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Energy in American Homes: Changes and Prospects†

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ABSTRACT

Average energy consumption per U.S. household has fallen by just under 20 percent in the last ten years. Much of this drop occurred after 1979, when gas and electricity prices as well as oil prices rose in real terms. The response of households to higher prices has involved physical modifications on and in the home and changes in behavior. Many actions have been taken by households, but the most important single factor has been a significant reduction in indoor temperatures. The greater energy efficiency of new homes and appliances has also helped to depress residential energy demand, although improvements have levelled off in the last few years. There are signs that the momentum of energy conservation is less now than it was two years ago, but it appears that energy prices will be high enough to discourage households from returning to former energy-using practices. Along with the continued replacement of homes and appliances with more efficient models, and other factors such as the migration to warmer regions and the movement to more apartments and smaller homes, this will probably keep U.S. residential energy consumption at about its present level through the 1980s.

1 INTRODUCTION

In the last ten years the number of people in the United States increased by over 20 million, and the number of households they live in grew by 13 million. The average household today has both more appliances and more income than it did in 1973. Despite these changes, the total amount of energy used in American homes is actually lower today than it was in 1973.†

Clearly, something has happened that was unexpected in the days before oil and energy captured our attention. But what is the outlook from where we now stand? Has growth in residential energy demand been only temporarily slowed, awaiting a healthier economy and a respite from rising energy prices to continue on an upward path? Or has it peaked, already begun on a long, slow descent as more energy-efficient homes and appliances replace the energy guzzlers of yesteryear?

A prudent prognosis requires an understanding of just what has gone on during the ten years in which the American people became convinced that energy was something to worry about. We know that Americans have tightened their belts (and put on extra sweaters!) since 1973. But how tight are those belts? And further, how tight are our homes? As we try to make sense of the changes, we need to keep some key points in mind:

- Inflation ate up much of the nominal increase in energy prices between 1974 and 1979. This is particularly true with respect to electricity, for which the real price hardly increased at all between 1974 and 1980.

- The much-publicized drop in oil prices should have only a small effect on overall residential energy demand, since less than one-fifth of all households now use oil. The most important residential fuels are natural gas and electricity, and the real prices of both are expected to increase further.

- Prices are important, but one can pay too much attention to them as the be-all and end-all of explaining factors. Some of the forces shaping residential energy demand have little to do with the price of energy, and it is important to recognize that growth

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†Energy consumption refers to site energy. Data have been adjusted for climate variation among years. Sources for energy consumption data are the U.S. Department of Energy,[1] the American Gas Association,[2] and the Edison Electric Institute.[3] Estimates of wood energy consumption[4] are included in total residential energy consumption.

in residential energy use would have slowed even if there had been no price shocks. Consider that by the time of the 1973 oil embargo, many major home appliances were already approaching full saturation of their markets, population growth was slowing, Americans were migrating to warmer regions of the country, and a period of reduced income growth (in part, a result of the oil price shock) was beginning.†

2 THE RECORD SINCE 1973

Average energy consumption per household in the U.S. has fallen by just under 20 percent in the last ten years (see Fig. 1). Not all of this can be credited to conscious attempts to conserve energy, however. Part of the decline is due to the increasing penetration of electricity in the space heating, water heating, and cooking markets, since unlike oil and gas, electricity's conversion losses are at the power plant and not at the home. Another factor behind the drop is the fact that the average home has only 2.75 persons today, well below the average of 3.11 in 1970. This statistic is reflected in the greater proportion of households found in townhouses, apartments, and mobile homes, all of which tend to require less energy than single-family homes. One other factor depressing residential energy use is the migration of households to warmer climates. In 1970, 48 percent of all households were located in the South and West regions of the country. By 1980, this percentage had increased to 52 percent. This migration has probably reduced energy requirements overall, though produced a greater total demand for air-conditioning.

Working against a drop in consumption is the fact that the average household has a greater array of appliances today than it did ten years ago. In particular, the percentage of homes with air conditioning rose from 37 percent in 1970 to 57 percent in 1981, and almost half of the air-conditioned homes have central systems today as opposed to only 30 percent in 1970. Market penetration of other appliances has also risen in the last ten years (see Table 1).

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†Growth in per capita real disposable income fell from an average annual rate of 3.2 percent between 1960 and 1973 to 1.2 percent between 1973 and 1980.

The increased use of electric appliances has somewhat changed the end-use structure of energy consumption in American homes, though space heating remains by far the largest consumer of energy. Most of the conservation since 1973 has affected home heating, however, and consequently, the share of total residential energy use claimed by heating has fallen from 67 percent in 1970 to 63 percent in 1980. Air-conditioning and other electric appliances have gained the most, while water heating and cooking have fallen slightly as a piece of the residential pie.

The mix of fuels used in the residential sector has changed considerably since pre-embargo days (Fig. 2). Natural gas still accounts for nearly half of the energy used in American homes, just as it did in 1970, but this seeming stability in fact hides substantial change. The share of electricity in the total picture has grown from 15 percent in 1970 to about 25 percent today, while oil's share has fallen precipitously from just under 25 percent in 1970 to only 13 percent today. Wood, the fuel of our forefathers, has made quite a comeback, and now accounts for nearly 10 percent of total residential energy use. Below we briefly discuss the fate of the main fuels used in U.S. households.

2.1 Natural Gas

Residential gas demand is at about the same level today as it was way back in 1969. Since there are over four million more residential gas customers today than in 1973, this stagnation and slight decline (since 1972-73) means that there has been a strong drop in average gas use per customer. From a high of 130 million Btu's in 1973, this indicator fell to about 107 million Btu's in 1981 (Fig. 3). This downward trend apparently slowed in 1982, despite sharp increases in the price of gas.

Gas has been holding its own in the home heating market, where its share has remained stable at about 55 percent. This has occurred only because of conversions to gas (nearly all from oil), since gas heating is installed in under 40 percent of new single and multi-family homes. In the 1979-81 period, 1.4 million homes were converted to gas heating.[5] With oil and gas prices now moving in opposite directions, however, the pace of conversions from oil to gas has slowed considerably.

2.2 Electricity

Aside from wood, electricity was the only residential fuel whose use continued to increase after 1973. To be sure, the growth since 1973 -- averaging just over 3 percent per year -- is nothing like that seen in the golden years of 1965 to 1973, when residential sales zipped along at an 8 percent clip. This growth was fuelled by appliance acquisitions and the increasing popularity of electric heating in new construction, which went from 36 percent of all new single-family homes in 1972 to a high of 52 percent in 1978.[6] This trend has since leveled off, but with so much of new construction taking place in warm climates, the share of electricity in the total home heating market is likely to gradually increase from its present level of 19 percent.

Because electricity is used for heating and cooling as well as for a host of other things, trends in demand are difficult to interpret. What seems clear, however, is that average electricity use per customer, which continued to grow after 1973 (though much slower than total demand), has more or less leveled off (Fig. 3). We conclude from this that a combination of conservation actions taken by consumers and improvement in the efficiency of new appliances has approximately balanced the upward pressure coming from the increasing number of electric-heating customers.

2.3 Oil

The bottom has dropped out of the barrel for oil in the residential sector, and even the recent decline in prices is unlikely to cause a dramatic change of fortunes. Residential use of oil today is just over half of what it was ten years ago. Total residential oil consumption fell sharply after the 1973 price rise, but then rose again until the 1979 oil price shock. The crunch came between 1979 and 1981, when consumption fell from 1.7 to 1.2 quadrillion Btu's, a drop of 30 percent.[7] The number of homes using oil for their primary heating needs, which had been falling gradually from a high of 17 million in 1973, plummeted to nearly 14 million in 1981.[8] This was due to conversions to gas, installation of wood stoves, and to the near disappearance of oil from the new home heating market. Average consumption per household has fallen drastically as well, reflecting reduced indoor temperatures, retrofit efforts, and use of secondary heating equipment (see Fig. 3). Data for 1982 suggest a more modest decline in residential oil consumption -- about 7 percent -- than in 1980-81.

3 BEHIND THE TREND

All in all, it is safe to say that most of the fall in average energy consumption has been due to the conscious efforts of consumers squeezed between rising energy costs and slower income growth. The squeeze on consumers apparently took hold most dramatically after the second oil shock in 1979. Average energy consumption per household fell from 130 million Btu in 1979 to 118 million Btu in 1981 (see Fig. 1). Significantly, it was in this period that the real prices of gas and electricity, as well as oil, really took off (Fig. 4). Electricity prices had actually declined in real terms in the late 1970s, and the average price of gas rose very moderately before 1979.

The climb of prices occurred during a period when consumers' ability to meet higher energy costs was limited by economic hard times. Real disposable personal income, which grew from $3700 per capita in 1970 to $4510 in 1979, just barely increased from 1979 to 1981. Thus, consumers had less wherewithal to absorb higher energy costs.

The combination of stagnant income and higher interest rates after 1979 probably had a dampening effect on consumers' willingness to make major investments in improving the energy efficiency of their homes. Thus, it is significant that it was also during this period that government and utility programs designed to financially encourage conservation (as opposed to mere exhortation) began to come into full swing. Still, the number of people claiming the federal energy conservation tax credit for installation of insulation or storm windows fell in 1980 and again in 1981.[9] This may reflect some saturation of the market for insulation and storm windows in existing homes, and suggests that the big drop in energy consumption in 1980 and 1981 was primarily due to changes in people's behavior, and not to massive retrofit efforts.

The response of households to their energy dilemma has involved two elements that are very important to keep separate. One is change in behavior: lower thermostats, closed rooms, use of room heaters. The other is physical modifications on and in the home: more insulation and storm windows, caulking and weatherstripping, better appliances.

Changed behavior can take several channels that affect energy use:

- The use of secondary heating systems -- wood stoves, portable electric heaters, and more recently, kerosene heaters -- has become more common. The number of households reporting use of a secondary system rose from 22 million in 1978 to 29 million in 1980 (35 percent of all households).[10] [11] Twice as many

households acquired portable electric heaters in 1980 than in 1978 or 1979,[12] a sign of the big behavioral response to the energy price increases of that time. In some cases -- particularly where wood is available -- the primary heating system has become the backup system. Nearly four million households acquired wood stoves in the 1978-80 period, and another 1.3 million installed fireplaces (see Table 2).

- Better maintenance of furnaces and the home as well as different heating practices have also become more widespread. By maintaining equipment more regularly, by keeping doors and windows properly weatherstripped, by shutting off unused rooms, consumers reduce energy use without sacrificing their perceived amenity.

- Although these measures have been important, it remains the case that Americans definitely live in colder homes today than they did ten years ago. In 1973, some 85 percent of all households kept their daytime indoor temperature at a cozy 70° or higher.[13] By 1981, similar heating practice was reported by less than 45 percent of households.[14] Whether the average American home has become uncomfortable is an important question to which we will return.

While the decline in indoor temperatures has probably played the major role in reducing average household energy use, it is also true that American homes are better able to keep heat in (or out, in the summer). The percentage of single-family homes with attic or ceiling insulation rose from 71 percent in 1974 to 77 percent in 1980, and the percentage of all households reporting storm windows over all windows increased from 45 percent to 52 percent.[15] What is unfortunately not known is the amount of insulation in homes, though it is certain that it has increased since 1974. Some 12 million households reported adding attic/roof insulation in the 1978-80 period, and nine million installed wall insulation.[16]

Part of the improvement in the housing stock is due to the fact that a large portion of it is recently built. Of the 83 million occupied housing units in the U.S., nearly 20 percent have been added to the stock since the 1973 oil embargo brought energy consciousness to American home buyers and builders. These homes are somewhat larger than those built earlier, and better appointed with appliances, but they also are built with more energy-conserving features. Between 1973 and 1979, the average R-value of ceiling insulation in new single-family homes nearly doubled from just over R-14 to R-26 (see Table 3).[17] The use of

double and even triple glazing for windows has increased as well. (These changes are more impressive when one considers that the proportion of homes built in mild climates increased between 1973 and 1979.)

4 LOOKING AHEAD

Some 230 million fairly unpredictable people affect energy use in American homes, as do mention oil ministers and congressmen. We can expect that the future will be different from what we think it will be, but in fact some of the many things that will shape the nature of residential energy use in years to come can be assessed with reasonable confidence.

Along with the guiding and limiting influences of price and income, residential energy use depends most heavily on (1) the number of households; (2) the kind of climate they are located in; (3) the kind of homes people live in; (3) the thermal characteristics of homes; (4) the appliances in them; and most importantly, (5) the behavior of the people in them.

4.1 Household Numbers

During the 1970s, the number of households grew faster than the population due to the declining number of persons in the average household. Population growth in the U.S., which dropped from an annual average rate of 1.22 percent in the 1960s to 1.08 percent in the 1970s, is expected to continue to slow. The middle series put out by the Bureau of the Census shows the annual rate of growth declining from 0.9 percent in 1981 to 0.6 percent in 2000. Household size will probably continue to decline gradually -- perhaps to 2.5 or less by the end of the century -- though this will depend on incomes and housing costs. (Sweden's average household size is down to 2.5 today, but its population has a very different composition.) Recent forecasts place the number of households in 1990 at around 95 million,[18] about 12 million more than exist today. This growth is driven to a large degree by the entry into the housing market of the last half of the "baby boom" generation.

4.2 Household Location

Over the last ten years Americans have moved South and West, seeking both sun and jobs. New housing construction has followed this movement. The share of new single-family homes built in the South and West has increased from 65 percent in 1977 to 72 percent in 1981.[19] The movement in apartments is even stronger, and mobile homes, which have accounted for 17 percent of all new homes completed in the last two years, are found mostly in the South and West as well. Whether this trend will continue as it has to date is difficult to say, but the number and proportion of retiring (and often, moving to warmer areas) people is increasing. Further, the fastest-growing group in the population, Hispanics, is also located predominantly in the South and West. Thus, it appears that a substantial majority of new residential construction will occur in areas with modest heating but higher air-conditioning requirements.

4.3 Housing Type

Two-thirds of all American homes are in single-family detached structures. Small (with two to four units) and large apartment buildings house 12 percent and 15 percent of all households, respectively. Nearly 5 percent of households are in mobile homes. With the exception of mobile homes, whose share has increased from 3 percent, these figures are not substantially changed from 1970.

The composition of new construction has jumped around in the last ten years, with the share of single-family homes (out of total completions including mobile homes) climbing from 45 percent in 1973/74 up to 66 percent in 1977, and then falling to 55 percent in 1980/81 and 51 percent in 1982.[20] The trend toward smaller families and households, as well as economic pressures making home ownership difficult, should act to increase the share of apartments and probably decrease the size of single-family units. The average floor area of new single-family homes, which increased throughout the 1970s, has peaked and may well be on the decline.[21] Since apartments have less wall area exposed to the elements, the movement toward them tends to reduce energy use. And since electricity -- which is both metered and relatively expensive -- remains overwhelmingly the fuel of choice in new apartments, the trend toward smaller households housed proportionately more and more in apartments will probably exert downward pressure on total energy demand.

4.4 The Building Shell

How much improvement can be expected in the building shells -- the envelope that keeps heat in or out -- of American homes? This depends on two elements: replacement of today's homes through new construction, and improvement of existing homes. New homes are certainly better than older homes when it comes to their thermal characteristics.[22] But the increase in the amount of insulation installed in new homes has leveled off in the last few years, despite the increases in energy prices. And the lack of penetration of walls with insulation higher than R-11 indicates that most builders have been unwilling to change construction techniques to install better wall systems. With builders highly conscious of first cost, further gains may be slow in coming without some institutionalized means of encouraging greater energy-efficiency. Even so, turnover of the housing stock will tend to reduce energy use per dwelling. The speed of penetration of new units depends, of course, on the state of the economy. The faster the economy grows, the faster that newer, more energy-efficient homes (and appliances) move the older stock out of the way.

Since it appears that housing turnover in the 1980s will be much slower than it was in the 1970s, most of the medium-term improvement in the housing stock will have to come from existing homes. The home retrofit market is difficult to judge, since the present level of insulation in homes is not known. In general, it seems that many homeowners have done the easy-to-do measures, and future improvements will probably come at a slower pace than in the recent past. The state of rental housing has not improved nearly as much, and gains could be made here if institutional barriers can be overcome. Incentive programs, financing assistance, and programs targetted to rental housing will probably be of critical importance to the continued improvement of existing homes.

4.5 Home Appliances

Major home appliances offered for sale have become considerably more energy-efficient in the last ten years. Compared to 1972 products, the average reduction in electricity use of appliances sold in 1981 was 31 percent for refrigerators, 42 percent for freezers, air conditioners, 32 percent for clothes washers, 31 percent for dishwashers, and 9 percent for room air conditioners.[23] While these gains are significant, greater improvement is cost-effective.[24] There is compelling evidence, however, that consumers are significantly underinvesting in energy efficiency. A

recent study indicates that consumers in the aggregate are purchasing efficiency in new appliances as if their discount rate was greater than 100% for most products, and as high as 300% for some appliances.[25] Since appliance energy standards at the national level have a dim future with the present administration, and since electricity prices are unlikely to make any huge leaps upward in the near future, the incentive for appliance manufacturers to further improve the energy efficiency of their models may prove small.

4.6 People

Energy use in similar homes located in similar climates can vary greatly: people matter. A recent national survey done by The Cambridge Report shows that although two-thirds of Americans say that they are doing more now to conserve energy than they were a few years ago, nearly half say that they could do more. Whether this means that they could cut back further in amenity levels or could make more technical improvements is unclear. But the fact that a majority of Americans (according to the same survey) now think that energy conservation means using energy more efficiently as opposed to simply using less energy suggests that conservation has become less associated with sacrifice.

The important question is whether American homes have become uncomfortable in the minds (and bodies!) of their occupants. Reference to European practices provides some insight. The warmest homes in the industrialized world are probably in Sweden, where people still heat to a 24-hour average of 68° F or more.[26] The English and Dutch, on the other hand, tend toward warming individual rooms, and maintain a chilly whole-house temperature in the 57-64° range. Homes in France, Germany, Denmark, and the U.S. are in between Sweden and the Netherlands. Relative to pre-1973 practice, Americans have cut back quite a bit. Given the poor thermal integrity of American homes in pre-embargo times, the benefits of doing so were high. As homes become more energy-efficient, however, the gains from reductions in indoor temperature become less dramatic.

This points to a key interaction between energy efficiency and consumption. People living in efficient homes and using more efficient appliances have less financial incentive to change their behavior to save energy, since the improved home and equipment efficiency has already reduced their energy costs. (This has been the case in Sweden.) Indeed, some of the gains from efficiency improvements may be eaten up by increased use of equipment, since the marginal cost to consumers of

that use is reduced. It is likely that many Americans would prefer to be somewhat warmer at home than they are now, and if the pressure of increasing prices abates, some upward creep in thermostat settings is possible. More likely though is that people will generally continue the practices that have become part of the new energy era. As time goes by, these practices may become habits, and the days of keeping the whole house at shirtsleeve comfort levels will be perhaps but a dim memory.

4.7 Energy Prices and Consumer Income

Economic variables will play a key role in determining the strength of the trends discussed above. Income affects the speed with which the housing stock expands, which in turn affects the speed with which new, more efficient homes replace old ones. Energy prices affect the level of efficiency that consumers will demand in new products, and price and income shape the degree to which consumers alter their behavior or invest in improving their homes. Relative price movements also influence interfuel competition within the overall picture.

It is important to bear in mind that people's impression of price is perhaps more influential than actual real prices. Between 1973 and 1974, for example, natural gas consumption per customer declined considerably, though the real price of gas did not increase at all. This may be attributable in part to the general attention that energy price increases were receiving. Today, although oil is not a major fuel in the residential sector, the media's focus on its price movements may have a spillover effect on consumption of other fuels.

Price prospects differ among the residential fuels. Oil prices are expected to remain stable or even continue downward for a while. But oil does not play nearly the role in the residential sector that gas and electricity do. Electricity prices on the whole seem likely to climb gradually as new, expensive power plants enter the rate base. With gas, the situation is very dependent on political factors and interfuel competition in the industrial market, and there is considerable debate concerning the likely price path of gas if controls are lifted. Overall, the outlook for at least the next few years is not one of relief from the pressure of energy prices.

5 CONCLUSION

Energy conservation has made substantial inroads in the U.S. residential sector. Considering the future of energy prices, it is safe to say that most of the gains are here to stay. American homes are not the energy sieves they were ten years ago, and the appliances in them are more efficient. Even if energy prices were to miraculously plummet, people are not going to rip out their insulation or trade in their new refrigerators, and turnover of homes and appliances will gradually improve household energy efficiency. It is true that Americans are not as warm in the winter as they once were, and some tradeoff of efficiency gains for increased indoor comfort can be expected. But it appears that consumers will simply be unable to afford the heating practices of a bygone era.

The end of the recession will not see the upturn in residential energy demand that will occur in industry. Indeed, the improving economic outlook will tend to dampen energy demand due to the accompanying faster turnover of homes and appliances. There are signs, however, that the momentum of energy conservation is not what it was two years ago. Improvements in the energy efficiency of new homes and appliances have levelled off, and energy consumption in 1982 suggests that consumers are not cutting back like they did before.

Neither this nor the energy savings that have occurred to date should obscure the fact that there remains considerable potential for energy conservation. Opportunities even at today's energy prices have by no means been exhausted. Few homes have been so well tuned that they are truly "optimal" to today's prices; this is also true of new homes and appliances. Working in the same direction as conservation are factors such as the migration toward warmer climates and the movement to more apartments and smaller homes. Taken together, the forces pushing downward on energy demand are likely to balance the increasing number of households using energy. Although many things will affect the rate of change, stable demand or even a gradual decline looks to be the most likely energy future for American households.

Acknowledgments

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Table 1
Saturation of Selected Appliances

	1973	1981
	(percent of households)	
Automatic clotheswasher	70	70
Dishwasher	25	35
Color television	53	80
Clothes dryer	53	60
Gas	16	13
Electric	38	47
Refrigerator	99	100*
Frost-free	51	60
Freezer	34	41
Range/stove		
Gas	52	44
Electric	46	56

Sources: Washington Center for Metropolitan Studies, Lifestyles and Energy Survey (for 1973); U.S. Department of Energy, Residential Energy Consumption Survey (for 1981)

* - 12% of households had 2 or more refrigerators.

Table 2
Conservation Actions by U.S. Households

	1978	1979	1980
		('000 households)	
Closed certain rooms[a]	3109	na	na
Used kitchen stove, fireplace, or portable heater[a,b]	5120	5601	5205
Acquired supplemental heating equipment[c,d]	3294	3606	5474
Stove	976	1267	1558
Fireplace	330	361	642
Portable electric heater	1228	1225	2494
Room heater w/o vent	211	191	410
Heating equipment maintenance or modification[b,c,e]	9910	10447	na
Insulation items added[c,f]			
Storm windows or other protective covering	4447	4455	4406
Storm doors	2994	3162	2603
Attic/roof insulation	4175	4199	4050
0-6 inches added	2007	1989	na
6+ inches added	1588	1528	na
Wall insulation	2974	3153	2921
Caulking/weatherstripping	11364	12069	10614
Other insulation	2440	2850	4229

Source: U.S. Bureau of the Census, "Annual Housing Survey"

[a] Refers to 1977/78, 1978/79, and 1979/80 winters, respectively

[b] Excludes households who reported using room heaters without flue or vent, fireplaces, stoves, and portable heaters as main heating equipment

[c] During 12-month period before survey

[d] Excludes households who reported using fireplaces, stoves, and portable heaters as main heating equipment

[e] Owner-occupied units only

[f] Includes 1-unit structures and mobile homes

Table 3
Conservation Practices in New Single-Family Detached Homes
U.S. Totals

	1973	1974	1976	1979	1980	1981
Window glazing (%)						
Single	60	52	50	43	36	38
Double	40	48	49	55	58	54
Single w/storm	16	24	18	24	n.a.	n.a.
Double[a]	24	24	31	31	n.a.	n.a.
Triple	-	-	1	2.5	6	8
Double w/storm	-	-	1	2	n.a.	n.a.
Triple	-	-	-	0.5	n.a.	n.a.
Average R-values of insulation:[b]						
Exterior walls	10.0	9.2	12	12	12	11.4
Flat ceilings	14.4	15.8	18	26	25	24.9
Floor joist	4.0	4.3	-	8	6	6.9

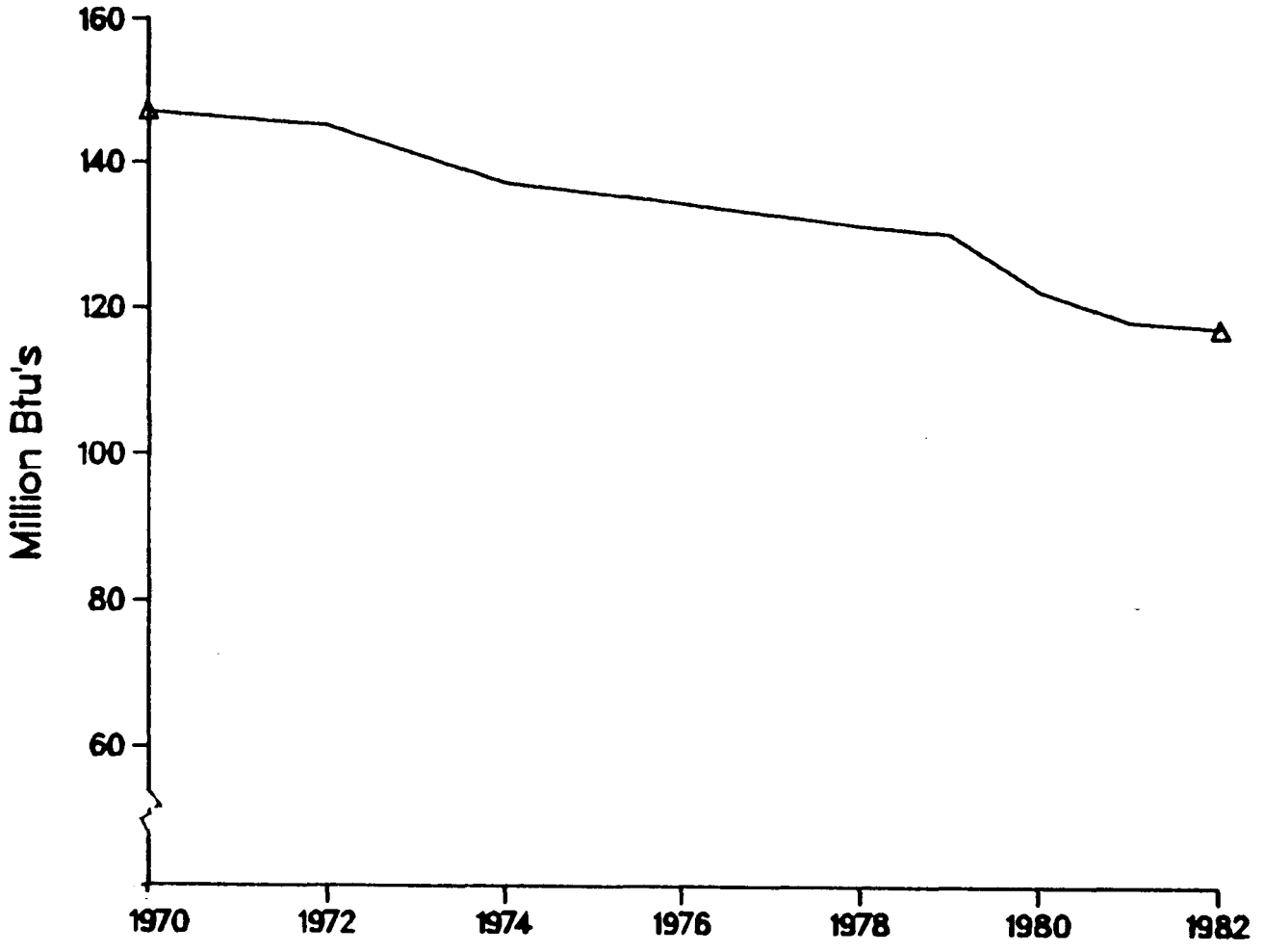
Source: National Association of Home Builders Research Foundation

[a] Insulating glass.

[b] Excluding siding and sheathing.

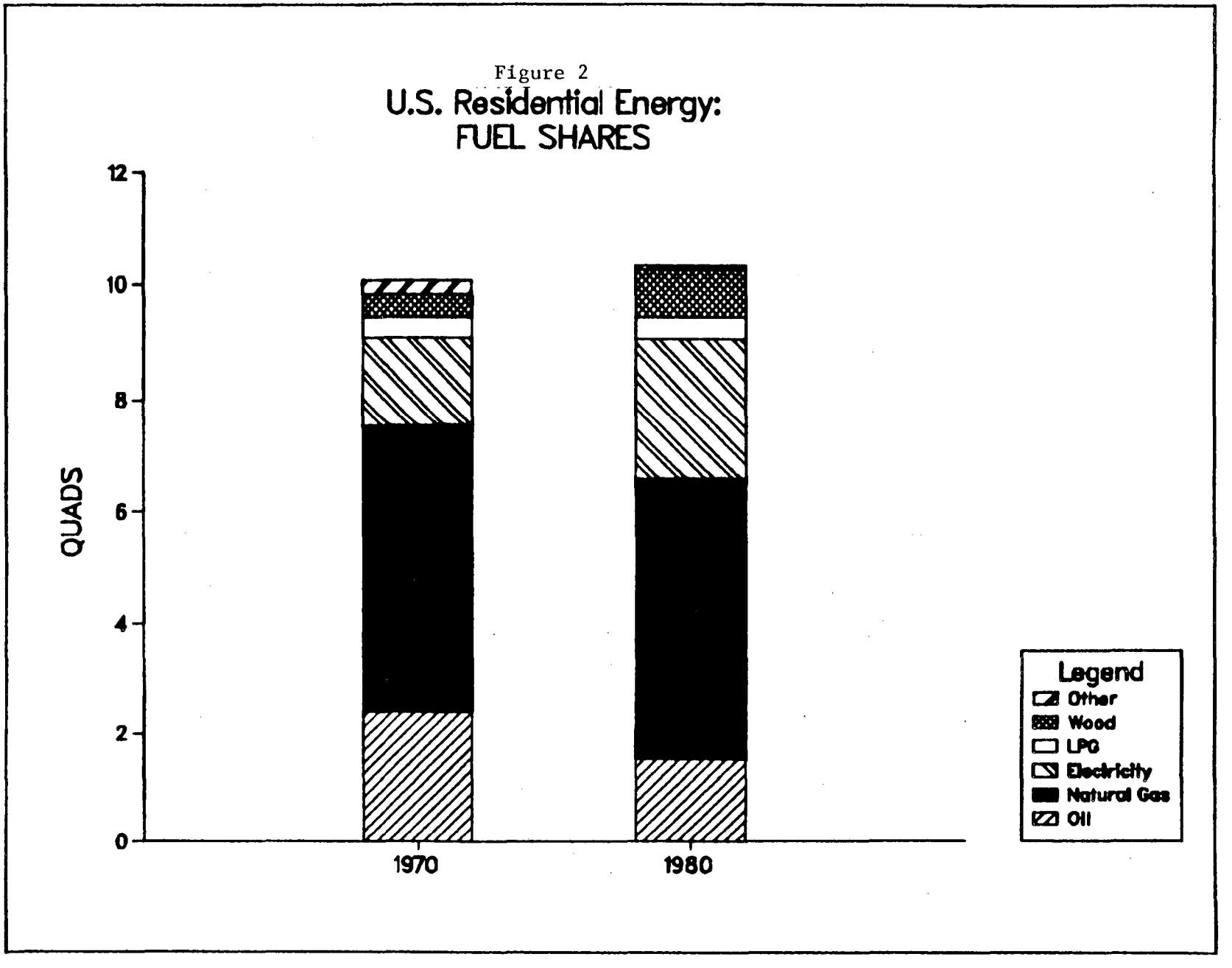
Figure 1

AVERAGE ENERGY CONSUMPTION PER HOUSEHOLD
Values adjusted to normal climate



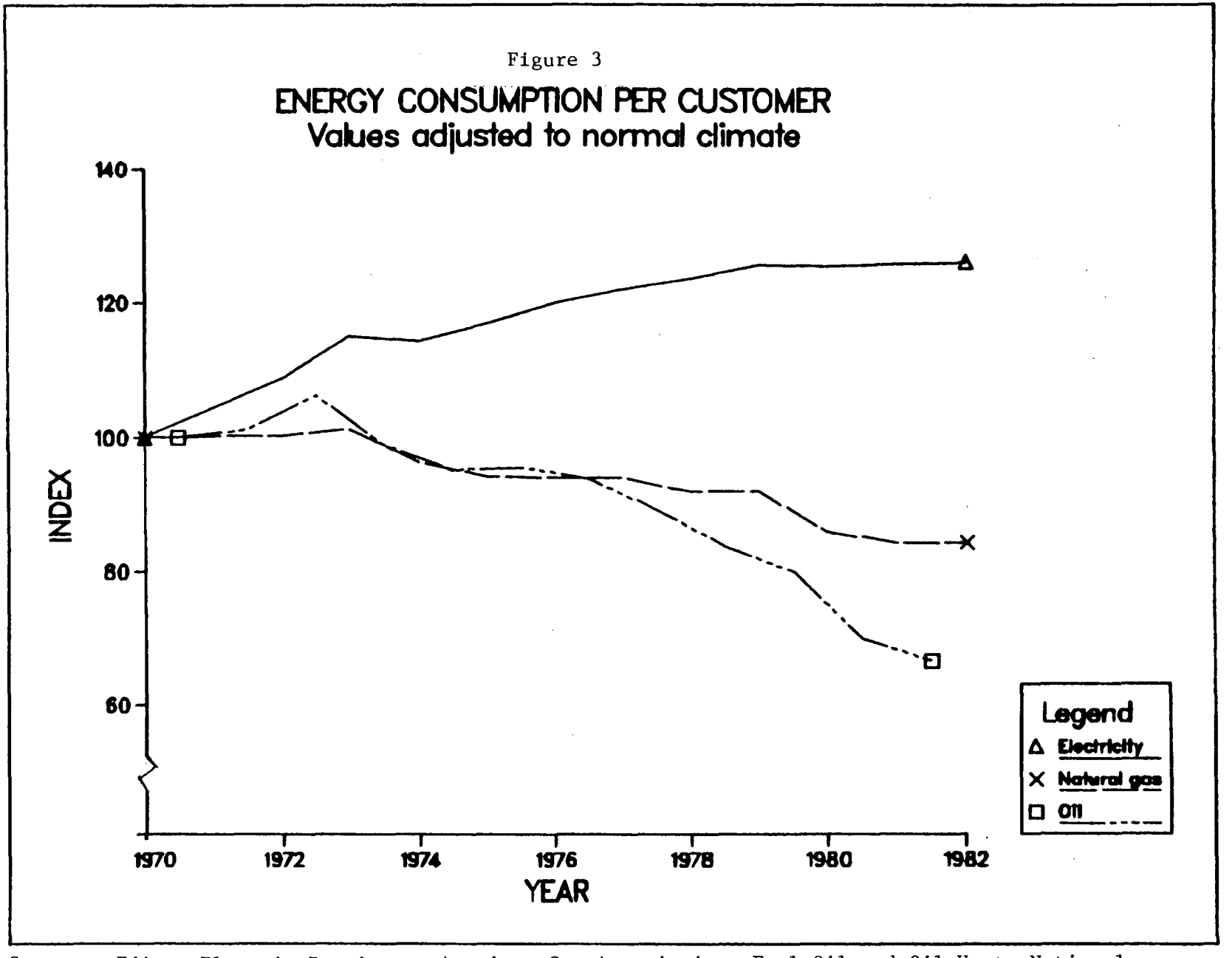
Sources: U.S. Department of Energy, American Gas Association, Edison Electric Institute, U.S. Bureau of the Census, National Climatic Center. Consumption is site energy.

Figure 2



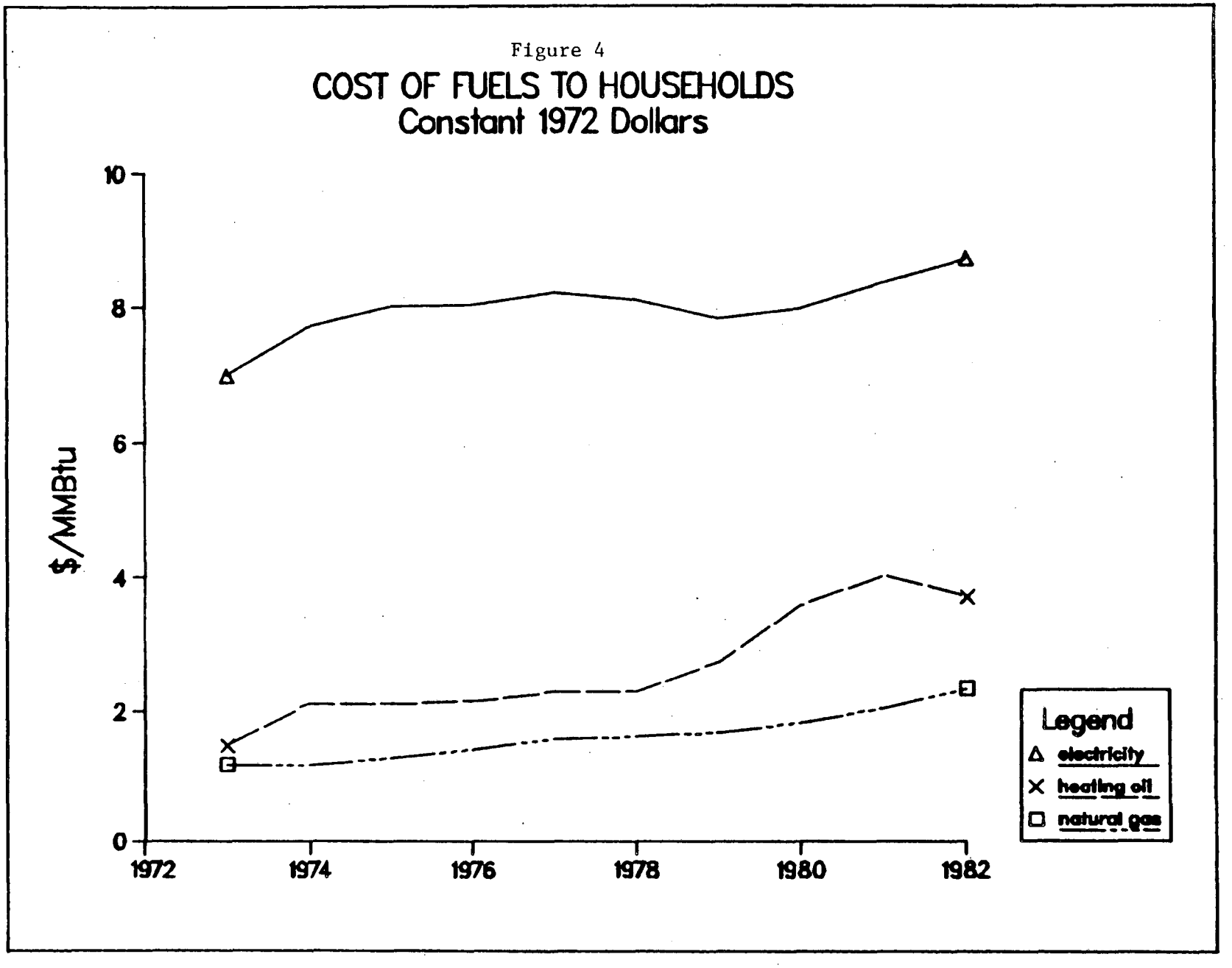
Sources: U.S. Department of Energy, American Gas Association, Edison Electric Institute.
Consumption is site energy.

Figure 3



Sources: Edison Electric Institute, American Gas Association, Fuel Oil and Oil Heat, National Climatic Center. Consumption is site energy.

Figure 4



Source: U.S. Department of Energy, Monthly Energy Review

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