formal report on energy conservation accomplishments was made for the period January 1 - June 30, 1975. In that survey 50 refining companies representing 87.1 percent of U. S. refinery capacity showed an improvement of 8.7 percent in energy use efficiency compared to the base period of 1972. The API has 70 member companies that conduct refinery operations.

AMERICAN TEXTILE MANUFACTURERS INSTITUTE

Energy Efficiency Table	1972	1973	1974	1975
Production (10^9 lbs)*		2.690**		2.647**
Btu's (10^{12})		56.8		52.1
Ratio (10^3 Btu/lb)		21.1		19.7
Percent Improvement Over Base Year		Base year		6.6

Recent Energy Trends

Improved energy efficiency in the textile industry in the last half of 1975 over that reported for the first six months results from higher production levels and energy conservation techniques that have been implemented. Comparison of the full calendar year of 1973 with the full calendar year 1975, which is given below, reflects substantial improvement given the low production levels of the last 12 months.

	1973	1975
Production (10^9 lbs)	5.494	4.711
Btu's (10^{12})	118.1	98.8
Ratio (10^3 Btu/lb)	21.5	21.0
Percent Improvement Over Base Year	Base Year	2.3

Background Information

The American Textile Manufacturers Institute (ATMI) was one of the earliest participants in the government's industrial energy conservation program. The Institute has about 80 companies which participate on a regular basis in its monthly reporting systems; the figures reported by ATMI include data from all major manufacturers in the industry and represent more than 50 percent of total U. S. textile production.

* Production is measured in terms of pounds of material input.
** Data is for the period July - December, 1973 and 1975.

BISCUIT AND CRACKER MANUFACTURERS ASSOCIATION

Energy Efficiency Table	1972	1973	1974	1975
Production (10^6 lbs)	3079.0			3129.4
Btu's (10^9)	10988.7			10522.9
Ratio (Btu/lb)	3569			3363
Percent Improvement Over Base Year	Base year			5.8
1980 Goal is 10 Percent				

Recent Energy Trends

The latest report submitted by the Biscuit and Cracker Manufacturers Association indicates that the industry improved its energy efficiency by 5.8 percent over base year 1972. The energy efficiency improvement can be attributed primarily to a concentrated effort by the industry to implement energy conservation techniques and systems. A slightly higher production volume also contributed to the improved energy ratio.

FORM AND PERCENTAGE OF ENERGY USE

Natural gas still accounts for about 50 percent of the energy used in the industry with gasoline being the second most important fuel, accounting for about 20 percent of the total.

	1972 %	1975 %
Natural Gas	50.1	48.1
Gasoline	22.1	19.9
Electricity	10.4	11.5
#6 Fuel Oil	9.5	10.1
Diesel Fuel	3.3	4.7
Propane	2.4	3.8
#3 Fuel Oil	1.6	1.2
Steam	0.6	0.7
	100.0	100.0

Biscuit and Cracker Manufacturers Association Cont'd.

Background Information

Biscuit and Cracker Manufacturers Association members account for approximately 85-90 percent of the total production of the industry. The Association represents all of the major firms in the industry and has virtually all of its members participating in the voluntary program.

BRICK INSTITUTE OF AMERICA

Energy Efficiency Table	1972	1973	1974	1975
Production (10^6 SBE)*	2878	3009	2729	1471
Btu's (10^9)	26076	25873	24246	12444
Ratio (Btu/SBE)	9060	8599	8885	8460
Percent Improvement Over Base Year	Base Year	5.1	1.9	6.6**

Form and Quantity of Energy Use

(10^{12}Btu)

Energy Form	1972	1973	1974	1975
Natural Gas	21.2	21.1	20.0	9.4
Oil }	4.2	4.2	3.7	1.9
Coal }				
Propane	0.5	0.5	0.4	0.4
Gasoline	0.2	0.1	0.1	0.1
Electricity	- -	- -	- -	0.6
Total	26.1	25.9	24.2	12.4

Recent Energy Trends

Use of natural gas in the industry fuel mix decreased to about 75 percent in 1975 from about 83 percent in 1974 and the use of coal increased to about 7 percent from 5 percent in the same period. The use of oil and propane was also increased over the last year to replace natural gas. It should be noted that energy efficiency is seasonally dependent, i.e., during winter quarters when production is lower, equipment still must be operated essentially continously at design levels.

* SBE is standard brick equivalent (2.25 in. x 3.5 in. x 7.5 in.)

** As noted in the Background Information, the reporting sample is smaller this year than previously. The marked increase in efficiency would seem to indicate that less efficient firms are the ones which did not report in 1975.

Brick Institute of America Cont'd.

Background Information

Data reported by the Brick Institute of America represents 24 percent of industry production for 1975 as compared to about 35 percent for previous years. The Institute is making an effort to increase participation in the reporting program among its 87 members which account for about 65 percent of brick production.

CAN MANUFACTURERS INSTITUTE

Energy Efficiency Table	1972	1973	1974	1975*
Production (10^6 Base Boxes)	140.8	150.2	158.6	
Btu's (10^{12})	25.3	25.5	23.6	
Ratio (10^3 Btu/Base Box)	179.7	169.8	148.8	
Percent Improvement Over Base Year	Base Year	5.5	17.2	

Recent Energy Trends

The most recent reports submitted by the Can Manufacturers Institute (CMI), covering the first three quarters of 1975, show an energy efficiency improvement of 12.3 percent over the same period in 1972. This 1975 data, when compared to the same period in 1972, shows production increased to 110 million units from 108 million units, while energy consumption dropped to 16.6 trillion Btu's from 18.6 trillion Btu's. Due to normally higher production rates in the fourth quarter, efficiency improvement is expected to increase when data for the whole year is reported.

Background Information

CMI was organized in 1939 and evolved from the Tin Can Club (founded 1924). CMI member firms, which number over 50, represent 84 percent of total can shipments and manufacture cans for commercial sale as well as for their own use. Member firm manufacturing plants are located in 40 states, including over 200 towns and cities. Reporting firms, which include both CMI members and non-members, accounted for 74 percent of 1974 production.

* Because of strong effects of seasonality, it is not possible to make a valid comparison with previous years with data for less than an entire year.

COMPUTER AND BUSINESS EQUIPMENT MANUFACTURERS ASSOCIATION

Energy Efficiency Table	1972	1973	1974	1975
Production (10^3sq ft)*	94670	94304	98801	105969
Btu's (10^{12})	34.46	32.63	26.38	26.81
Ratio (10^3Btu/sq ft)	364	346	267	253
Percent Improvement Over Base Year	Base Year	4.9	26.6	30.5

Recent Energy Trends

Computer and Business Equipment Manufacturers Association (CBEMA) members have been reviewing energy usage of fuel and electricity in terms of total Btu's per thousand square feet of utilized space. The major categories of space utilized by the industry are Manufacturing, Office, Warehouse, and Data Processing Centers. The association indicates that vigorous energy conservation measures undertaken by member firms account for a large portion of the improved energy efficiency shown in the report.

Background Information

CBEMA has a membership of 40 companies and reporting member firms account for over 50 percent of total industry production. CBEMA members are engaged in the engineering, manufacture, finance, sale and support of all types of computer systems, associated peripheral equipment, and office equipment ranging from postage meters to office copiers. These firms are also involved in the operation of data processing, microform and other types of service centers; the manufacture and sale of supplies for business equipment and computers and the provision of specialized data services.

* Thousand square feet of utilized space is used as a proxy for production.

GLASS CONTAINER MANUFACTURERS INSTITUTE

Energy Efficiency Table	1972	1973	1974	1975
Production (10^6tons of packed production)	10.4	11.0	10.3	11.2
Btu's (10^{12})	139.9	148.7	138.0	149.8
Ration (10^6Btu/ton)	13.45	13.52	13.40	13.38
Percent Improvement Over Base Year	Base Year	(0.5)	0.4	0.5
1980 Goal is 5 Percent				

Recent Energy Trends

The glass container industry has been engaged in improving energy efficiency for a number of years. A recent trend is to install more efficient dual fuel (gas/oil) firing equipment. While experimental work is underway on use of coal, serious problems have been encountered with such factors as product contamination, adverse effect on refractories, pollution requirements, and slagging.

Background Information

Approximately 85 to 90 percent of glass container production is represented by the 15 companies reporting in this 29 company industry. Reports are provided on a semi-annual basis.

FLAT GLASS

Energy Efficiency Table	1972	1973	1974	1975
Production (10^6 tons)	2.59			2.22
Btu's (10^{12})	53.1			39.9
Ratio (10^6 Btu/ton)	20.5			18.0
Percent Improvement Over Base Year	Base year			12.2
1980 Goal is 15 Percent				

Form and Quantity of Energy Use

(10^{12} Btu)

Energy Form	1972	1975
Natural Gas	47.13	33.04
Fuel Oil	0.87	3.56
Coal	1.77	0.13
Electricity	3.14	2.84
Propane	0.02	0.05
Other	0.17	0.31
Total	53.10	39.93

Recent Energy Trends

The six reporting companies operated at 71 percent of capacity in 1975 as compared to 93 percent in 1972. In view of the requirement to operate much of the industry equipment at design levels, the 12.2 percent improvement in energy efficiency at lower production levels is noteworthy. Production improved more than 40 percent in the second half of 1975 over the first half, although total production was below that in 1972.

In addition to the positive effect of a higher level of operation in the last half of the year on energy efficiency in this industry, one producer started up a new high-pull furnace replacing a less efficient facility.

Background Information

This report covers approximately 90 percent of flat glass production and six of the seven producers of flat glass. Production in the industry is affected by new housing starts, automobile production, and imports of flat glass. Reports are provided semi-annually through a representative of the six flat glass producers.

GLASS - PRESSED AND BLOWN

Energy Efficiency Table	1972 *	1973	1974*	1975
Production (10^6 tons)	1.81r		1.87r	1.68
Btu's (10^{12})	63.2r		59.2r	51.2
Ratio (10^6 Btu/ton)	34.9r		31.7r	30.5
Percent Improvement Over Base Year	Base year		9.2r	12.6
1980 Goal is 12 Percent				

Form and Quantity of Energy Use
(10^{12} Btu)

Energy Form	1972	1973	1974	1975
Natural Gas	52.6		46.7	39.3
Fuel Oil, distillate	2.2		2.8	2.1
Fuel Oil, residual	1.8		1.8	2.1
Other Fossil Fuels (Propane, coal, mixed oils)	0.2		0.2	0.4
Electricity	6.4		7.7	7.3
Total	63.2		59.2	51.2

Recent Energy Trends

Significant changes have occurred in the industry's energy mix. Natural gas use decreased to 77 percent in 1975 from 83 percent in 1972. Oil and other fossil fuels increased to 9 percent in 1975 from 7 percent in 1972. Electricity increased to 14 percent from 10 percent in 1972. Electricity is being used increasingly for boosting and, in new installations, for melting.

r-Indicates revised data
* Two additional companies have reported data for 1972 and 1974 resulting in higher figures for both production and energy consumption for the industry than previously reported.

Background Information

The manufacturers of pressed and blown glass have contracted with a third party to report their energy data. The reporting group includes all but one major manufacturer and represents 58 percent of shipments and energy use in this industry segment. The industry as a whole is composed of about 200 companies including 44 hand-blown glass manufacturers

GYPSUM ASSOCIATION

Energy Efficiency Table	1972	1973	1974	1975
Production (10^3 MSF*)	14362	15159	12853	10804
Btu's (10^6)	44436	45356	38469	32111
Ratio (10^3 Btu/MSF ½" board)	3094	2992	2993	2972
Percent Improvement over Base Year	Base Year	3.3	3.3	3.9

Recent Energy Trends

Despite reduced output of gypsum wallboard for 1975, the industry's fuel efficiency ratio improved. Lower volumes tend to reduce fuel efficiencies by interrupting what may be continuous operations. Quarterly data has been provided beginning with 1975, and comparisons with previous year data on a quarterly basis will become possible in 1976.

Background Information

The gypsum manufacturers reporting actual unit figures under this program represent over 90 percent of total industry production. All 8 member companies of the Gypsum Association are participating.

* Production is given in the equivalent amount of thousand square feet of one-half inch gypsum board: MSF.

MANUFACTURING CHEMISTS ASSOCIATION

Energy Efficiency Table	1972	1975
Production (10^9 lbs)		423
Btu's (10^{12})	3065*	2941**
Percent Improvement Over Base Year (on gross Btu consumption)	Base Year	4.0
1980 Goal is 15 Percent		
Energy Consumed to Meet Current OSHA and EPA Requirements (10^{12} Btu)		27.8
Energy Consumed to Meet OSHA and EPA Requirements (Percent of Current Consumption)		.9

Recent Energy Trends

For the calendar year 1975 the basic industrial chemicals industry achieved a reduction of 4 percent in energy consumption taking into account the extra energy consumed in meeting regulatory restrictions since 1972. The adjusted energy consumption savings achieved during the same period was 4.9 percent. In 1975, production in the industry was at 74.2 percent of capacity, some 10 percent below the 1974 industry figure of 84.5 percent of capacity. Most chemical processes are less energy efficient when operating below capacity. Lower rates of plant through-put consequently result in lower rates of energy saving.

* The energy that would have been required at base period (1972) efficiencies to produce 423×10^9 pounds (1975 production).

** The actual energy required to produce 423×10^9 pounds (1975 production).

ENERGY CONSUMED IN CHEMICALS PROCESSING

(Calendar Year 1975)

The wide variety of fuels and the quantities consumed in the processing operation of the 107 reporting companies are as shown below. The companies represent over 80 percent of the industry sales.

Distillate Fuel Oil, gallons	411	X 10^6
Residual Fuel Oil, gallons	1079	X 10^6
Liquified Petroleum Gas (LPG), gallons	14	X 10^6
Natural Gas, scf	1305	X 10^9
Other Gas, scf	25	X 10^9
Coke, tons	354	X 10^3
Coal, tons	11.3	X 10^6
Purchased Steam, lbs	88.5	X 10^9
Purchased Electricity, kWh	68.9	X 10^9
Propane, gallons	64	X 10^6
Other Liquids, gallons	50	X 10^6

Background Information

The Manufacturing Chemists Association (MCA) reports on energy use in the production of basic industrial chemicals. In the first comprehensive semi-annual report of the industry for the year ending June 30, 1975, energy savings of 5.0 percent were achieved against the energy consumption base year 1972. Additional energy used as a result of meeting OSHA and EPA requirements amounted to 0.7 percent, which would have otherwise have been reflected in the industry's reported energy savings. This semi-annual report for the basic industrial chemicals industry was compiled by MCA from the individual reports of 100 companies who represent over 80 percent of the industry's sales. The current membership of MCA is 188 companies, some of whom report their energy conservation results through other appropriate industry trade associations (e.g. Pharmaceutical Manufacturers Association).

NATIONAL CANNERS ASSOCIATION

Energy Efficiency Table	1972	1973	1974	1975
Production (Label wt - 10^6 lbs)	20741	21762	22838	17726 p
Btu's (10^9 Btu)	47434	48096	48157	36531 p
Ratio (Btu/label wt lb)	2287	2210	2109	2061
Percent Improvement Over Base Year	Base Year	3.4	7.8	9.9 p

Recent Energy Trends

The latest report submitted by the National Canners Association (NCA) covers the year 1975. However, since all of the participating companies have not yet turned in their 1975 data, the report should be considered preliminary. The present report does include the major companies in the industry and, therefore, is indicative of the general trend in the canning industry. The energy efficiency improvement is dependent on a number of factors including production, weather, seasonality and, of course, energy conservation techniques and systems implemented by the industry.

Background Information

The National Canners Association represents about 90-95 percent of the industry. For the years 1973 and 1974, the reporting companies in the voluntary program accounted for about 65 percent of the industry's production. Since the 1975 report is preliminary, the percent of the industry coverage has not been computed.

p - preliminary data and calculation

PORTLAND CEMENT ASSOCIATION

Energy Efficiency Table	1972**	1973	1974**	1975
Production (10^6 Equivalent tons)*	75.5r		76.08r	63.42
Btu's (10^{12})	578		575r	479
Ratio (10^6 Btu/ton)	7.66r		7.56r	7.55
Percent Improvement Over Base Year	Base year		1.3r	1.4
1980 Goal is 10 Percent				

Form and Quantity of Energy Use
(10^{12} Btu)

Energy Form	1972	1973	1974	1975
Natural Gas	228.8		211.9	164.2
Fuel Oil	63.3		56.6	39.0
Coal and Coke	182.4		201.0	183.6
Electricity	103.9		105.6	91.8
Total	578.4		575.1	478.6

r Indicates revised data.

* For the purposes of this report the Portland Cement Association uses "equivalent tons" to assure comparability of energy data. Finished cement production does not correlate directly with clinker production, which accounts for the major use of energy; for instance, 3 million tons of clinker was imported in 1975. Finished cement production for the years 1972, 1974 and 1975 was 82.1, 80.8 and 69.0 million tons respectively.

** Companies, during the last year, have amended and corrected data for earlier periods resulting in slightly changed figures for production and energy consumption from those previously reported.

Portland Cement Association Cont'd.

Recent Energy Trends

The cement industry operated at about 73 percent of capacity in 1975, a 16 percent decrease from the base year 1972. Fuel usage in 1975, primarily for kiln operation, was 3.5 percent lower than in 1972 and 1.5 percent under 1974. Gains in fuel efficiency are attributed to energy conservation programs which included upgrading chain systems in kilns, improving kiln seals, and reducing the moisture content of the raw feed. Increased electric power consumption, however, offset much of the gain. Much of that increased electric power use is attributed to the substantial increase in the use of coal and petroleum coke. These fuels require crushing, milling and conveying that is not required when oil and natural gas are used for kiln fuel. The industry change in kiln fuel mix is noteworthy. Use of coal and coke increased to 48 percent of all fuel in 1975 from 38.7 percent in 1972. Over the same period the natural gas ratio declined to 42.6 percent from 48.4 percent and petroleum products ratio declined to 9.4 percent from 12.9 percent

Background Information

The two billion dollar cement industry consists of 50 companies of which 47 are in the voluntary reporting system. Close to 98 percent of 1975 production is included in the report provided by the Portland Cement Association. Included are 93 wet-process plants, 63 dry-process plants, 6 wet and dry process plants and 3 clinker grinding facilities.

TILE COUNCIL OF AMERICA

Energy Efficiency Table*	1972	1973	1974	1975
Production (10^6 sq.ft.)	218.2	246.4	242.6	223.6
Btu's (10^{12})	5.5	5.9	6.2	4.7
Ratio (10^3 Btu/sq.ft.)	25.21	23.94	25.56	21.02
Percent Improvement Over Base Year	Base year	5.0	(1.4)	16.6

Form and Quantity of Energy Use (10^{12} Btu)

Energy Form	1972	1973	1974	1975
Natural Gas	5.05	5.33	5.62	3.98
Liquified Petroleum Gas	0.01	0.05	0.04	0.06
Petroleum	0.14	0.19	0.21	0.34
Electricity	0.32	0.35	0.33	0.34
Total	5.52	5.92	6.20	4.72

Recent Energy Trends

Like many industries, tile manufacturers felt the effects of reduced availability of natural gas and made significant efforts to improve efficiency. The cost of fuel also stimulated conservation efforts. One innovation being installed is so-called "fast-firing" which significantly reduces energy requirements. These efforts have led to changes in the energy mix. Natural gas decreased to 84 percent in 1975 after maintaining a consistent level of 90 percent through 1974. Petroleum and LPG use increased to 8.5 percent in 1975 from 2.7 percent in 1972. Use of electricity increased slightly to 7 percent from 6 percent in 1972.

* Number of companies reporting has increased, changing data from 1972, 1973 and 1974 from that in previous report.

Background Information

Of a total of 41 companies in the tile industry, the 16 in the reporting group account for 93 percent of production. Three companies were added to the reporting group in 1975. About 35 percent of tile sold in the United States is imported.

PART II

The industries listed in this Part each conduct active voluntary industrial energy conservation programs. The reporting systems of these industries are in varying stages of development and reflect the progress being made in expanding the voluntary program.

Industry Representative

American Die Casting Institute
Corn Refiners Association
Metal Treating Institute
Motor Vehicle Manufacturers Association
Refractories Institute
Rubber Manufacturers Association
U. S. Beet Sugar Association
U. S. Cane Sugar Refiners Association

AMERICAN DIE CASTING INSTITUTE

Recent Energy Trends

The American Die Casting Institute (ADCI) initiated a formal industry-wide energy conservation program and survey in June, 1975. Estimated energy efficiency improvement is 4 percent during the period 1972 to 1974. Preliminary data submitted by ADCI covering the four calendar quarters of 1974 and 1975 indicates:

	1974	1975
Average Product (10^6 lbs. of metal shipped)	311.3	306.2
Btu (10^9)	5306.5	5574.1
Average Btu/lb	17118	18204

Background Information

ADCI estimates that there are about 1,000 - 1,100 large and small operations engaged in die casting. ADCI represents 169 firms, which account for 50 to 60 percent of known industry capacity. Most member firms are custom die casting operations, while some equipment manufacturers and suppliers are also affiliated with the Institute. There is a wide variety of plants in terms of size and technical sophistication.

ADCI reports that many new firms are now participating in the program and that more extensive data will be made available shortly. The Institute's program includes monthly energy bulletins (disseminating information on energy conservation and technical subjects) and a periodic survey of natural gas deliveries in the industry.

CORN REFINERS ASSOCIATION

Energy Efficiency Table	1972	1973	1974	1975
Ratio (10^3 Btu/lb)	4.2	4.2	4.2	4.0
Percent Improvement Over Base Year	Base Year	-	-	4.8

Recent Energy Trends

The most recent report submitted by the Corn Refiners covers calendar year 1975 and shows a 4.8 percent improvement in energy efficiency as compared to the base year 1972. A number of factors are instrumental in the determination of energy efficiency results in this industry. For example, while production volume is important, the moisture content of the corn is equally as important. One of the reasons for the improved showing in 1975 was that the product was in better condition for initial processing than in other years. Another factor is, of course, energy conservation techniques and systems which have been implemented by the industry firms.

Background Information

The Corn Refiners Association estimates that its membership represent 93 percent of production in the wet corn milling industry. All 11 members of the Association participate in the voluntary program.

METAL TREATING INSTITUTE

The Metal Treating Institute (MTI) energy conservation program is still in the formative stages. While the number of participating companies increased from 42 to 76 over the last half of 1975, all of these firms are not reporting both energy use and shipments. As more firms join the program, more comprehensive data will be developed.

Preliminary information provided by the Institute indicates an increase of 14.7 percent in the Btu consumption per pound of industry production from the third to the fourth quarter of 1975.

	Btu/lb. Shipped
July-September 1975	13230
October-December 1975	15172

MTI indicates that the industry is composed of about 350 small firms which are involved in commercial operations and 800 "captive" plants (internal heat treating departments within larger manufacturing firms). The specific delineation of energy used by these captive plants is a statistically difficult task which is receiving the attention of the industry.

MOTOR VEHICLE MANUFACTURERS ASSOCIATIONS

The Motor Vehicle Manufacturers Association (MVMA) reports that total Btu consumption for domestic automobiles and truck manufacturers declined during 1975 as compared to base year 1972. According to MVMA:

	1972	1974	1975
Btu's (10^{12})	326.6	287.6	268.0

The 1975 decline in Btu consumption was due, in part, to declining auto sales. However, the reduction in energy usage from 1972 to 1975 was also due to positive results from the industry-wide energy conservation program. The program, covering over 95 percent of all domestic motor vehicle production, is presently under review as MVMA attempts to develop an appropriate measure of energy efficiency improvement. It is anticipated that this measure will be based on comparisons between quarterly energy consumption adjusted for production volumes and other pertinent factors.

THE REFRACTORIES INSTITUTE

Form and Quantity of Energy Use (10^{12} Btu)

Energy Form	1972	1973	1974
Coal	9.83	10.64	11.93
Fuel Oil (1 - 2)	2.33	3.80	5.40
Fuel Oil (3 - 6)	2.34	4.54	4.26
Gasoline	0.15	0.18	0.19
Propane	0.15	0.27	0.26
Natural Gas	37.52	43.85	43.58
Electricity	2.93	3.60	3.98
Total	55.25	66.88	69.60

Recent Energy Trends

The refractories industry is constantly adjusting its product mix to the demands of its customers: steel, non-ferrous metal, chemical, petroleum, mineral processing, glass, cement and other major industries. Moreover, all refractory products do not require the same kinds of process energy. The preliminary report reflects these industry characteristics. A comparison of the ratio of fuel types used in the years 1972 and 1974 shows the following:

Form and Percentage of Energy Use

	1972 %	1974 %
Coal	17.7	17.1
Fuel Oil (1 - 2)	4.2	7.7
Fuel Oil (3 - 6)	4.2	6.1
Gasoline	0.3	0.3
Propane	0.4	0.4
Natural Gas	68.0	62.7
Electricity	5.2	5.7
	100,0	100.0

This comparison indicates a slight shift from natural gas to fuel oil. The data reveals a decrease in the proportion of natural gas consumed and an increase in the proportion of fuel oil consumed even though the actual amounts of both increased from 1972 to 1974. In developing a meaningful measure of energy efficiency, the Refractories Institute is concerned with accounting for the impact of changes in product mix and higher quality raw materials upon energy requirements.

Background Information

The Refractories Institute was established in 1951 and its active membership includes 54 major U.S. producers of refractories and 25 associate members who are suppliers of raw material and/or equipment to the industry. The energy report, which only includes data received from refractories producers, was not confined to Institute members. Of 134 known U.S. refractories producers, 57 responded with data. These producers account for 75 to 85 percent of the industry's production and cooperated to the fullest extent in the survey as well as continuing to report in this voluntary program. The Institute is currently investigating the solution of significant problems concerning a meaningful fuel efficiency index.

RUBBER MANUFACTURERS ASSOCIATION

Energy Efficiency Table	1972	1975
Production (10^6 lbs)		6912.61
Btu (10^9)	98.16	92.51
Ratio (10^3 Btu/lb)		13.38

Recent Energy Trends

The Association indicates that the industry-wide energy conservation program can probably achieve a 15 percent saving by 1980 compared to 1972 in terms of Btu per unit of output. This assumption, based on the preliminary findings of the industry group, is subject to revision as more complete information is received and as general economic trends develop.

Background Information

The Association reports the energy use of five major tire companies which represents 80 percent of all domestic manufacturing in the industry. In terms of product mix, the industry reports that while radial tire production requires thirty percent more energy, these tires provide more energy savings in vehicular fuel mileage than conventional tires.

U.S. BEET SUGAR ASSOCIATION

Energy Efficiency Table	1967 - 1972*	1974
Ratio Btu (10^6)/100 lbs refined sugar	1.28	1.19
Percent Improvement Over Base Period	Base Period	7.0

Recent Energy Trends

Beet sugar producers have substantially curtailed the use of natural gas in their processing operations in recent years. In 1970, a record 79 percent of the Btu's consumed by beet sugar manufacturers was obtained from natural gas fuel. Spurred by curtailments and rapidly rising fuel prices, the industry has been induced to take steps to reduce natural gas usage while increasing the amount of coal and other forms of energy.

Form and Percentage of Fuel Use

	1970 %	1975 %
Natural Gas	79	60
Coal	14	23
Fuel Oil	3	7
Other Fuels	4	10
Totals	100	100

* Base is for the Years 1967 - 1972, inclusive

A major problem for the industry in balancing energy use is the highly variable impact that weather conditions, especially moisture, have upon the amount of sugar that can be processed from a given beet crop. In addition, sugar yield varies due to the condition of the beets when harvested and the extractable sugar they contain.

Background Information

The Beet Sugar Association reports 100 percent participation in its industry-wide program. The ten members of the Association operate all but one of the 55 beet sugar processing plants in the United States. Together they produce more than 60 million hundredweight bags of sugar annually, which represents half of the nation's annual sugar production and approximately a third of U.S. consumption. Two-thirds of the sugar consumed in the United States is in the form of processed foods and beverages such as cereals and soft drinks.

U.S. CANE SUGAR REFINERS ASSOCIATION

Energy Efficiency Table	1966 - 1973*	1974	1975**
Ratio Btu (10^3)/cwt Refined Sugar	293.4	262.4	260.5
Percent Improvement Over Base Period	Base Period	10.6	11.2

Recent Energy Trends

Weather variations have substantial impact on the energy consumption of the industry due to the mositure content of the sugar cane when processed. The continuing increase in energy prices and commitment of members of the industry to national goals of energy conservation have resulted in an improvement in energy efficiency of 11.2 percent compared to the base period of 1966-1973.

Background Information

The U.S. Cane Sugar Refiners Association is presently composed of 12 member firms. All of these firms are voluntarily reporting their energy conservation results through the Association for aggregation into the industry report to the federal government.

* Base is for the Years 1966-1973, inclusive
** Data for the period July 1 - December 31, 1975

PART III

This industrial energy conservation program is a voluntary one. Participation has been discussed with 52 groups since 1974. Most have chosen to participate. Among those industries conducting energy conservation programs but remaining in the initial stages of participation in or discussion of the voluntary national programs are:

Industry

Air Conditioning and Refrigeration (2 groups)
Aircraft Manufacture (2 groups)
Beverages (2 groups)
Clay Pipe
Cutlery,Handtools and Hardware
Dairy Products
Electronics (3 groups)*
Forging
Frozen Food
Household Appliances (2 groups)
Lime
Paving and Roofing Materials
Pharmaceuticals
Grocery (2 groups)

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NOTE: The terms "industry" and "industry groups"are used in a general sense in this report and are not related to any standard definition.

Where shown, production data was collected from those firms actively participating in the program at the time, and is not expected to equate to total industry production figures published elsewhere.

* Some overlap with members of the Computer and Business Equipment Manufacturers Association.