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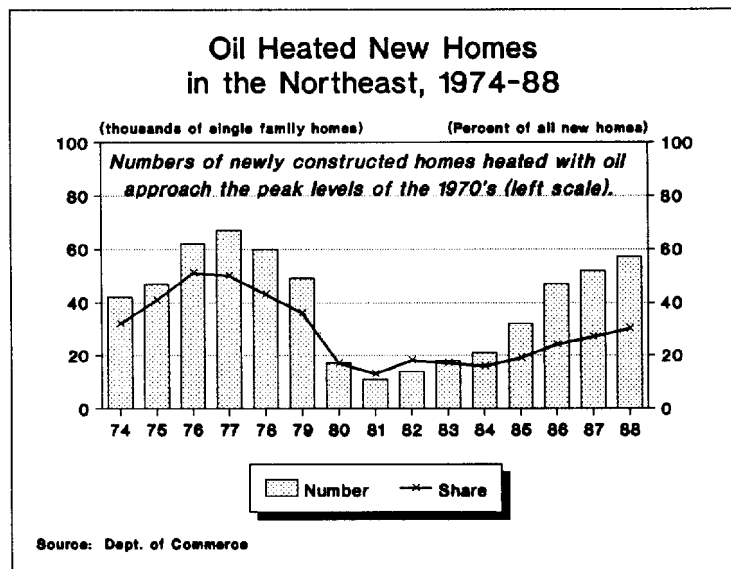
**Oil Heat's Comeback  
in the Northeast**

**October 1989**

The number of newly constructed homes in the Northeast heated with oil has been growing in recent years, and for single family homes now approaches the peak levels of the late 1970's. Its new popularity is rooted in homes built by or for the owner, capturing more than half of this relatively small market in the Northeast in 1988. Other regional markets for installation of oil heat, however, have dwindled. Outside of the Northeast, oil heat does not capture a measurable share of the new home market. This brief memorandum reviews oil heat's performance in the new home market, using primarily the Bureau of the Census data supplied in its "Construction Report" series.

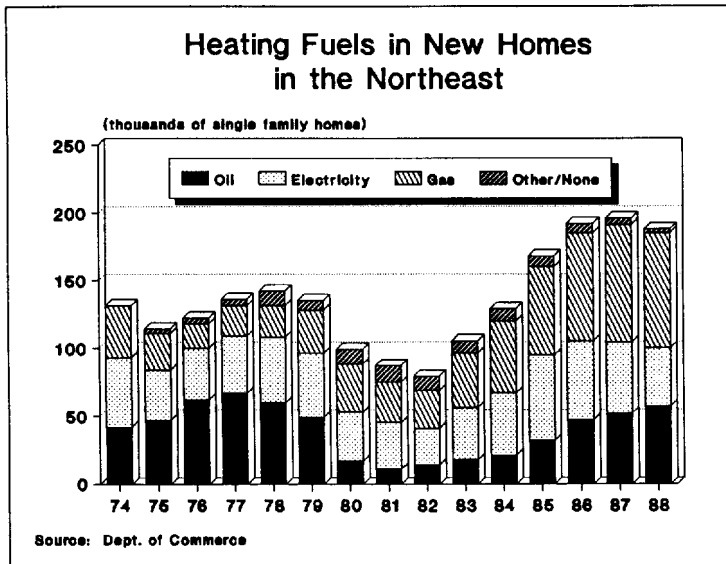
■ Oil heat's fortunes in the new home market have rapidly improved in the 1980's, as prices fell from their 1981 high. The increase in the oil-heated share of the market began even before the oil price decline of 1986. By 1988, oil heat's share in the Northeast's new single family home market had risen to 30%. Distillate fuel oil prices delivered to consumers peaked in 1981, at almost \$1.20/gallon. Oil heat's nadir in the new home market was also 1981, when a combination of a building slump and the recent price increases gave oil a 13% share of an 87,000 single family home market, or 11,000 new oil heated homes. By 1988, the price had fallen to \$0.84/gallon, a 30% decline overall, with more than half of the decline occurring in 1986. There were 188,000 single family homes completed in the Northeast in 1988. Oil heat was installed in 57,000 of these, 30% of the total.

Figure I



■ *Oil heat's recovery in the Northeast has come at the expense of electricity's share, not gas's. The gas share has recovered very sharply from its low point in the 1976-78 period. 1988, however, was the first year since 1979 in which the oil heated share of the new single family home market in the Northeast exceeded the electric heat share.* The number of newly constructed homes in the Northeast heated with electricity has been declining throughout the 1980's. (The loss of electricity to gas in the new home market has been even more pronounced in other regions of the country; see further discussion below.) Gas and oil prices are currently highly competitive in the Northeast (also discussed below). However, while gas rapidly gained market share against oil in the late 1970's when oil prices rose, it has continued to improve its market share in the late 1980's in the face of declining oil prices because of its popularity with commercial builders.

Figure II



■ *Oil heat's market strength comes from owner-built and contractor-built segments, where the homeowner makes the heating system decision. Gas heat's strength comes from build-ers--houses built to be sold, which account for two-thirds of all new homes.* As illustrated in Figure III, oil heat got a 63% share of the Northeast's owner-built market and a 44% share of the contractor-built market, but together these homes account for only one-third of the new single family home market. Gas, on the other hand, got 57% of the bigger market, homes built-for-sale.

In the Northeast's owner-built market, the oil heat share has increased from 17% in 1983 to 63% in 1988, taking share from gas heat, which went from 26% to 17%, and from electricity, which fell from 30% to 17%. In the contractor-built market, the patterns are similar--oil heat up substantially, gas and electricity down substantially. (Figure III).

The reasons for the disparity between oil heat's highly successful performance in the owner-/contractor-built market versus its stagnation in the built-for-sale market are not entirely clear. One factor is that gas utilities focus their sales efforts with builders, since the utility can service new subdivisions more inexpensively than they can single isolated homes. The utilities provide sales incentives and other benefits (power to the building site, for instance), with the certainty that the benefits the utilities offer accrue back in new customers, since the utility is the only gas source in an area. Furthermore, the need for an oil tank raises the cost of an oil heat installation relative to gas. While an oil dealer might offer incentives such as a free or subsidized tank, however, the dealer may lose the new customers to a competing dealer when the house is finally sold and occupied, and thus is reluctant to incur promotional costs.

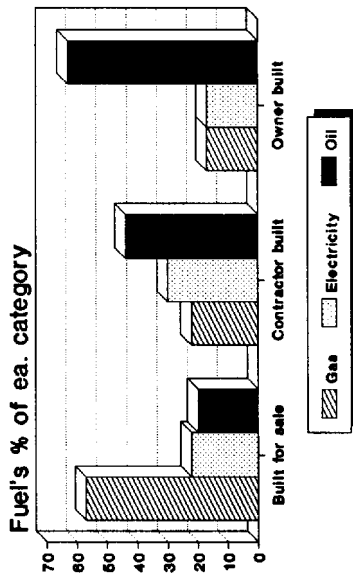
**Figure III**

**OIL HEAT IS INCREASINGLY POPULAR AMONG OWNERS**

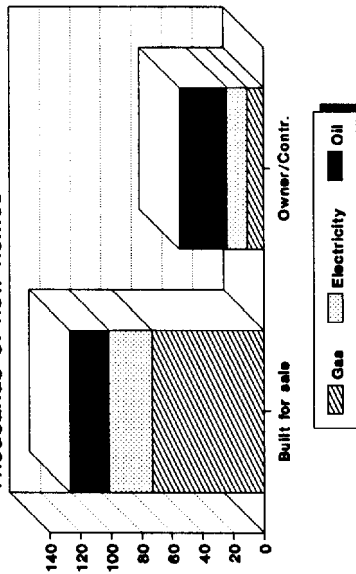
--Oil is the favorite among contractors and owners, but homes built for sale, where gas dominates, are a larger market (charts at left for 1988).

--Oil has rapidly captured market share from both gas and electricity in the owner-built and contractor-built markets, but has just maintained market share among builders (chart below).

**FUEL CHOICE IN THE NORTHEAST BY CATEGORY OF BUILDER, 1988**

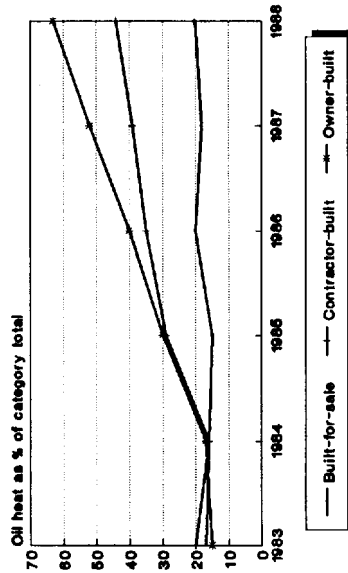


**Thousands of new homes**



Note: Single family homes

**OIL HEAT'S SHARE IN THE NORTHEAST, BY CATEGORY OF BUILDER**

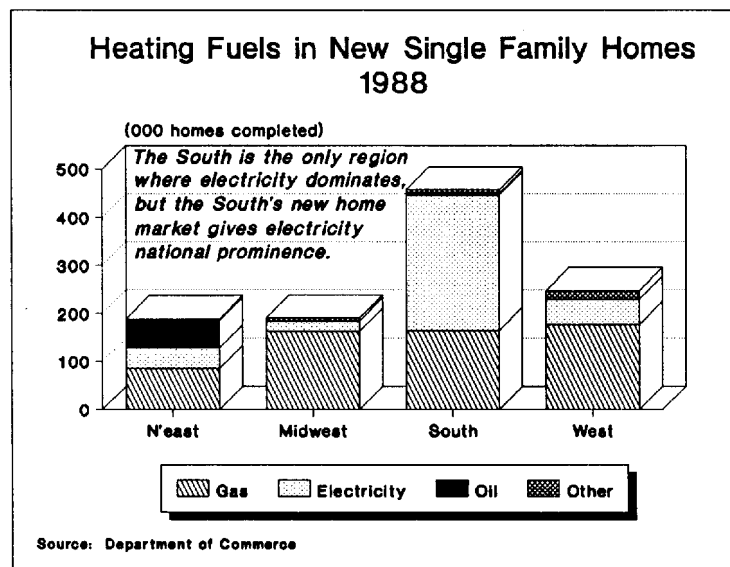


Note: New single family homes

Gas unavailability is often cited as a factor in oil heat's homeowner popularity, since in many Northeastern exurbs utility gas is still not available. Given the fact that the owner/contractor share is so high and has increased so rapidly, however, gas availability is unlikely the key: gas has not become *less* available in recent years, leaving a new vacuum for oil heat expansion. Gas would generally be more widely available in a population hub than in a rural area, and so we must look to see whether there is a difference between the location of the two types of homes. Generally, 90% of homes built-for-sale, nationwide, are built inside the population/economic centers classified by the Department of Commerce as Metropolitan Statistical Areas (MSA's), while only 60% of owner/contractor homes are built inside MSA's. But in order for the home's location to account for the *trend* in oil heat's popularity, an increasing share of the owner/contractor homes would have to be moving outside the MSA's. In fact, the opposite is true. More and more of the owner/contractor homes, on a nationwide basis, are being built within MSA's, the area where gas is more likely to be an option.

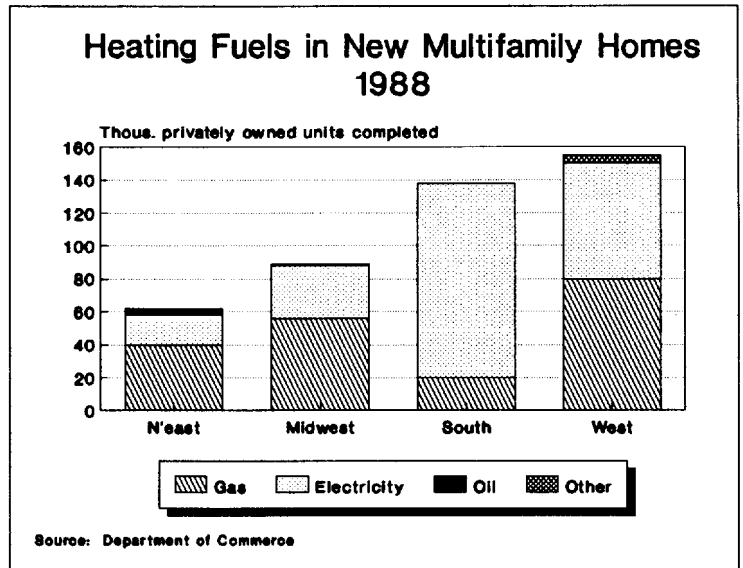
■ *In the national data, gas is the most important fuel in new homes. Electricity's high share of the South's large new home market gives that fuel its national prominence. Gas heat has been the dominant fuel in the new home market since 1986, and in 1988 was installed in 54% of new single family homes. Electricity's share of the market--45% in 1988--has fallen in all regions, most sharply in the West, from 42% in 1980 and 21% in 1988, and the Midwest, where the electric heat share dropped from 27% to 12%. In the Northeast, it fell from 36% to 23% over the same period, as noted earlier. Only in the South, which accounted for 42% of U.S. single family home completions in 1988, does electricity dominate. Its share in the region has slid more moderately: from 67% in 1980 to 62% in 1988.*

Figure IV



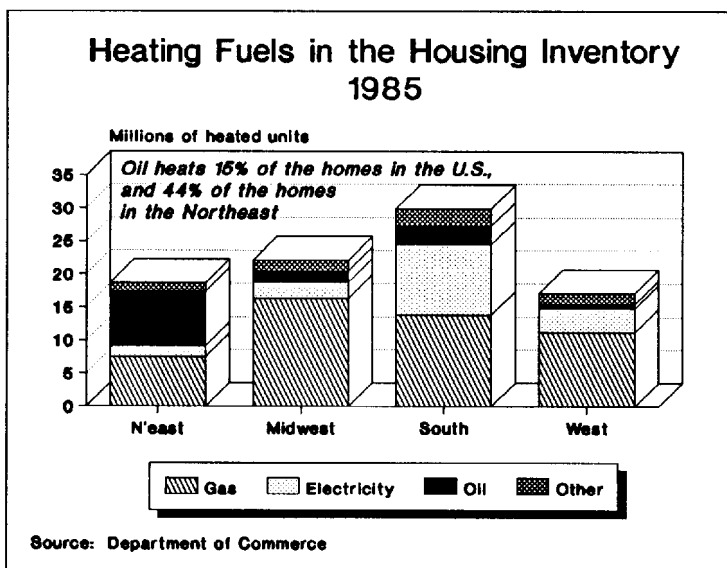
■ *In multifamily housing, electricity continues to be installed in more than half of the units completed, because its share overwhelms gas in the South, and it captures a considerably higher share of the multifamily home market than of single family homes in both the Midwest and the West.* The 445,000 units completed in multifamily buildings account for about one-third of all new housing construction. Although electric heat captured more than half of the market in 1988, its share is still down substantially from the peak of 72% as recently as 1984. The gas heat share in that year was 26%, and by 1988 had risen to 44%. Gas is particularly important in the Northeast and Midwest, where it captured about two-thirds of the new multifamily units in 1988. Oil is unimportant as a fuel in new multifamily homes, even in the Northeast. (For the most part, units heated with oil will use residual fuel, not distillate. In the Northeast, for instance, only 20% of all multifamily units completed in 1988 were in buildings with 2 to 4 units, the type that might use the lighter oil.)

Figure V



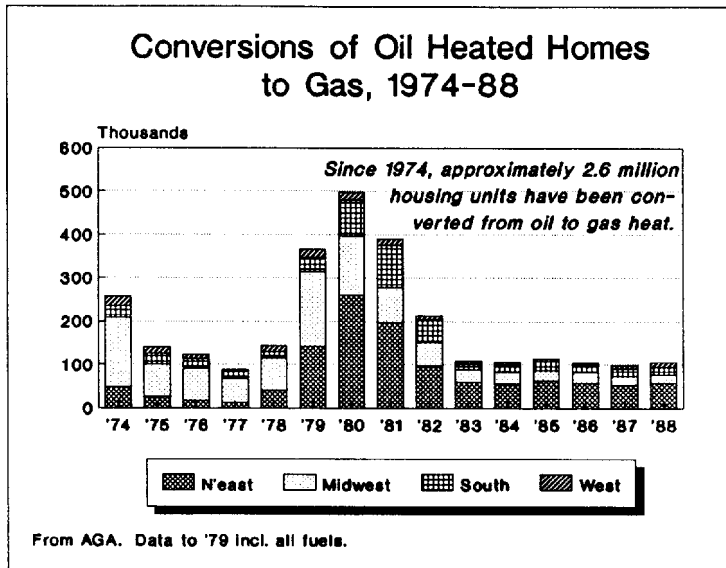
■ *Oil heat's share of the housing inventory is considerably higher than its share of the new home market: it heats 15% of the 88 million housing units in the U.S., and about 44% of the units in the Northeast.* In 1950, oil heated just under one-quarter of the housing units in the U.S., and gas heated just over one-quarter. Coal was the most commonly used heating fuel, with about one-third of the market. Gas and oil took coal's market. The oil heat share of U.S. housing peaked at about one-third of the market, in the 1960's.

Figure VI



Included in the 13.5 million oil heated units shown in the Bureau of the Census *American Housing Survey* for 1985 are about 1 million units heated with kerosene or other petroleum products. In the Northeast, about 8 million units are reported heated with "fuel oil" (distillate or residual oil) and 250,000 with kerosene or other products. The kerosene/other share is most important in the South, where it accounts for 25% of oil heated units.

Figure VII



■ *Since oil heat's peak, the decline in its share has been speeded by conversions to gas: approximately 2.6 million oil heated homes were converted to gas heat between 1974 and 1988. The Midwest's housing stock has been most affected by conversions. According to the American Gas Association, about 800,000 oil heated homes in the Midwest have been converted to gas since 1974, half of them before 1980. While conversions have slowed considerably in the Midwest, they continue to lead to a net loss in oil heated homes in the region, since its new oil heat construction is negligible.*

In the Northeast, however, oil-to-gas conversions have settled down to relatively stable level of 55-60,000 per year. (The peak level was 5 times that, in 1980.) Thus, the renewed success of oil heat in the Northeast's new home market has finally led to small net additions of oil heated housing in the last several years.

On a net basis, then, the total number of oil heated homes in the U.S. has probably declined by about 120,000 units to about 13.4 million units since the 1985 *American Housing Survey*. The Northeast has remained at about 8.2 million units.

■ *Oil consumption in the residential sector has fallen both because it is used in fewer homes and because conservation measures have reduced the amount of oil consumed per household.* In 1988, U.S. distillate fuel oil consumption in the residential sector was 500 MB/D, 16% of all distillate fuel oil use, compared to its peak of 950 thousand B/D in 1974, when it accounted for 30% of the distillate total. As heating oil demand becomes a less and less important component in overall distillate fuel oil demand (it accounted for 40% of U.S. distillate use in the 1960's), the seasonal variation in distillate consumption is increasingly flattened. Winter peak demand, about one-quarter of the U.S. distillate market in the coldest months, is no longer logistically difficult to meet. The required stock build is substantially reduced, increased crude runs and small yield shifts rapidly take care of weather-induced spikes in demand. About three-quarters of the residential demand is in the Northeast, where it accounts for a larger share of the region's total distillate demand: in New England, for instance, residential demand still accounts for over half of all distillate demand and in the Central Atlantic, the residential share is 40%.

Heating oil consumption per customer is about 900-950 gallons per year, according to data compiled by the publication *Fuel Oil and Oil Heat*. Adjusted for weather, consump-

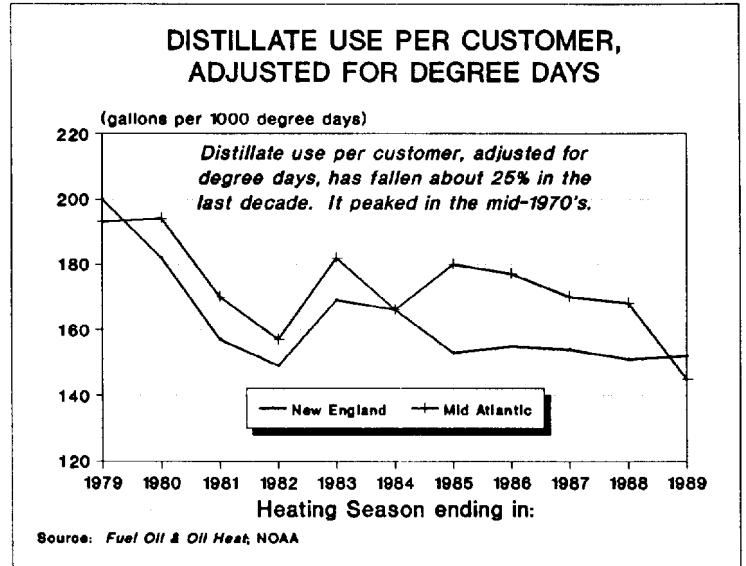
**Figure VIII**

tion per customer has dropped about 25% in the last decade, from about 200 gallons per 1000 degree days to about 150 gallons. New England has about 6200 degree days, and the Mid-Atlantic region has about 5600 over the September - April heating season.

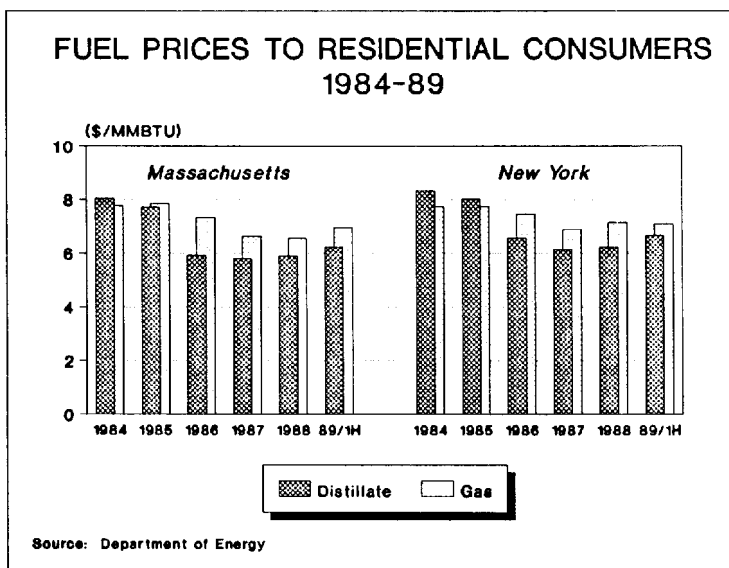
The decline has now been institutionalized: where people first simply turned down thermostats when prices rose in 1979 and 1980, homeowners have now made conservation improvements. According to the Department of Energy's report, *Housing Characteristics, 1987*, for instance, 40% of the single family and mobile homes in the Northeast added "conservation measures" (caulking, weatherstripping,

storm windows, storm doors and a variety of other measures) in the year ending in August 1987. The DOE estimates that three-quarters of the single family homes in the Northeast have at least some ceiling and wall insulation, storm doors, and/or storm windows. As a consequence, even though homeowners may turn thermostats up when prices fall, their consumption does not return to earlier levels.

■ *Even though distillate prices to residential consumers are lower than residential gas prices in the Northeast, the share-of-market data discussed earlier clearly indicate that oil and gas are not competing on the basis of price.* As shown in Figure IX, distillate prices in Massachusetts, for instance, have been 10-20% below gas prices since the oil price drop of 1986. In New York, the gap has been somewhat narrower. The increase in oil heat's share of the new home market, however, began before oil prices fell below gas's. It began when oil started again to be perceived as plentiful and its price able to move down as well as up, in contrast to the public perception in 1979 and 1980. Electricity, a strong competitor in the new home market in the early 1980's, was never priced competitively with oil and gas. It was cheaper to install, and still is. However, this clearly is not enough of an incentive to preserve its share in the new home market.



**Figure IX**





**APPENDIX TABLE 1**

**HEATING FUELS IN NEW HOMES, 1974-1988:  
SINGLE FAMILY HOMES  
Percentage Distribution by Fuel**

		Total (000)	Gas	Elec.	Oil	Other
			-----%			
U.S.	1988	1085	54	45	6	3
	1987	1123	52	39	5	3
	1986	1120	47	44	5	4
	1985	1072	43	49	3	4
	1984	1025	45	48	2	5
	1983	924	43	48	2	6
	1982	632	40	50	3	8
	1981	819	41	50	2	7
	1980	957	41	50	3	5
		1974	940	41	49	9
N <sup>east</sup>	1988	188	45	23	30	2
	1987	196	44	27	27	3
	1986	193	41	30	24	4
	1985	168	39	38	19	5
	1984	129	41	36	16	7
	1983	106	38	36	17	8
	1982	79	35	34	18	13
	1981	87	34	39	13	14
	1980	100	35	36	17	11
		1974	132	29	39	32
Midwest	1988	191	85	12	b	3
	1987	201	83	13	1	3
	1986	170	78	18	b	4
	1985	151	74	21	b	5
	1984	156	71	19	b	9
	1983	142	65	25	b	11
	1982	92	58	26	3	14
	1981	140	62	26	b	9
	1980	170	59	27	4	9
		1974	220	51	36	12
South	1988	457	36	62	1	2
	1987	467	33	65	b	2
	1986	505	30	66	b	3
	1985	514	28	69	b	2
	1984	508	33	64	b	2
	1983	476	34	62	b	3
	1982	340	33	63	b	4
	1981	408	31	64	b	4
	1980	455	30	67	1	2
		1974	397	27	67	4

**HEATING FUELS IN NEW HOMES, 1974-1988: SINGLE FAMILY HOMES (cont'd)**  
**Percentage Distribution by Fuel**

		Total (000)	Gas	Elec.	Oil	Other
			-----%			
West	1988	248	71	21	b	7
	1987	259	68	25	b	7
	1986	253	64	29	b	7
	1985	239	60	33	b	7
	1984	233	55	39	b	6
	1983	200	53	40	b	8
	1982	121	49	41	b	10
	1981	183	51	40	b	8
	1980	233	52	42	b	6
	1974	191	66	33	b	b

Note: b= Withheld because estimate did not meet publication standards based on sample size.

Source: U.S. Department of Commerce (Bureau of Census) and U.S. Department of Housing and Urban Development, "Characteristics of New Housing," Current Construction Report Series

**APPENDIX TABLE 2**

**SUMMARY OF TOTAL HOUSING ADDITIONS, 1974-1988**  
 Percentage Distribution by Fuel

		Total (000)	Gas	Elec.	Oil	Other	
			----- %				
U.S.	1988	1530	51	48	4	3	
	1987	1669	48	45	4	3	
	1986	1756	43	51	3	3	
	1985	1703	39	56	2	3	
	1984	1652	38	57	2	3	
	1983	1391	38	56	2	4	
	1982	1006	35	57	3	5	
	1981	1266	38	55	2	5	
	1980	1502	37	56	3	4	
		1974	1728	38	54	7	1
N'east	1988	250	50	24	24	2	
	1987	258	48	27	22	3	
	1986	254	44	30	21	4	
	1985	214	42	37	16	4	
	1984	169	41	38	12	6	
	1983	139	44	34	13	6	
	1982	120	36	37	18	9	
	1981	127	42	35	13	9	
	1980	146	35	38	18	8	
		1974	231	29	41	28	3
Midwest	1988	280	78	19	b	3	
	1987	302	75	21	1	2	
	1985	230	64	32	b	3	
	1984	221	65	28	b	6	
	1983	201	64	28	b	8	
	1982	143	59	29	2	10	
	1981	218	59	33	b	6	
	1980	274	54	38	2	6	
		1974	377	54	37	7	1
	South	1988	595	31	67	1	1
1987		660	28	70	b	2	
1986		764	24	73	b	2	
1985		812	22	76	b	1	
1984		866	25	74	b	1	
1983		746	26	72	b	2	
1982		539	25	72	b	3	
1981		626	26	71	b	3	
1980		697	25	73	1	2	
		1974	756	24	72	3	1

**SUMMARY OF TOTAL HOUSING ADDITIONS, 1974-1988 (cont'd)**  
**Percentage Distribution by Fuel**

		Total (000)	Gas	Elec.	Oil	Other
			-----%			
West	1988	404	63	30	b	6
	1987	449	59	35	b	6
	1986	469	58	37	b	4
	1985	446	55	41	b	4
	1984	397	50	46	b	5
	1983	304	49	45	b	6
	1982	203	46	47	b	7
	1981	294	47	47	b	6
	1980	386	49	46	b	5
	1974	364	57	42	b	b

Note: b = Withheld because estimate did not meet publication standards based on sample size.

Source: U.S. Department of Commerce (Bureau of Census) and U.S. Department of Housing and Urban Development, *"Characteristics of New Housing,"* Current Construction Report Series