THE RESIDENTIAL DEMAND FOR ENERGY: ESTIMATES OF RESIDENTIAL STOCKS OF ENERGY USING CAPITAL

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ABSTRACT

A program of research into the demand for residential energy requires the construction of an adequate data base on the stock of energy using capital. This report details the procedures used to assemble such a data base.

The development of data on housing stocks was the most important element of this analysis. Bureau of the Census figures were available for 1960 and 1970. Two methods were used to obtain annual estimates of the stock. In the first, data on housing permits authorized were used as investment and a constant rate of depreciation was assumed. The second employed an adjusted annual change in the number of residential electric customers as a proxy for investment and depreciation. These methods yielded substantially similar results.

Stocks of refrigerators, home freezers, room air conditioners, electric ranges, water heaters, automatic washers, conventional washers and electric dryers were estimated by benchmarking annual state saturation rates obtained from Merchandising Week to decennial saturation rates obtained from the Census and multiplying these saturation rates by the stock of houses.

This study was hampered by a lack of information on the number of appliances held by consumers, and on the age distribution, size distribution, and historical utilization rates of these appliances. Fortunately, enough data were collected to allow for the construction of a reasonable data set on appliance stocks. However, we were unable to gather adequate data to construction estimates of the age, size, or usage types of capital. To correct this deficiency, it would be necessary for some agency to undertake the development of periodic systematic censuses of consumer holdings of capital.

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Section 1

BACKGROUND

The consumption of energy reflects a decision to utilize a fixed stock of capital. Whether the type of energy is oil, gas, coal, or electricity, there are no uses which do not involve the use of a capital good. The demand for energy is, in short, a derived demand. Most recent econometric studies of energy demand have, however, been unable to take account of this relationship directly due to a lack of adequate time series data on the stock of energy using capital. It is thus significant that EPRI's program of research in the demand for residential energy included the development of the requisite data base. The construction of this data base for the residential sector has been undertaken by Data Resources, Inc. This report discusses the data base.

Estimates of the stocks of appliances and energy using capital held by consumers have been developed in two previous studies. In 1960, Fisher and Kaysen published a seminal study on the demand for electricity using estimates of state by state stocks of appliances owned by consumers.* In 1972, Stanford Research Institute (SRI) published estimates of energy usage by end use in the residential sector.** These estimates were based on detailed analysis of appliance saturation.

The earlier Fisher and Kaysen study follows more closely along the outline of this work. In it the authors developed estimates of the number of refrigerators, washing machines, electric ranges, ironing machines, electric clothes

*Fisher, Franklin M. and Carl Kaysen. A Study in Econometrics: The Demand For Electricity in the United States, North-Holland Publishing Company, Amsterdam, 1962.

**Stanford Research Institute, Patterns of Energy Consumption in the United States, U. S. Government Printing Office, 1972.

dryers, food freezers, and electric water heaters which were owned by consumers for the period 1946 to 1957. These estimates were then used in the estimation of the demand for electricity. The methodology employed to develop estimates of stocks by Fisher and Kaysen is complex. It is discussed below in Section 2. The similarity of the Fisher and Kaysen study and this study is due to the fact that we also have developed estimates of the stock of residential stocks of energy using capital. In our analysis, however, the emphasis has been on all types of capital.

The SRI project did not try to provide the same depth as was found in Fisher and Kaysen. The authors sought only to estimate the uses, by type of activity, of energy in the residential sector (as well as in the industrial, commercial, transportation, and utilities sectors) for the period from 1960 to 1968. The procedure used in the SRI study is, however, illuminating for the purpose of this study because the authors there developed their estimates of energy use by activity through the use of inventories of consumer holdings of capital and surveys of average usage of these appliances. Thus the SRI economists have provided us with a methodology for determining the relative importance of the various types of capital in the household sector, as well as estimates of the stock.

The Fisher and Kaysen and SRI studies each provided useful elements to the structure of this project. Essentially Fisher and Kaysen provided the technical framework, while the SRI study provided a methodological basis for the selection of the particular types of capital which are most important in the determination of residential demand. Thus, we applied some of the methodologies developed by Fisher and Kaysen to a different set of capital goods. For instance, for the period of our study (1960 to 1973) the most important usage of electricity in the residential sector - electric heating and cooling - did not even merit consideration in the Fisher and Kaysen analysis. The reason was not oversight but an entirely changed situation. Homes heated by electricity have increased from 900,000 as reported in the 1960 Census of Housing, to over 3.5 million, as reported in the 1970 Census of Housing, and will increase to perhaps 5 million in 1975. The same type of phenomenon can be observed for cooling. In 1960, 1.9 percent of the housing units surveyed had had central air conditioning and 10.5 percent had at least one window unit. By 1970, the percentage of centrally air conditioned units had increased to 10.7%, while the percentage of housing units with at least a single window

unit had increased to 25.0%. Homes without any air conditioning dropped from 87.6% in 1960 to 64.3% in 1970.*

The increased saturation of electric heat and air conditioning might not have been a problem for our analysis. It could have developed that the increase in the use of electric heat was found only in those regions where heat was relatively unimportant (such as the southwest) while the increase in the stock of air conditioners was concentrated in northern states where the mean summer temperature never exceeds 80° Farenheit (27°C). In such an event, these changes in the market could have been ignored. Of course the increased use of the electric heat was not concentrated in the southwest, and the growth in air conditioning was not confined to the northernmost states. In fact, as we shall demonstrate presently, the increase in the stock of air conditioners and electrical heating equipment account for the greatest portion of the growth in residential energy use during the period of interest. Further, the very large variation in rates of usage of this type of equipment between regions due to differences in mean heating and cooling temperatures explains most of the differences in regional growth rates of electricity demand. These differences in temperature, and the increase in the stock of air conditioners and heating equipment, so dominate the growth in the use of electricity in the household sector that much of our concentration was devoted to heating and air conditioning, with less emphasis placed on the characteristics of other types of capital. In the case of other appliances, we were content to develop estimates of the number of units in operation. We did not attempt to develop estimates of the average energy requirements by age of appliance (i.e. we did not try to determine the number of kilowatt hours used by the average refrigerator manufactured in a specific year). This choice represents a departure from the Fisher and Kaysen approach. The reasons for skipping such calculations are the following. First, due to the large variation in size of many types of appliances such as refrigerators it is difficult, if not impossible, to develop a single estimate of the average number of kilowatt hours used by a refrigerator produced in a particular model year. Second, the regional location of appliances such as refrigerators and freezers will influence the number of

*Another way of viewing the change is to examine the number of homes without air conditioning. In 1960 there were 46,438,552 such units. By 1970 there were only 43,492,346 such units. This implies that the air conditioning market increased more rapidly between 1960 than the housing market.

kilowatt hours used during a year more than their size. Third, the use of air conditioners influences the energy requirements of certain appliances. (During the summer an eleven cubic foot refrigerator operated in a centrally air conditioned house requires less energy than does one operated in a non-air-conditioned house.) Finally, data on location and scrappage by size and location were not available. Thus, we report here only the number of units in operation.

The omission of information on the specific energy consumption of appliances manufactured each year is offset, to a certain extent, in this study by the introduction of data on the number of homes heated by various types of fuel (gas, oil, etc.), as well as by inclusion of estimates of electric heat and air conditioning usage by region. The reason for the emphasis on heating and air conditioning can be seen from Table 1-1, which tabulates SRI's estimates of the distribution of 1960 energy usage in the residential sector. Several comments should be made about Table 1-1. First, the relative unimportance of electricity, even in 1968, is striking. According to the SRI data, natural gas, liquified petroleum gases, and petroleum dominate electricity in water heating, space heating, and cooling. Second, considering the relative unimportance of electric heating and air conditioning, it is not surprising that the Fisher and Kaysen analysis ignored them, especially since the study was concerned with the period from 1947 to 1957. Third, the very small, but increasing, market share of electric heat and air conditioning is displayed. This increase is shown more clearly on Table 1-2. There we have tabulated estimates of 1960 and 1970 usage of electricity and natural gas by purpose. The 1960 estimates are taken from SRI. The 1970 estimates are based upon the SRI methodology but employ data on the capital stock published in the 1970 Census of Housing.* The growth rates for electric heat and air conditioning stand out.

*The SRI approach was to make annual estimates of the inventory of various types of capital goods and multiply these by estimates of usage made by the Edison Electric Institute or the American Gas Association. SRI used the 1960 Census of Housing for most of its base cases. However, since the SRI study ended with 1968, they had no way of verifying their calculations of the inventory. By using the 1970 Census of Housing, we were able to correct for this problem. See Section 2.

Table 1-1

COMPARISON OF THE TYPES OF CAPITAL EVALUATION IN THIS STUDY WITH THOSE COVERED IN FISHER AND KAYSEN TOGETHER WITH SRI ESTIMATES OF PERCENTAGE OF 1968 ENERGY CONSUMPTION

	Percent of 1960 Energy Usage	Percent of 1968 Energy Usage	SRI	Fisher & Kaysen
Electricity				
Space Heating	.4	1.8	x	
Refrigeration	1.9	2.7	x	x
Water Heating	2.4	2.4	x	x
Air Conditioning	.7	1.7	x	
Television	.1	1.4	x	
Cooking	1.1	1.0	x	x
Freezing	.2	.9	x	x
Clothes Drying	.4	.6	x	x
Other	4.1	2.7		P
Natural Gas & LPG				
Space Heating	33.3	35.2	x	
Water Heating	9.9	10.7	x	
Cooking	4.8	3.5	x	
Clothes Drying	.4	.6		
Oil				
Space Heating	39.3	32.5	x	
Water Heating	1.2	1.6	x	

Footnotes to Table 1-1

Source: Column 1, SRI pg. 42
Column 2, This study
Column 3, Fisher & Kaysen, pg. 68

P = partial

Table 1-2

USE OF ELECTRICITY AND NATURAL GAS
BY HOUSEHOLDS IN 1960 AND 1970
(SRI METHODOLOGY WITH CENSUS DATA)
(TRILLION BTU'S)

	1960	1970	Compound Annual Rate of Growth
Electricity			
Space Heating	29	236	23.3%
Water Heating	155	248	4.8
Cooking	73	104	3.6
Clothes Drying	23	63	10.6
Refrigeration	122	293	9.2
Air Conditioning	48	200	15.3
Other*	292	507	5.7
Natural Gas			
Space Heating	2,188	3,303	4.2
Water Heating	650	1,133	5.7
Cooking	316	385	2.0
Clothes Drying	26	70	10.4
Refrigeration	32	4	-18.8
Air Conditioning	0	4	N/M
Other	0	0	N/M

*Other is distribution as follows for 1970: Television 139.5 trillion BTU, Home Freezers 26.4 trillion BTU, Dishwashers 5 trillion BTU, and Light and Small Appliances 72.2 trillion BTU.

N/M - Not Meaningful

The estimates shown on Tables 1-1 and 1-2 are subject to certain caveats. First, the estimated inventory of capital equipment made by SRI are, in certain cases, quite crude (as we indicate in Section 2). Second, the assumptions made with respect to the usage of certain appliances (especially air conditioners) appear very weak. Both of these problems result from the use of national instead of regional data. Both could be corrected by the extensive use of survey data. However, the collection of better data on usage rates for a single year, or even a group of years, will not provide a satisfactory basis for forecasting or predicting the response to changes in the environment. Our econometric approach provides such a facility. It also possesses the distinct advantage that surveys of usage rates are, in general, not required.

The priorities followed in this study represent an adaptation to the new role of electricity. The primary objective has been to disaggregate the housing stock into three categories: that portion heated by electricity, that portion heated by gas, and that portion heated by oil. The second objective has been to determine the level and rate of growth in the stock of air conditioners by region. We have also attempted to assimilate data on the use of these air conditioners. Air conditioning represents a second use of electricity which was not covered by Fisher and Kaysen due to its minor role in the late 40's and first half of the 50's. Now, however, accoring to SRI, these two uses (heating and air conditioning) account for at least 60% of residential energy consumption. Our analysis suggests that they may account for as much as 70% of residential demand.

The third objective of the study was to develop adequate estimates of the inventory of appliances other than air conditioners and heaters. As we indicate in Section 5, our results are not as satisfactory as we had desired. Unfortunately, the data are very poor due to collection procedures followed by the principal suppliers of the data.

Section 2

REVIEW OF FISHER, KAYSEN AND SRI ANALYSES

There have been two previous studies which analyzed residential stocks of energy using capital. The first analysis was contained in The Demand for Electricity in the United States by Franklin M. Fisher and Carl Kaysen (hereafter referred to as FK). The second study was Patterns of Energy Consumption in the United States by Stanford Research Institute (hereafter referred to as SRI). Chronologically, FK preceded SRI by ten years. While the earlier FK study concentrated on residential electricity using appliances by state, the SRI study provided estimates of the stock of all types of capital equipment on a national basis.

Fisher and Kaysen developed estimates of stocks of electric dryers, freezers, ironing machines, electric ranges, electric refrigerators, washing machines, and electric water heaters. The basic source of their data was Electrical Merchandising, a McGraw-Hill publication. This publication is the predecessor of Merchandising Week, which is used here.

For some appliances Electrical Merchandising pulbished state by state estimates of stocks for certain years. However, as is indicated on Table 2-1, these estimates ended in 1950. Thus, FK has to construct estimates of stocks by state using sales data. The authors note that these data are "undoubtedly open to serious question", but were the best available for their analysis.* Using these data they developed a very complicated method to determine state stocks for years where they had no data. This method is summarized here because it is essential to understand their results.

The first step in the FK allocation procedure involved the calculation of sales by state for years where there were no data. This was accomplished by calculating a national depreciation rate, r, defined as -

*Fisher & Kaysen, op.cit., pg. 62.

Table 2-1

AVAILABILITY OF DATA USED
IN THE FISHER AND KAYSEN STUDY

	Sales		Stocks	
Refrigerators	1933-1942 1946-1957	1945[1]-1957	1947-1950	1947[1]-1957
Washing Machines	1933-1942 1946-1957	1945[1]-1957	1947-1950	1947[1]-1957
Electric Ranges	1939-1942 1946-1957	1945[1]-1957	1947-1950	1947[1]-1957
Ironing Machines	1939-1942 1946-1957	1925[1]-1957	1933-1950	1947[1]-1957
Electric Clothes Dryers	1947-1957	1947[1]-1957		1947[1]-1957
Food Freezers	1947-1957	1947[1]-1957		1947[1]-1957
Electric Water Heaters	1947-1957	1933[1]-1957		1947[1]-1957

Footnotes: Fisher, Franklin M. and Carl Kaysen, The Demand For Electricity In The United States, North-Holland Publishing Company, 1962, pp. 61-72.

1 = Data for earlier years apparently available. However, no date is identified.

$$r = \text{scrappage}/K(t-1) \tag{1}$$

where K(t) represents stock of a specific appliance in year, t, and

$$\text{scrappage} = S(t) - (K(t) - K(t-1)) \tag{2}$$

where sales, S(t), were national sales of a specific appliance. Sales, S, in state, i, were then given as -

$$S(t,i) = rK(t-1,i) + K(t,i) - K(t-1,i) \tag{3}$$

The authors note:

> "Now, the assumption involved in the above - that percentage depreciation in year t was the same in all states - is, of course, a bad one. Indeed, we refuse to make it or any similar assumption where it counts - in actually estimating state stocks - and thus to make our task far lighter. Here, however, such an assumption is relatively minor. State sales are by far the major part of net changes in state stocks. Moreover, the estimated sales for the early years only enter into our ultimate estimates as affecting the age distribution of the various state stocks. This is somewhat true even for 1945, and here total sales were, of course, very small. The errors introduced into our final results by making the uniform depreciation assumption at this stage are therefore negligible."*

The second step involves the determination of national and state wide "scrappage age" for each appliance. The authors assume that the oldest element of the stock is scrapped first and that scrappage age differs by state. The national scrappage age, N_N, was determined for 1951 by summing sales backwards until historical sales equaled the estimated national stock in 1951. That is the authors calculated N_N such that the known value of the stock, K(t) -

$$K(t) = \sum_{j=1}^{N_N} S(t-j) \tag{4}$$

Since they refused to assume that the scrappage age was the same for each state, they also determined state scrappage ages, N_i, for 1950 (the last year for which Electrical Merchandising published data on state stocks) using the formula -

$$K(50,i) = \sum_{j=1}^{N_i} \text{Sales } (t-j,i) \tag{5}$$

where S(t-j,i) represents sales in state, i, in year, t-j. The authors then proceeded to determine values of N_N for the years 1951 to 1957 using equation (4). Values for N_i for each of these years were calculated according to -

*Ibid., pg. 63.

$$N_i(t) = \frac{N_N(t) * N_i(50)}{N_N(50)} \qquad (6)$$

In the third step the authors calculated the state estimates of stocks for 1951 to 1957 by -

$$K(t,i) = \sum_{j=1}^{N_i(t)} S(t-j,i) \qquad (7)$$

The authors defend their procedure by noting that:

> "In essence, then, we assumed a constant differential over states in the matter of scrapping age, adjusting this assumption by further assuming that no postwar-sold refrigerators were scrapped until all prewar-sold ones had disappeared. Preliminary estimates of state stocks were then obtained as cumulated state sales from the estimated time of acquisition of the oldest unit. This method, like any other, no doubt leaves much to be desired; it seems doubtful that it could be much improved upon, however, given the primary data available.
>
> "Fortunately, one check, if only a very rough one, is available to us. While the use of the crude and incorrect first approximation of equal scrapping ages throughout would have ensured that our estimates totaled to the national stock estimates of Electrical Merchandising (save for rounding error), no such result was built into our figures. Our estimates were thus finally adjusted by multiplying each of them by the ratio of the national stock estimates to their total to ensure compatibility with the national series. While an adjustment factor of unity is, of course, compatible with all sorts of horrendous but cancelling errors in the figures for individual states, and while the fact that we start our process with the national estimate of scrapping age means that we are unlikely to be wildly off in our totals, it is nevertheless reassuring to note that our adjustment factors are all very close to one - closer, in fact, than the similar adjustment factors for some of Electrical Merchandising's own state stock estimates for earlier years - and that no strong trend appears in them so that no large systematic errors are present in the totals."*

The adjustment factor is computed so that the sum of the stocks calculated in (7) equaled the national estimate.

The FK is an interesting and perhaps a better approach than the more general geometric decay model used by others. However, one of the authors' results suggests a major problem with the approach. FK note that washing machines had very different life spans between regions. In New England the scrappage age was eighteen years while in the south the scrappage age appeared generally to be about six years.**

*Ibid., pp.65-66.

**Ibid., pg. 64.

The authors speculate:

> "The reason for this effect is probably that the Southern states were only able to purchase adequate equipment for the first time after the great rise in incomes experienced during the war, and that electrification was relatively late in the South."*

There is another possible reason for this phenomenon - migration. The authors determine their relative scrappage ages by using estimated stock for 1951 and sales for as many years prior to 1951 as were required to equal the stocks. If there had been substantial outward migration from a region, and if this migration had been accompanied by movement of appliances, the scrappage age would be under estimated. This can be seen from (8) which represents a modification of (5).

$$K(50,i) + K(50,M_i) > \sum_{j=1}^{N_i} S(t-j,i) \qquad (8)$$

and where $K(50,M_i)$ represents the number of appliances which have been moved out. (If a state had experienced inward migration $K(50,M_i)$ would be negative and the sign of the inequality revised).

Another factor which may have contributed to the large differences in estimated age is the problem of differing estimating techniques. Essentially, FK rely on utility surveys. Thus, in those regions where 1951 stocks were over estimated, longer appliance service lives (or later scrappage lives) would be estimated. In those regions where the utility underestimates the stock, shorter lifetimes would be determined.

Fisher and Kaysen use the same methodology to develop stocks for all the appliances they analyze. The technique was applied directly in the development of estimates of the number of refrigerators, washing machines, electric ranges, and ironing machines (where the authors estimate the sales of ironing machines in certain states would have had to have begun before 1900 based upon their estimates of service lifetimes!). For electric clothes dryers and freezers a different procedure was used because data on the pre-war period were not available.** For electric water heaters the authors were forced to make a number of

*Ibid., pg. 64.

**The methodology was similar to the procedure described above. "... for each year beginning with 1947 we found the number of years' sales (starting with the latest possible) and proportion of the 1946 end-of-year stock were required to give the national proportion of 1946 end-of-year stock were required to give the national end-of-year stock for that year. The same years' sales and proportion of 1946 end-of-year stock were then added for every state." Ibid., pg. 68.

compromises because state sales data were unavailable before 1947 and there were no estimates of stocks. Thus the authors assumed that sales before 1947 were in the same proportion as electric ranges and assumed that the relative scrappage ages were the same as for electric ranges.*

After review of the Fisher and Kaysen methodology we determined that, while it was an interesting and, in fact, very elaborate approach to the problem it was probably inappropriate. Our dissatisfaction resulted from (1) the inability to incorporate migration (this is clearly a problem from 1960 to 1974 and probably was a problem between 1947 and 1957); (2) reliance upon a single source of data; and (3) weakness in that data source. A substantial amount of effort was required, however, before we were willing to reject this approach. Far less effort was required to dispense with the SRI approach.

The SRI report was prepared to provide estimates of the use of energy in the United States. As SRI states:

> "The objectives of the study are to determine:
>
> (1) What significant purposes (end uses) have fuels been used for in the United States?
>
> (2) What portion of the nation's energy requirements for the various end uses have been met by each fuel?
>
> (3) What has been the rate of growth of consumption in the major end uses of each fuel?
>
> (4) What technical efficiency can be expected when each fuel is used for those end uses for which it is suitable?"**

The approach taken by SRI involved distribution of reported statistics on energy usage to specific purposes. Thus, SRI began with estimates of total use of electricity, natural gas, and oil by the four major sectors (residential, commercial, transportation, and industrial). To make their allocations SRI collected data on the stock of appropriate types of capital in each sector and data on the average usage rate for each type of appliance. While our interest is in the data on types of capital and indices of usage, we note that the approach described by SRI does have the potential for severe problems.

*Ibid., pg. 70.

**SRI op.cit., pg.1.

Specifically, the SRI study makes total usage of a given type of energy, i, in a sector, j, $E_{i,j}$ a function of the stocks of capital which can use that type of source $K_{i,K}$ and engineering estimates of usage, $u_{i,K}$.

$$E_{i,j} = \sum_{k=1}^{N} K_{i,K} u_{i,K} \qquad (9)$$

Since SRI takes $E_{i,j}$ as given for any year, some residual category must be developed for each fuel and each sector. Thus, if the estimates of $E_{i,j}$ are incorrect or any errors occur in the estimate of $K_{i,K}$ or $u_{i,K}$, the residual estimate will be affected. To the extent that SRI tried to adjust either the u's or K's, to correct obvious problems in the residuals, the errors will propagate throughout the analysis. We note the problem because it is acknowledged that the estimate of energy usage by sector (the $E_{i,j}$) is frequently in error. For instance, some residential usage of electricity is classified as industrial or commercial usage due to the master metering phenomenon. We are unfortunately, unable to estimate the precise magnitude of this problem.

The SRI capital estimates are developed for space heating, water heating, cooking, refrigeration, air conditioning, television, clothes drying, food freezing, and others. The estimates cover the period from 1960 to 1968. Ideally, these could have been used as benchmarks for our estimates of the capital stock. However, careful analysis suggested that the SRI estimates would be useless for our work. The following paragraph taken from the SRI report, which captures the flavor of the entire study, is the basis for our rejection.

> "All room air conditioners were assumed to operate in residences, since sales records do not show how many are used in small commercial establishments. Air-conditioning units in use were estimated as shown in Table 3-28. Replacements as a share of total sales or shipments were assumed at 50% for room air conditioners (life expectancy probably less than 10 years) and 30% for electric central air conditioners which are still relatively small in number and have a somewhat longer average life. Central gas air conditioners, with fewer moving parts than electric units, have a longer lifetime of about 20 years and were assumed to constitute incremental units."*

The assignment of all room air conditioners to residential units was the first problem we noted. The second problem was the arbitrary assumption that fifty percent of shipments were for replacement purposes. Although SRI is able to avoid the first problem in their analysis of other types of capital, they

*Ibid., pg. 57.

invariably allocated shipments between replacement and new investment according to the same type of scheme used for room air conditioners. This approach was deemed unsatisfactory. Thus we rejected the SRI data and methodology.

Section 3

METHODOLOGY

We were fortunate to discover a large number of independent estimates of various types of capital. Unfortunately, the agreement between these sources was minimal. In fact, we are forced to conclude that any agreement between data sources must be due to pure chance. As a result, our efforts to develop consistent estimates of capital required extensive checking and balancing to bring the various random estimates into line with one another. The procedure followed began with benchmark estimates for two years, 1960 and 1970. These were taken from the Census of Housing published by the U. S. Census Bureau. From these estimates we then began to build trial estimates from yearly tabulations of stocks and flows published by other agencies. The yearly estimates of stocks were then balanced by comparing either the imputed investment flow to actual investment flows or calculating and comparing residual shares against actual residuals. Normally the initial stock estimates required correction. Frequently the errors were greater than 10%. The corrections generally reduced the error to less than 2%. In making the corrections, however, we were forced to change some reported data to such an extent that it no longer bore any real relationship to the original source data. While such large corrections are regretted, they were absolutely necessary.

The methodologies used were developed by DRI for the project. They are described below. A quick examination will suggest their relative simplicity. Before choosing our own approaches we searched through the literature in an attempt to uncover approaches used by others. Our search was a failure. The only discussion we could uncover concerned national income accounting and input-output techniques.* These were generally inappropriate. Our failure does not necessarily suggest that such techniques have not been practiced in other research efforts. A more likely supposition is that efforts by others to develop data involved only the expenditure of that amount of money and time

*See Kuznetts, Faucett, and Jorgenson and Christensen.

which provided a data set regardless of its accuracy.* The procedure used is as follows.

First, it was recognized that the determination of capital stocks of appliances, air conditioning equipment, and heating equipment would, in general, be based upon saturation rates. Thus, the critical element in our analysis became the inventory of housing units. Stocks of capital would be determined by multiplying the saturation rates times our housing stock estimates.

Second, due to the importance of heating and air conditioning, we emphasized the development of satisfactory estimates of the saturation of the stock in terms of heating and cooling fuel. The investment series represented the number of new housing units using a specific type of fuel for heat or air conditioning. The stock data indicated either the market penetration of a specific fuel or the number of units using a specific fuel for heat. These estimates were then balanced using, whenever possible, data from other sources.

Third, data on saturation rates for major appliances were developed and then multiplied by our estimates of housing stocks. This calculation provided trial estimates of the capital stock of appliances. Net investment flows (measured in units) were then estimated by taking the difference between yearly estimates of the stock. These investment series were compared to shipment levels as reported by the U. S. Census Bureau and industry associations. Where major discrepancies occurred specific adjustments were made by a combination of techniques.

Finally, average age of appliances were calculated using a first in, first out approach. Depreciation rates were determined from the difference between yearly figures on gross and net investments. Then by accumulating gross investment series over time we determined the number of years which were required to complete the capital stock. This was then used as our estimate of the age of each type of appliance.**

*We are unwilling to speculate as to the reasons others have had for not detailing methodologies used to develop data. We offer here our methodology noting all its problems. Hopefully through such a discussion others will be able to recommend better data or better procedures of developing similar data bases.

**This approach was first used in Fisher and Kaysen.

The remainder of this section is devoted to a detailed explanation of the methods used to balance the various stocks listed in the report. We begin with a discussion of our estimate of the stock of houses.

HOUSING STOCK DATA

The Housing Stock Data represents the most important element in our analysis. State allocations of heating equipment, cooling equipment, and appliance stocks were predicated upon the gross housing stock figures. Their importance is suggested by equation 10 which describes the approach used in the calculation of oil heated homes, and equation 11 which describes the manner in which the stock of appliances were determined. In equation 10 the number of housing units heated by oil and other fuels in a region (K_O^H) is given as the difference from the number of units heated by gas (K_G^H), the number of units heated by electricity (K_E^H) and the total number of units (K).*

$$K_O^H(i,t) = K(i,t) - K_E^H(i,t) - K_G^H(i,t) \qquad (10)$$

In equation 11 the stock K_j (i,t) of a particular appliance is given by the product of the saturation rate for that appliance in a given state S_j (i,t) and K (i,t).

$$K_j\ (i,t) = S_j\ (i,t)\ K\ (i,t) \qquad (11)$$

A quick glance at 10 and 11 will demonstrate the importance of the estimate of the number of housing units K (i,t). Any error here will permiate throughout the study. Any error will affect both the estimate of the number of homes heated by oil and other fuels and the estimate of the stocks of all appliances. On the other hand, an error in the estimate of the number of homes heated by gas or electricity will effect only the estimate of the number of homes heated by oil; while an error in the estimate of a saturation rate will effect only the calculation of the stock of that appliance.

*Note that the terms in parenthesis represent the region, i, and time period, t. Whenever notational considerations allow these identifiers will be surpressed.

**It should be noted that an error in either the estimated inventory of housing units or the saturation rates may affect calculations of the stock in all other states. This will occur where the year to year changes in national stocks are determined by estimates of net investment or sales. In such cases an over estimate in one state may lead to marginal errors in other regions.

The basic data for the development of our estimates of the stock of housing were taken from The Census of Housing 1960 and 1970 editions and estimates of housing starts published by the Census Bureau (Series C40). These latter data list the number of housing permits taken out in permit issuing areas. Single family and multiple family housing units are separately identified. As we indicate in Section 4 there are clearly errors in these data.* Given the Census 1960 and 1970 estimates of the stock of housing [(referred to as K(60) and K(70) or K(i,60) and K(i,70)] and the published housing permits I (i,t) depreciation rates (r) were calculated such that -

$$K(i,70) = (1-r)^{10} K(i,60) + \sum_{j=1}^{10} (1-r)^{j-1} I(i,70-j) \qquad (12)$$

Rates were calculated for single family units, multiple family units and mobile homes.** These depreciation rates were then used to calculate yearly stocks for the years 1960 to 1969 and 1971 to 1973 by the standard formula.

$$K(i,t) = (1-r) K(i,t-1) + I(i,t-1) \qquad (13)$$

Rates of depreciation varied from +.1 to .05 (in our formula a value of r less than zero is inadmissible). Depreciation rates are shown on Table 3-1 for all states.

The estimates for single family housing units appear to be good. Only four states (Alaska, Arkansas, North Carolina, and South Carolina) had negative depreciation rates. Further, the depreciation rates for most of the other states were in line with rates which economic theory suggests are correct. The depreciation rates for multiple unit homes are, however, a different case. Over half of the states (25) had negative rates. In general the rates were good for more populous states. We can offer two hypothesis for this phenomenon. First, it is possible that housing permit data do not capture remodeling. Thus, if an individual turns a single family house into a three unit apartment,

*For instance in certain states, the number of housing starts between 1960 and 1970 when added to the inventory as published in the 1960 Census, failed to equal the figure published in the 1970 Census. Such a phenomenon does not suggest that units previously demolished were reconstructed as if by magic. Rather they suggest that certain regions of the country apparently operate under laise faire building procedures which allow land owners to build without taking out building permits.

**Due to discrepancies in the Census between 1960 and 1970 it was impossible to separate multiple unit housing units. In 1960 estimates of two and three family units and buildings with four or more units were published. In 1970 the categories were two to six, and six or more.

Table 3-1

DEPRECIATION RATES BY STATE AND UNITS IN STRUCTURE

	Single Unit Homes	Multiple Unit Homes	Mobile Homes
Alabama	.0032	-.0041	.0839
Alaska	-.0024	-.0372	.0600
Arizona	.0033	.0037	.0308
Arkansas	-.0015	-.0224	.0967
California	.0072	.0097	.0411
Colorado	.0065	.0072	.1001
Connecticut	.0068	-.0018	.1060
Delaware	.0110	.0058	.1767
District of Columbia	.0057	.0138	N.A.
Florida	.0027	.0216	.0774
Georgia	.0037	.0049	.1512
Hawaii	.0193	.0320	N.A.
Idaho	.0025	.0141	.0920
Illinois	.0049	.0042	.0852
Indiana	.0049	-.0124	.0944
Iowa	.0087	.0100	.0609
Kansas	.0078	.0012	.1353
Kentucky	.0027	-.0115	.0473
Louisiana	.0002	.0013	.1512
Maine	.0050	-.0051	.0925
Maryland	.0072	.0014	.0708
Massachusetts	.0102	-.0026	.1336
Michigan	.0059	-.0019	.1762
Minnesota	.0051	.0091	.1360
Mississippi	.0006	-.0038	.1608
Missouri	.0049	.0095	.0897
Montana	.0046	-.0283	.1314
Nebraska	.0075	.0056	.1575
Nevada	.0117	-.0062	.0340
New Hampshire	.0043	-.0164	.0770
New Jersey	.0087	-.0038	.1052
New Mexico	.0037	-.0128	.1007
New York	.0065	.0016	.0985
North Carolina	-.0028	-.0203	.0644
North Dakota	.0137	-.0193	.1323
Ohio	.0077	-.0029	.0964
Oklahoma	.0015	.0089	.0951
Oregon	.0028	.0017	.1105
Pennsylvania	.0093	-.0216	.1035
Rhode Island	.0087	-.0010	.1480
South Carolina	-.0003	-.0250	.0733
South Dakota	.0086	-.0133	.1670
Tennessee	.0026	-.0115	.0878
Texas	.0027	.0102	.1569
Utah	.0073	-.0036	.1045
Vermont	.0010	-.0247	.0993
Virginia	.0109	-.0044	N.A.
Washington	.0073	.0133	.0851
West Virginia	.0076	-.0350	-.0066
Wisconsin	.0067	-.0022	.1642
Wyoming	.0079	.0059	.0650

Source: U. S. Bureau of Census

his action may not be recorded. Second, in some states builders may obtain permits for an apartment house of one size and then later add additional units without being legally obligated to report the additional units. At this point we are unable to determine whether either our first or second conjecture is correct. However, we must acknowledge the problem of "phantom housing units".

The estimated depreciation rates for mobile homes (also shown on Table 3-1) contain another problem. Specifically, the calculated depreciation rates appear too large. While mobile homes are known to have shorter lives than homes constructed using standard building techniques, they still are generally thought to last at least fifteen years. According to our calculations, however, a lifetime of ten years is high. These high depreciation rates are the result of three obvious problems. First, mobile homes are just what they say they are - mobile. Thus, a mobile home which is shipped to state X (our data are on mobile home shipments) may be sold to a resident of state Y who later locates it in state Z. In such a case the movement would exert an upward bias in the depreciation rate calculated for Z. Second, some mobile homes are sold as houses while others are sold as vacation vehicles. Although some mobile homes can be easily designated as houses there is apparently a problem with 40 foot trailers which can be either dwelling units or vacation vehicles. Only those units which are used as dwelling units at the time of the Census will be reported as dwelling units. Finally, the mobile home industry experienced very strong growth between 1960 and 1970. In 1960 the Census counted 766,565 mobile homes. In 1970 the number of mobile homes had increased to 2,072,887. This 10.5% per year increase may have been a factor in the imputed depreciation rate. However, one usually expects an industry experiencing rapid growth to demonstrate low depreciation rates when techniques such as those used here are employed to calculate them; since calculated depreciation rates in certain regions suggested that the housing permit data in these regions were unrepresentative. Thus, a second procedure was adopted. Instead of using housing permit data, estimates of the number of electric utility customers were employed. Estimates of electrical utility customers seems to be the second best alternative because of the nearly universal use of electricity in the U.S. Estimates of the number of customers were adjusted so that 1960 and 1970 customers counts matched the estimates of housing units published in the 1960 and 1970 Census of Housing. Several possible methods of adjustment were considered. For purposes of completion they are given below. The new variable in the equation, EC, represents electricity customers.

Method 1

$$K(i,t) = \frac{K(i,70) - K(i,60)}{EC(i,70) - EC(i,60)} EC(i,t) \quad (14)$$

Method 2

$$K(i,t) = K(i,t-1) + \frac{K(i,70) - K(i,60)}{EC(i,70) - EC(i,60)} (EC(i,t) - EC(i,t)) \quad (15)$$

Method 3

$$K(i,t) = EC(i,t) * C(i,t) \quad (16)$$

$$C(i,t) = C(i,60) * (1+\hat{r})^{t-60} \quad (17)$$

where $\hat{r}$ represents the compound annual rate of change in the ratio of total dwelling units (K(i,t)) to residential electric utility customers computed from the 1960 and 1970 census benchmark data (shown on Table 3-2). Method 1 can be immediately rejected because it fails to guarantee that the 1960 and 1970 estimates of K(i,t) pass through the benchmark estimates. Methods 2 and 3 both satisfy this latter constraint. The choice between them then must rest on other grounds, unless in the case where the ratio of customers to housing units in 1960 and 1970 are identical. Both procedures were tried in this study. In the end, Method 3 was selected for the following reasons. First, as can be observed from Table 3-2 the ratios were not constant over time. In fact, the differences were as large as 20% with the greatest difference occurring in the southern and southwestern states. Second, Method 2 requires us to assume that the average difference between the Census years applied only to new customers connected to the power system. In other words, for every new customer, the housing stock increased by a fixed proportion. This means, we are assuming, that no customers connected in 1960 were disconnected; and none of these customers gained additional meters (the latter type adjustment might have occurred if apartment units which previously had a master meter were assigned individual meters).

The third method has none of these problems. It assumes that the charge in the ratio, if any, occurred smoothly over the period. It also allows us to assume that some of the 1960 units were removed. For these reasons it was adopted. The data prepared using Method 3 were adopted as the final housing stock data for this study instead of the data set prepared using housing permit data. The negative depreciation rates calculated for multiple housing units, or the very high depreciation rate calculated for mobile homes, were the decisive factors. The choice of the aggregate data developed from electric utility customer estimates implied, however, that the distribution of housing units by single, multiple, and mobile home types would have to be eliminated. This compromise

Table 3-2

RATIO OF STOCK OF HOUSES
TO RESIDENTIAL ELECTRIC CUSTOMERS

	1960	1970
Alabama	1.1712	.9562
Alaska	1.4964	1.2511
Arizona	1.1788	1.0874
Arkansas	1.2963	.9877
California	1.1176	1.0579
Colorado	1.1140	1.0142
Connecticut	1.0221	.9959
Delaware	1.0680	.9895
Florida	1.0787	.9775
Georgia	1.0359	.9647
Hawaii	1.1912	1.1260
Idaho	1.0299	.9573
Illinois	1.1097	1.0415
Indiana	1.1059	1.0074
Iowa	1.1420	.9818
Kansas	1.1877	.9986
Kentucky	1.1476	1.0099
Louisiana	1.0665	.9903
Maine	.9242	.8441
Maryland and D. C.	0.0000	0.0000
Massachusetts	1.0355	1.0277
Michigan	1.0159	.9674
Minnesota	1.0417	.9753
Mississippi	1.0751	1.0023
Missouri	1.1818	1.0175
Montana	1.0266	.9765
Nebraska	1.0680	1.0228
Nevada	1.2401	1.0577
New Hampshire	.8863	.8578
New Jersey	1.0199	1.0237
New Mexico	1.1569	1.0631
New York	1.1212	1.1152
North Carolina	1.1387	.9592
North Dakota	1.0497	.9906
Ohio	1.0873	1.0147
Oklahoma	1.0845	1.0051
Oregon	1.0790	1.0177
Pennsylvania	1.0790	1.0383
Rhode Island	1.0275	1.0126
South Carolina	1.0844	.9339
South Dakota	1.0395	.9791
Tennessee	1.0319	.9724
Texas	1.1457	1.0746
Utah	1.1055	1.0265
Vermont	.9623	.8266
Virginia	1.1051	1.0677
Washington	1.0876	.9936
West Virginia	1.1052	.9939
Wisconsin	1.1023	.9498
Wyoming	1.0863	.9563

Source: U. S. Bureau of Census

was accepted because most of the other information on the characteristics of the housing stock (heating fuel, air conditioning, etc.) did not distinguish between single, multiple, and mobile units.

It should be clear that none of the approaches considered are ideal. In the first place, published data on housing starts are not perfect. In addition, the data on mobile home shipments include both travel trailers and permanent dwelling units. Further, since these units have wheels, one can suppose that shipments reported as going to one state eventually are located in another state. Even worse, there is a clear movement of trailers from state to state as population migration occurs. Indeed this is one of the major advantages of trailers. Thus, there are clearly problems with the data developed using housing permits and mobile home shipments.

There are also problems with data developed from estimates of the number of electricity customers. Among these are the following:

1. Some homes do not have electricity. (This may not be a problem for this study because homes without wiring cannot have electricity using capital. We would, however, like to include them in our inventory). As was noted above, we believe this is a small problem.
2. Electric Utilities have sold to more than one dwelling unit through one electric meter in the past. Changes in these master metering practices and procedures for correcting for the number of dwelling units are unknown. This is a real problem.
3. Some residential customers are probably reported in the small industrial category where large apartments benefit from lower commercial rates by the use of single meters.
4. Utilities in some regions do not count vacant units as customers. Thus, vacancy rates may account for part of the discrepancy.
5. In certain areas one dwelling unit may have more than a single meter and be counted as more than one customer. This could occur either because a customer with hot water heating has a separate meter, or where an apartment building has several extra meters for community lights, washers and dryers, etc.

We have become convinced that estimates based upon utility customers are, in spite of these difficulties, probably superior to those made using estimates of building permits. However, certain steps could be taken to improve the estimates made using utility data. In brief, we recommend that a full survey of all utility marketing groups be made to determine the number of uncounted vacant units, the number of master metered units, and the number of customers who really only use electricity to light and heat community areas in apartment buildings. We will elaborate on these recommendations in Section 5.

The utility and housing permit techniques for estimating the number of housing units actually produce fairly similar results. Given the problems involved in developing the data, this is a bit surprising. On a national basis the difference is never greater than 18% (.1 million units) and is generally considerably smaller. Table 3-3 presents yearly comparisons for all states.

HOLDINGS OF CAPITAL STOCK

Distribution of the stock of housing between types of heating fuel, and calculations of the number of housing units with a specific type of appliance, were predicated on our calculations of the housing stock. Again, the basic sources of data for the estimates were the decennial Census of Housing, 1960 and 1970 editions. The procedure used to prepare yearly stocks and distribution assumed that these benchmark estimates were accurate.

The data development was divided into two efforts: preparation of heating fuel data, and preparation of appliance stock data. The heating fuel data were prepared first because heating accounts for 60% of residential energy usage. The preparation of the heating fuel data set involved three steps. These were (1) preparation of an inventory of electrically heated homes, (2) preparation of an inventory of homes heated by gas, and (3) calculation of the inventory of homes heated by oil by a residual method.*

The determination of the number of electrically heated homes turned out to be a difficult project. Yearly estimates of the number of homes heated by electricity were taken from the FPC Publication Typical Electrical Bills for Electrically Heated Homes. The FPC began publication of this report in 1962. It tabulates, by utility, the number of customers taking advantage of special tariffs for electric heat or electric heat and air conditioning. As the number of utilities reporting this information did not represent the total number of utilities in a state, the data were inflated by multiplying all electric customers reported by the ratio of total customers in a state to customers of utilities reporting. Data similar to the FPC data are now published by the Edison Electric Institute and were formerly published by the Electric Illuminating Association in Electric Heat and Air Conditioning. The estimates of the number of homes with electric heat in 1970 published in these volumes differed substantially from the estimate published by the U. S. Census Bureau. The discrepancies, which were as

*See page 18 above.

Table 3-3
PERCENT DIFFERENCES BETWEEN HOUSING STOCKS
CALCULATED USING DEPRECIATION RATES AND UTILITY CUSTOMERS

	60	61	62	63	64	65	66	67	68	69	70	71	72	73
ALABAMA	0.00	11.79	10.22	9.51	7.68	6.53	5.76	4.78	3.29	1.76	-0.00	-1.67	-4.34	-4.84
ALASKA	0.00	-2.81	-0.50	5.22	4.60	2.48	-1.89	-3.04	-0.62	-2.96	-0.01	-1.54	-3.66	2.12
ARIZONA	-0.00	0.18	-0.47	-0.79	-3.19	-3.95	-3.25	-1.97	-0.34	0.62	0.00	2.05	-0.44	-3.71
ARKANSAS	0.00	17.81	17.20	16.85	14.04	12.04	9.36	7.32	5.58	2.36	-0.00	-0.68	-3.67	-5.74
CALIFORNIA	0.00	0.57	0.45	0.26	-0.60	-1.39	-1.51	-0.10	0.66	0.42	0.00	-0.07	-0.66	-1.66
COLORADO	-0.00	3.17	3.38	4.44	2.89	1.55	0.79	0.46	0.74	-0.12	-0.00	0.52	-0.59	-2.97
CONNECTICUT	0.00	0.53	-0.07	1.07	1.09	1.00	0.55	0.09	0.02	-0.06	0.00	-0.26	-0.72	-1.03
DELAWARE	-0.00	1.47	1.75	4.33	5.07	4.59	4.22	3.83	2.77	0.54	-0.00	-0.44	-2.03	-3.71
FLORIDA	-0.00	-0.11	0.32	0.76	0.71	0.84	0.56	1.37	1.99	1.13	-0.00	0.66	-0.36	-4.14
GEORGIA	-0.00	1.35	0.37	1.00	0.71	0.79	2.18	2.80	2.81	1.86	0.00	-2.14	-6.29	-7.80
HAWAII	0.00	-0.34	0.39	-3.18	0.61	1.39	0.48	-0.31	0.91	0.86	0.00	0.34	0.94	0.10
IDAHO	-0.00	1.31	1.20	0.72	0.05	0.23	-1.05	-1.21	-0.58	-0.97	-0.00	1.27	1.77	1.63
ILLINOIS	0.00	1.34	1.40	1.37	1.57	1.71	1.62	1.48	1.08	0.59	0.00	-0.06	-0.52	-0.84
INDIANA	0.00	5.52	4.39	4.75	4.23	3.70	3.45	2.75	2.55	1.20	-0.00	-0.64	-2.56	-3.75
IOWA	0.00	6.99	4.50	6.15	5.38	3.94	2.48	1.69	1.36	-0.09	0.00	-0.61	-2.30	-3.35
KANSAS	-0.90	9.16	8.12	8.10	7.37	5.80	4.21	3.37	2.15	0.33	-0.90	-1.41	-2.95	-4.27
KENTUCKY	-0.00	3.86	5.76	7.69	5.29	4.12	2.65	2.46	2.04	0.49	0.00	-2.31	-2.88	-3.65
LOUISIANA	-0.00	0.69	0.30	1.80	2.48	2.38	1.77	1.56	2.25	1.32	-0.00	0.19	-1.12	-2.83
MAINE	0.00	2.36	1.41	0.52	-0.08	-0.67	-0.39	-0.10	0.05	-0.61	-0.00	-0.21	-0.33	1.41
MARYLAND & DIST. OF COLUMBIA	-0.00	5.27	5.61	5.62	4.54	3.89	2.08	0.73	0.53	0.24	-0.00	0.08	-0.17	-0.82
MASSACHUSETTS	0.00	1.19	0.96	0.32	0.31	-0.59	-0.60	-0.19	0.08	0.02	-0.00	-0.67	-1.47	-1.97
MICHIGAN	-0.00	0.36	0.26	0.39	0.87	1.31	1.23	1.04	0.93	0.55	-0.00	0.12	-0.45	-0.94
MINNESOTA	-0.00	2.88	2.65	3.80	3.69	3.16	2.74	2.71	2.58	0.72	0.00	-0.26	-1.94	-2.41
MISSISSIPPI	0.00	1.88	2.34	3.97	2.41	1.75	0.81	0.90	0.50	-1.29	-0.00	0.20	-1.64	1.50
MISSOURI	0.00	9.24	8.27	7.33	6.66	5.69	4.79	3.74	3.17	1.32	-0.00	-0.20	-1.49	-2.81
MONTANA	0.00	-0.49	-0.91	-0.28	-0.48	-0.41	-0.76	0.28	0.95	-0.07	-0.01	1.32	1.44	1.76
NEBRASKA	0.00	3.49	8.76	4.18	3.32	3.64	3.59	2.89	1.29	-1.53	0.00	1.27	-0.01	-0.08
NEVADA	-0.00	3.58	6.06	3.37	-2.11	-2.40	-7.48	-4.75	-2.00	-0.93	-0.00	-0.73	-2.94	-5.85
NEW HAMPSHIRE	-0.00	0.72	0.87	1.59	0.32	-0.22	0.44	0.71	1.00	0.33	0.01	1.01	0.85	-0.29
NEW JERSEY	0.00	0.50	0.73	0.71	0.69	0.10	-0.24	-0.18	-0.20	-0.20	0.00	0.18	-0.01	-0.58
NEW MEXICO	0.00	1.63	2.63	4.59	4.48	3.36	0.26	-1.75	-1.23	-1.15	0.01	1.05	-0.55	-2.64
NEW YORK	-0.00	0.07	-0.25	-0.47	-0.36	-0.23	-0.20	0.19	0.17	0.02	0.00	-0.30	-0.84	-1.03
NORTH CAROLINA	0.00	9.33	9.10	8.71	7.94	7.00	6.10	5.19	4.40	1.98	0.00	-1.84	-5.18	-7.87
NORTH DAKOTA	0.00	1.10	2.26	3.85	2.89	2.50	1.86	1.04	1.70	0.35	-0.00	0.25	0.14	-0.44
OHIO	0.00	2.47	2.24	2.37	1.89	1.95	1.48	0.99	0.99	0.55	0.00	-0.46	-1.37	-2.13
OKLAHOMA	-0.00	0.90	0.68	1.51	1.03	1.10	0.06	0.46	0.93	0.06	-0.00	0.78	-1.10	-1.57
OREGON	-0.00	-0.23	1.23	2.25	2.28	1.96	0.97	-0.54	0.12	-0.05	-0.00	2.09	1.27	-0.17
PENNSYLVANIA	0.00	0.39	0.32	0.27	0.46	0.61	0.68	0.47	0.28	0.35	-0.00	-0.18	-0.67	-1.13
RHODE ISLAND	-0.00	0.18	0.04	-0.11	-0.03	-0.12	-0.26	-0.47	0.22	0.03	0.00	-0.03	-0.72	-2.47
SOUTH CAROLINA	0.00	3.69	3.44	6.07	5.38	5.76	6.42	5.23	3.61	1.21	0.00	-1.26	-6.39	-10.12
SOUTH DAKOTA	0.00	3.56	1.47	3.93	2.20	1.29	0.90	1.08	1.21	0.11	0.00	1.42	0.78	0.16
TENNESSEE	0.00	0.24	0.52	0.85	1.17	1.20	1.22	1.35	1.31	0.45	0.00	1.69	-0.30	-1.11
TEXAS	-0.00	5.19	5.27	5.29	4.30	3.98	3.52	4.02	4.33	0.68	0.00	-0.30	-2.02	-2.94
UTAH	-0.00	0.85	0.45	0.50	-1.19	-0.92	-0.97	-1.33	-1.07	-1.09	-0.00	-0.25	-0.39	-1.19
VERMONT	0.00	1.87	0.28	-0.80	-0.95	0.18	0.96	1.81	1.51	0.16	-0.00	-1.16	-1.97	-2.51
VIRGINIA	0.00	2.04	2.51	2.54	2.26	1.57	0.32	0.52	0.59	0.52	-0.00	0.35	-1.04	-2.39
WASHINGTON	0.00	2.70	3.35	3.83	2.55	2.91	2.53	2.94	2.29	0.81	0.00	-1.51	-2.14	-1.70
WEST VIRGINIA	-0.00	3.66	3.00	2.30	1.88	1.43	0.84	0.64	0.32	-0.16	-0.00	0.17	0.17	-0.30
WISCONSIN	-0.00	8.79	8.16	7.67	7.38	6.42	4.87	2.92	2.62	1.34	0.00	-0.63	-1.73	-2.87
WYOMING	0.00	6.75	-1.25	2.33	1.15	-0.89	-2.08	-1.03	-0.62	-1.50	-0.00	1.69	1.96	2.84

large as 2,200%, are shown on Table 3-4. After discussions with several individuals at EEI, the FPC, and in various utilities, it was determined that the problem resulted from the absence of incentive electric heating schedules in certain regions. For instance, in Florida several utilities do not offer electric heating tariffs. Thus, these utilities would not report, and may not tabulate, estimates of the number of customers using electric heat. Further compounding the problem in certain warm climates is the reliance by consumers on appliance type plug in heaters. These portable units may be used either to supply additional heat or to supplement an installed heating system. As a result of these two phenomena, it is not surprising that we found that the FPC and EEI data seriously underestimated the number of homes heated by electricity in southern states. Given this error, the question was whether we should calculate the yearly estimates of electrically heated homes using the FPC or EEI data, or trend the data published in the Census. To answer the question we examined data published by the Census on the type of heating fuels used in new, single family dwelling units constructed between 1964 and 1974. To develop these data the Census Bureau surveyed new housing units to determine the type of heating fuel used. Data are published for four regions; northeast, northwest, southeast, and southwest. Individual estimates for specific states are unavailable because the sample size of the survey is too small. Although we could not directly use the information in the data preparation, they allowed us to determine the trend towards electrically heated homes by region. As can be seen from Table 3-5 the percentage of electrically heated homes increased throughout the period. The increasing use of electricity for heat indicated on Table 3-5 caused us to reject the simple trend techniques. Thus, the data published by the FPC were inflated following the approach suggested in equation 6. The resulting estimate of electrically heated dwelling units shown on Table 3-6 agree with the data published by the U. S. Census Bureau in 1960 and 1970 and follow the growth rates published by the FPC.

Estimates of the number of homes heated by gas were taken directly from trade sources. The American Gas Association has published estimates each year of the number of customers with natural gas heat. These estimates do not exactly agree with estimates published in the Census of Housing. However, as can be seen from Table 3-7, the differences are in general smaller than those encountered with other items. We can list two reasons for the discrepancy. First, some people who inform the Census Bureau that they have heat by natural gas may actually have liquified petroleum gas heat (bottled gas). We suspect this is, however, only a minor problem. Second, in some cases more than one

Table 3-4

THE NUMBER OF CUSTOMERS BY STATE WITH ELECTRIC HEAT
IN 1970 - CENSUS DATA VERSUS FPC

State	Number of Units - Census	Number of Customers - FPC	Difference	%/Difference
Alabama	141,060	99,205	41,855	29.67
Alaska	3,794	3,327	467	12.31
Arizona	66,130	42,431	23,699	35.84
Arkansas	27,475	18,163	9,312	33.89
California	565,956	246,001	319,955	56.53
Colorado	24,038	1,714	22,324	92.87
Connecticut	48,809	43,012	5,797	11.88
Delaware	6,909	3,923	2,986	43.22
Florida	738,548	793,387	-54,839	-7.43
Georgia	147,123	101,357	45,766	31.11
Hawaii	6,081	141,908	-135,827	-2,233.63
Idaho	21,390	13,777	7,613	35.59
Illinois	105,421	50,282	55,139	52.30
Indiana	94,824	110,593	-15,769	-16.63
Iowa	16,998	5,827	11,171	65.72
Kansas	22,397	17,436	4,961	22.15
Kentucky	81,793	15,334	66,459	81.25
Louisiana	63,762	25,404	38,358	60.16
Maine	5,793	3,671	2,122	36.63
Maryland & D. C.	72,903	16,065	56,838	77.96
Massachusetts	71,841	48,544	23,297	32.43
Michigan	67,665	33,892	33,773	49.91
Minnesota	29,728	9,129	20,599	69.29
Mississippi	70,664	43,947	26,717	37.81
Missouri	43,940	20,835	23,105	52.58
Montana	8,464	2,045	6,419	75.84
Nebraska	15,119	5,717	9,402	62.19
Nevada	55,423	46,473	8,950	16.15
New Hampshire	9,994	9,643	351	3.51
New Jersey	72,333	15,007	57,326	79.25
New Mexico	7,529	2,770	4,759	63.21
New York	104,091	36,461	67,630	64.97
North Carolina	162,825	182,272	-19,447	-11.94
North Dakota	5,924	0	5,924	100.00
Ohio	112,543	66,999	45,544	40.47
Oklahoma	42,577	35,527	7,050	16.56
Oregon	205,896	181,753	24,143	11.73
Pennsylvania	145,727	109,837	35,890	24.63
Rhode Island	7,984	5,464	2,520	31.56
South Carolina	485,720	54,730	430,990	88.73
South Dakota	93,178	2,249	90,929	97.59
Tennessee	812,137	485,703	326,434	40.19
Texas	295,858	91,393	204,465	69.11
Utah	54,538	5,406	49,132	90.09
Vermont	63,157	7,484	55,673	88.15
Virginia	604,469	96,032	508,437	84.11
Washington	934,947	157,139	777,808	83.19
West Virginia	131,464	32,902	98,562	74.97
Wisconsin	491,803	5,500	486,303	98.88
Wyoming	14,378	134	14,244	99.07

Source: U. S. Bureau of Census and FPC Typical Electric Bills inflated by residential customers over the number of customers in utilities reporting.

Table 3-5

USE OF SPECIFIC HEATING FUELS
IN NEW SINGLE-FAMILY HOMES
(PERCENTAGE)

Year	Region														
	U.S.A.			Northeast			North Central			South			West		
	Elec.	Oil	Gas	Elec.	Oil	Gas	Elec.	Oil	Gas	Elec.	Oil	Gas	Elec.	Oil	Gas
1966[1]	20	13	64	13	36	48	7	10	83	28	11	56	24	2	73
1967[1]	20	11	66	13	28	56	9	11	80	29	9	58	20	3	76
1968[1]	22	11	65	15	33	51	8	13	78	32	7	57	23	2	74
1969[1]	25	9	64	19	31	49	10	6	83	35	7	57	25	2	72
1970[1]	28	8	62	24	31	43	13	7	80	39	5	54	22	1	76
1971[2]	30	8	60	24	33	42	13	9	78	45	4	49	21	1	78
1972[2]	36	8	54	29	33	36	16	9	74	52	4	42	26	1	72
1973[2]	42	10	47	28	35	34	25	13	61	59	7	33	29	1	69
1974[2]	49	9	41	38	32	29	36	12	51	67	4	27	33	*	66

Footnotes:
* = less than 0.5 percent
(1) Based on housing completion data.
(2) Based on housing permit data.

Source: U.S. Bureau of Census, Construction Reports, C-25,
New Privately Owned One-Family Homes

Table 3-6
STOCK OF ELECTRICALLY HEATED HOUSES
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69	70	71
ALABAMA	33,667	43,994	49,889	57,281	65,187	104,140	112,003	105,255	116,623	131,066	146,460	163,381
ALASKA	0,112	0,154	0,225	0,340	0,482	0,916	1,541	1,854	2,346	2,914	5,988	5,729
ARIZONA	10,951	13,408	16,147	19,522	23,249	28,873	35,331	40,743	46,965	54,850	69,490	88,716
ARKANSAS	3,928	5,789	6,969	8,452	9,975	12,925	15,537	18,316	21,203	24,541	28,548	32,069
CALIFORNIA	149,890	173,428	199,527	230,816	267,398	307,890	359,227	406,516	455,981	509,058	585,065	712,920
COLORADO	1,478	2,023	2,711	3,645	4,748	6,416	8,402	11,185	13,971	17,357	24,826	31,354
CONNECTICUT	1,522	2,243	3,268	4,859	7,153	13,345	21,901	33,831	45,509	58,878	73,422	102,982
DELAWARE	0,591	0,759	0,960	1,253	1,616	1,912	2,981	4,250	5,174	6,004	7,113	7,584
FLORIDA	159,434	186,340	217,881	254,864	297,367	351,802	402,740	498,533	558,766	657,393	774,027	906,656
GEORGIA	19,250	23,775	28,691	35,435	43,632	54,948	86,742	84,929	103,996	130,146	152,849	199,439
HAWAII	1,898	2,132	2,394	2,610	3,021	3,359	3,756	4,126	4,580	5,167	6,270	6,875
IDAHO	5,908	6,808	7,739	8,778	9,937	11,407	12,856	14,522	17,030	19,263	22,085	26,991
ILLINOIS	7,685	10,473	14,102	18,985	25,599	37,367	51,745	69,057	91,806	122,980	152,533	186,132
INDIANA	13,192	16,976	20,395	24,958	30,324	38,192	46,547	57,128	69,631	83,030	98,061	116,646
IOWA	2,410	3,152	3,731	4,617	5,570	6,431	9,054	9,925	11,639	13,787	17,516	20,614
KANSAS	1,875	2,667	3,380	4,343	5,532	8,012	11,421	14,172	17,927	20,209	23,315	25,619
KENTUCKY	13,763	17,101	20,821	25,433	29,758	36,786	117,962	71,790	31,278	74,675	85,857	99,652
LOUISIANA	5,995	7,645	9,633	12,409	15,887	20,495	27,497	31,602	39,814	52,604	66,825	84,315
MAINE	0,521	0,680	0,856	1,079	1,365	1,666	1,817	2,339	3,156	4,398	5,978	8,307
MARYLAND & D.C.	3,776	5,516	7,152	9,655	13,026	17,751	28,715	38,574	50,167	61,378	75,134	89,897
MASSACHUSETTS	2,343	3,335	4,686	6,569	9,282	15,910	24,749	34,080	44,461	58,831	73,611	88,664
MICHIGAN	5,998	7,651	9,701	12,352	15,825	19,266	26,772	35,825	46,825	58,758	70,124	75,636
MINNESOTA	1,430	1,990	2,682	3,678	4,985	7,040	9,264	12,278	16,890	22,759	30,400	37,623
MISSISSIPPI	11,027	13,519	16,331	20,020	23,784	33,410	37,345	45,000	53,370	62,492	73,440	85,980
MISSOURI	4,970	6,813	8,385	10,332	12,812	17,122	25,624	29,567	35,331	39,076	45,876	51,983
MONTANA	2,718	3,043	3,411	3,857	4,329	4,603	5,482	6,304	7,345	7,876	8,837	10,436
NEBRASKA	1,208	1,618	2,212	2,726	3,489	5,196	5,527	8,012	10,115	12,297	15,678	23,793
NEVADA	20,991	24,046	27,760	33,080	36,653	41,982	53,838	60,221	76,874	52,043	57,489	64,251
NEW HAMPSHIRE	0,203	0,300	0,443	0,659	0,961	1,584	2,145	2,800	5,062	7,234	10,297	14,264
NEW JERSEY	4,555	6,031	7,984	10,537	13,961	25,215	37,621	48,796	58,666	66,990	73,626	85,300
NEW MEXICO	1,577	1,673	2,009	2,450	2,939	4,373	4,567	4,711	5,072	4,419	7,937	9,363
NEW YORK	9,226	11,791	15,066	19,298	24,712	31,626	41,204	56,586	72,177	88,577	106,041	124,856
NORTH CAROLINA	9,804	14,268	18,791	24,748	32,507	45,326	62,439	83,052	109,029	136,847	168,141	204,773
NORTH DAKOTA	0,243	0,338	0,471	0,659	0,902	1,243	1,708	2,334	3,247	4,435	6,139	8,531
OHIO	11,443	14,765	18,503	23,339	29,311	36,402	45,780	56,717	71,957	92,528	115,595	146,100
OKLAHOMA	2,286	3,089	4,134	5,615	7,546	8,369	12,482	15,961	23,147	32,998	44,833	59,398
OREGON	81,782	89,249	99,112	109,787	121,052	134,331	149,308	162,229	179,747	198,885	212,728	194,335
PENNSYLVANIA	6,058	8,354	11,460	15,756	21,697	33,819	52,671	74,314	96,691	122,736	149,001	171,508
RHODE ISLAND	0,238	0,339	0,481	0,683	0,974	1,474	2,397	3,483	4,863	6,346	8,219	9,455
SOUTH CAROLINA	3,833	5,258	6,927	9,443	12,458	16,112	24,982	36,098	42,934	54,608	68,995	87,147
SOUTH DAKOTA	0,999	1,257	1,494	1,863	2,226	2,782	3,224	3,755	4,823	5,800	6,962	8,891
TENNESSEE	204,944	223,772	244,424	267,113	292,806	322,338	354,460	374,485	410,950	462,435	507,242	594,609
TEXAS	24,016	32,403	41,588	53,669	68,557	86,056	107,432	139,199	176,764	236,336	298,348	365,554
UTAH	0,968	1,222	1,527	1,918	2,367	3,563	4,156	4,633	5,409	6,735	8,629	11,271
VERMONT	0,273	0,387	0,531	0,732	1,020	1,109	1,898	2,734	3,867	5,649	8,065	10,822
VIRGINIA	8,987	11,883	15,494	20,273	26,477	40,587	57,609	72,511	88,159	108,043	127,781	150,465
WASHINGTON	110,689	126,147	141,176	159,003	175,514	202,659	192,941	221,508	240,411	306,319	352,624	399,440
WEST VIRGINIA	3,035	3,899	4,787	5,879	7,251	8,870	10,954	13,062	16,204	20,576	26,204	33,624
WISCONSIN	2,168	3,046	3,865	4,913	6,280	6,713	7,618	9,100	11,746	16,651	26,309	30,935
WYOMING	0,249	0,342	0,401	0,531	0,666	0,964	1,363	1,698	1,898	2,195	2,737	3,225

Table 3-6 (continued)
STOCK OF ELECTRICALLY HEATED HOUSES
(THOUSANDS)

	72	73
ALABAMA	186,808	212,810
ALASKA	6,704	9,776
ARIZONA	115,016	175,355
ARKANSAS	53,600	71,685
CALIFORNIA	927,013	1,058,462
COLORADO	42,608	68,620
CONNECTICUT	102,619	118,278
DELAWARE	8,415	10,029
FLORIDA	1,052,785	1,196,290
GEORGIA	227,115	332,521
HAWAII	7,603	8,454
IDAHO	33,247	38,772
ILLINOIS	235,592	302,120
INDIANA	135,478	157,493
IOWA	26,934	30,699
KANSAS	28,538	32,834
KENTUCKY	120,497	151,133
LOUISIANA	122,599	165,152
MAINE	12,438	18,036
MARYLAND & D.C.	111,236	139,435
MASSACHUSETTS	108,686	127,432
MICHIGAN	86,758	95,289
MINNESOTA	44,209	52,489
MISSISSIPPI	102,496	124,991
MISSOURI	60,871	65,058
MONTANA	12,059	14,051
NEBRASKA	34,526	49,352
NEVADA	72,167	81,421
NEW HAMPSHIRE	20,169	27,360
NEW JERSEY	95,676	109,905
NEW MEXICO	12,434	16,369
NEW YORK	146,994	169,179
NORTH CAROLINA	248,267	302,076
NORTH DAKOTA	11,890	16,570
OHIO	184,748	246,909
OKLAHOMA	85,314	114,172
OREGON	216,507	247,737
PENNSYLVANIA	196,613	222,602
RHODE ISLAND	12,877	15,855
SOUTH CAROLINA	110,204	146,399
SOUTH DAKOTA	10,513	13,241
TENNESSEE	652,183	762,150
TEXAS	474,112	574,350
UTAH	14,972	19,758
VERMONT	12,152	18,567
VIRGINIA	179,487	222,776
WASHINGTON	461,660	550,591
WEST VIRGINIA	43,475	56,861
WISCONSIN	43,664	67,002
WYOMING	3,883	6,106

Table 3-7

RATIO OF GAS HOUSE HEATING CUSTOMERS AS REPORTED BY THE AGA
TO DWELLING UNITS WITH GAS HEAT AS REPORTED BY THE CENSUS BUREAU

State	1960 # of Units with Gas Heat (Census)	1960 # of Gas Heating Customers (AGA)	1960 Percent Difference	1970 # of Units with Gas Heat (Census)	1970 # of Gas Heating Customers (AGA)	1970 Percent Difference
Alabama	442,153	359,000	18.81	569,537	541,400	4.94
Alaska	57	0	100.00	20,585	14,000	31.98
Arizona	290,299	268,000	7.68	424,457	391,600	7.74
Arkansas	286,148	265,000	7.39	399,311	369,600	7.44
California	4,347,151	230,000	94.70	5,650,839	5,403,600	4.37
Colorado	401,575	333,000	17.08	585,895	510,000	12.95
Connecticut	96,628	91,000	5.82	192,072	178,800	6.90
Delaware	17,658	21,000	-18.93	49,973	42,000	15.95
District of Columbia	90,418	4,000	95.58	137,252	82,800	39.67
Florida	165,735	147,000	11.30	351,778	243,300	30.84
Georgia	533,435	447,000	16.20	808,597	721,400	10.78
Hawaii	108	0	100.00	800	0	100.00
Idaho	21,044	22,000	-4.54	70,460	66,900	5.05
Illinois	1,111,507	1,135,000	-2.11	2,468,259	2,077,100	15.85
Indiana	362,812	358,000	1.33	917,316	794,500	13.39
Iowa	349,629	321,000	8.19	563,016	517,400	8.10
Kansas	516,865	479,000	7.33	598,095	560,700	6.25
Kentucky	388,613	334,000	14.05	570,324	488,500	14.35
Louisiana	706,328	640,000	9.39	859,507	735,700	14.40
Maine	5,689	6,000	-5.47	5,552	6,100	-9.87
Maryland	272,962	276,000	-1.11	549,483	440,800	19.78
Massachusetts	239,305	258,000	-7.81	493,158	436,200	11.55
Michigan	1,028,768	1,000,000	2.80	1,856,238	1,641,100	11.59
Minnesota	390,127	241,000	38.23	622,548	508,600	18.30
Mississippi	276,513	246,000	11.03	332,892	308,900	7.20
Missouri	697,199	613,000	12.08	1,031,425	908,300	11.94
Montana	123,435	105,000	14.93	151,104	126,000	16.61
Nebraska	260,056	235,000	9.63	340,584	298,500	12.36
Nevada	23,841	22,000	7.72	62,379	66,400	-6.44
New Hampshire	11,374	7,000	38.46	24,526	24,100	1.73
New Jersey	446,301	381,000	14.63	914,197	695,900	23.88
New Mexico	174,750	161,000	7.87	225,666	203,500	9.82
New York	1,199,223	997,000	16.86	2,237,007	1,513,500	32.34
North Carolina	60,767	70,000	-15.19	225,500	208,800	7.40
North Dakota	30,360	21,000	30.83	57,706	41,300	28.43
Ohio	1,920,000	1,845,000	3.91	2,517,093	2,353,700	6.49
Oklahoma	568,024	543,000	4.41	672,275	625,800	6.91
Oregon	58,381	61,000	-4.49	163,411	164,000	-.36
Pennsylvania	1,240,476	1,145,000	7.70	1,788,010	1,552,600	13.17
Rhode Island	41,853	49,000	-17.08	80,088	81,200	-1.39
South Carolina	59,364	42,000	29.25	198,630	178,300	10.23
South Dakota	54,941	49,000	10.81	80,531	68,000	15.56
Tennessee	280,773	270,000	3.84	395,806	353,900	10.59
Texas	2,183,285	2,049,000	6.15	2,705,812	2,533,700	6.36
Utah	167,705	156,000	6.98	243,844	217,600	10.76
Vermont	552	0	100.00	6,651	7,800	-17.27
Virginia	191,653	196,000	-2.27	422,986	335,700	20.63
Washington	69,297	69,000	.43	258,892	238,600	7.84
West Virginia	321,314	305,000	5.22	376,303	337,600	10.28
Wisconsin	255,949	256,000	-.02	654,851	572,300	12.61
Wyoming	68,286	54,000	20.92	80,524	68,100	15.43

Source: U. S. Bureau of Census and American Gas Association, Gas Facts

dwelling unit may be served by the same natural gas meter. In such cases the number of customers reported by the Census would exceed the number reported by the AGA. This is thought to be the major reason for the difference. Finally, the Census is subject to a sampling error and the AGA data may miss some customers. The magnitude of these statistical discrepancies is difficult to determine. The estimates of the number of units heated by natural gas are given on Table 3-8.

Electricity and natural gas were used to heat 45% of all dwelling units in 1960 and 63% in 1970. Oil and kerosene heated 32% of the homes in 1960 and 20% in 1970. The number of units heated by oil declined 4% from 17,158,401 in 1960 to 16,473,470 in 1970. Other heating fuels were coal (12.2% in 1960 and 2.9% in 1970), wood (4.2% in 1960 and 1.3% in 1970), bottled gas (5.1% in 1960 and 6.0% in 1970) and other or no fuel (1.3% in 1960 and 1.0% in 1970). Given our yearly estimates of the stock of housing, electrically heated homes, and homes heated by gas we were able by subtraction to prepare estimates of the number of homes heated by fuels other than gas and electricity. The estimates of the number of units in this residual category is shown on Table 3-9. Then, since the econometric modeling work was to concentrate strictly on oil heat, state-by-state ratios for 1960 and 1970 of the number of homes heated by oil to the number of homes in the residual heating category were calculated, smoothed out over the 1960 to 1973 interval as described in equation 16, and applied to the residual category. Table 3-10 presents these ratios for 1960 and 1970.

Table 3-11 below provides a tabulation of Census Bureau estimates of the number of homes heated by oil in 1960 and 1970. Several observations about Table 3-11 are required. As we noted above the growth rates for many states are small. The exceptions we have noted occur generally in states having relatively few homes heated by oil where small numerical changes would have dramatic impacts on growth rates. For instance, Massachusetts with over a million oil heated homes had a net ten year increase of 885 dwelling units. On the other hand, Arkansas experienced a decline of 7.7% per year, but had less than 10,000 homes heated by oil. In Pennsylvania, North Carolina, Virginia, Michigan, Illinois, Indiana, and possibly Connecticut and Wisconsin, fuel oil is an important heating fuel and in each of these states the change in the market size was substantial during the period from 1960 to 1970. The importance of these states to the fuel oil market is illustrated on Table 3-12 where we have ranked the fourteen largest states in order of the number of dwelling units heated by fuel oil. Also shown on Table 3-12 is the compound annual rate of growth for

Table 3-8
STOCK OF NATURAL GAS HEATED HOUSES
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69
ALABAMA	459.485	515.246	526.980	517.837	529.512	531.824	538.587	548.786	556.389	647.177
ALASKA	0.060	0.120	3.018	3.633	5.769	7.613	9.316	11.029	13.828	17.106
ARIZONA	306.817	326.111	340.811	345.665	358.283	365.178	376.631	383.966	397.906	424.252
ARKANSAS	295.305	337.975	318.229	329.278	344.367	354.888	370.237	381.910	394.831	404.852
CALIFORNIA	4,570.160	4,679.628	4,874.478	4,970.801	5,155.326	5,305.617	5,442.959	5,562.485	5,690.461	5,881.703
COLORADO	418.602	451.181	477.158	480.211	496.725	510.345	523.063	536.824	554.370	573.366
CONNECTICUT	99.450	120.254	121.387	127.334	139.304	147.888	156.478	168.031	181.564	187.981
DELAWARE	18.401	21.747	23.425	25.580	28.557	32.121	36.002	39.667	43.426	47.513
DIST. OF COLUMBIA	93.230	97.533	103.358	105.994	111.267	116.769	121.596	126.770	132.152	137.748
FLORIDA	177.320	183.878	214.634	208.993	220.421	242.946	267.222	284.565	311.396	347.312
GEORGIA	552.532	610.680	642.467	642.408	679.138	712.528	743.470	776.389	805.237	820.711
HAWAII	0.111	0.132	0.161	0.197	0.240	0.293	0.360	0.447	0.551	0.672
IDAHO	21.903	26.115	33.440	36.395	41.153	41.726	47.765	55.391	59.943	66.619
ILLINOIS	1,146.519	1,295.878	1,442.288	1,528.098	1,685.229	1,832.488	1,978.548	2,129.549	2,281.728	2,431.621
INDIANA	373.878	431.839	497.732	530.750	591.563	645.321	706.531	765.719	817.849	885.816
IOWA	357.810	389.723	424.046	453.991	488.713	518.783	553.516	593.702	632.879	679.626
KANSAS	538.883	548.308	556.585	559.461	565.127	572.567	580.098	588.947	599.665	614.136
KENTUCKY	401.165	420.742	435.539	444.582	463.040	483.218	503.310	527.906	556.535	605.547
LOUISIANA	735.994	757.987	794.201	816.310	849.515	876.461	909.205	933.314	955.757	970.292
MAINE	5.887	5.861	5.836	5.714	5.592	5.184	5.353	5.805	5.875	5.755
MARYLAND	282.352	303.415	325.289	341.544	370.345	402.797	433.606	466.206	498.716	533.840
MASSACHUSETTS	246.436	262.923	301.812	304.764	326.393	362.006	384.834	422.629	450.270	471.214
MICHIGAN	1,071.050	1,148.863	1,245.450	1,282.509	1,363.113	1,451.239	1,556.570	1,652.740	1,746.383	1,842.287
MINNESOTA	399.529	436.399	466.619	473.557	494.885	518.778	542.115	576.173	592.744	606.277
MISSISSIPPI	283.841	287.902	295.325	293.243	299.514	306.148	315.144	320.259	327.284	332.464
MISSOURI	722.995	755.250	788.720	811.948	856.596	895.615	931.363	973.899	1,016.243	1,046.425
MONTANA	123.979	122.243	132.523	134.273	138.093	140.860	143.778	146.356	149.579	153.332
NEBRASKA	267.676	276.694	286.924	289.509	298.470	307.495	315.302	321.175	330.141	341.292
NEVADA	24.990	26.847	30.844	33.412	41.023	45.343	50.350	51.828	55.460	59.661
NEW HAMPSHIRE	11.755	16.020	16.812	16.039	16.414	21.498	22.408	23.310	23.620	24.293
NEW JERSEY	456.978	501.875	553.929	584.141	632.606	680.415	733.802	783.744	833.645	883.088
NEW MEXICO	182.596	189.976	193.975	193.877	200.550	207.261	208.930	215.009	222.982	233.651
NEW YORK	1,227.245	1,336.204	1,444.178	1,521.611	1,657.772	1,781.698	1,877.066	1,978.790	2,075.888	2,172.378
NORTH CAROLINA	62.724	73.269	89.867	98.073	119.995	136.242	150.492	166.141	188.279	214.696
NORTH DAKOTA	31.183	35.547	39.889	41.703	45.124	48.088	50.744	52.657	55.724	56.598
OHIO	1,982.593	2,064.484	2,131.615	2,152.410	2,218.709	2,285.179	2,345.942	2,406.415	2,470.094	2,525.603
OKLAHOMA	593.244	605.189	626.012	622.464	633.287	647.624	659.822	671.986	684.114	697.898
OREGON	69.833	69.030	78.283	81.855	93.933	106.797	117.506	126.038	144.751	167.071
PENNSYLVANIA	1,272.356	1,341.225	1,377.126	1,403.336	1,456.985	1,506.292	1,563.602	1,627.544	1,685.775	1,737.487
RHODE ISLAND	48.448	52.545	57.657	58.411	61.068	63.939	66.825	69.827	74.664	73.310
SOUTH CAROLINA	61.822	83.383	103.905	106.419	120.279	136.050	152.299	168.090	179.163	193.793
SOUTH DAKOTA	56.358	64.390	65.542	67.563	71.365	74.903	78.418	80.211	83.899	91.875
TENNESSEE	289.786	295.226	302.911	297.412	311.391	329.355	347.573	360.617	375.435	392.295
TEXAS	2,309.262	2,367.950	2,421.006	2,434.729	2,496.697	2,546.945	2,591.674	2,641.816	2,701.770	2,759.135
UTAH	174.380	184.901	189.856	193.371	203.563	211.202	218.764	225.566	233.199	240.869
VERMONT	0.569	0.529	0.477	0.528	0.408	0.632	4.405	7.388	7.625	7.605
VIRGINIA	198.756	222.425	246.787	254.849	278.780	302.715	326.495	350.671	377.579	407.765
WASHINGTON	73.060	95.996	118.191	124.471	141.740	161.234	182.002	205.965	232.964	256.956
WEST VIRGINIA	333.850	336.631	342.749	344.031	349.895	355.137	360.310	366.546	374.545	381.241
WISCONSIN	262.352	297.172	335.814	354.835	397.854	441.832	485.343	533.742	579.571	628.242
WYOMING	71.058	75.800	77.878	77.217	80.274	80.106	80.695	81.022	82.212	82.763

Table 3-8 (continued)
STOCK OF NATURAL GAS HEATED HOUSES
(THOUSANDS)

	70	71	72	73
ALABAMA	591.341	587.952	589.814	584.286
ALASKA	21.640	22.325	24.880	27.606
ARIZONA	446.316	464.455	499.601	527.433
ARKANSAS	414.886	421.677	436.231	445.181
CALIFORNIA	5,842.458	6,000.218	5,844.728	6,080.161
COLORADO	605.056	627.279	671.742	709.841
CONNECTICUT	196.047	201.157	204.295	208.203
DELAWARE	51.461	51.569	59.878	62.868
DIST. OF COLUMBIA	143.222	149.977	156.465	162.836
FLORIDA	368.658	401.655	442.797	458.041
GEORGIA	840.047	859.935	883.239	901.202
HAWAII	0.825	1.019	1.254	1.534
IDAHO	72.757	78.669	87.779	99.502
ILLINOIS	2,551.659	2,710.818	2,843.589	2,968.563
INDIANA	948.621	1,013.416	1,070.149	1,119.874
IOWA	580.125	744.389	763.465	803.514
KANSAS	622.794	640.636	653.114	668.214
KENTUCKY	591.770	611.554	637.438	649.035
LOUISIANA	900.850	1,016.187	1,035.728	1,030.895
MAINE	5.730	5.424	5.122	4.821
MARYLAND	564.540	604.087	651.436	693.501
MASSACHUSETTS	505.433	547.187	589.776	628.660
MICHIGAN	1,923.962	2,026.369	2,115.198	2,189.210
MINNESOTA	636.869	666.203	684.353	703.226
MISSISSIPPI	335.941	341.311	357.676	363.579
MISSOURI	1,077.114	1,100.361	1,155.211	1,205.369
MONTANA	157.751	159.825	166.478	175.499
NEBRASKA	353.114	365.970	375.582	389.927
NEVADA	64.697	68.317	73.325	80.955
NEW HAMPSHIRE	25.273	24.210	24.146	23.946
NEW JERSEY	930.303	1,015.745	1,070.700	1,072.180
NEW MEXICO	237.898	244.835	259.221	265.080
NEW YORK	2,279.320	2,329.328	2,255.769	2,476.481
NORTH CAROLINA	232.823	257.572	293.903	313.854
NORTH DAKOTA	59.784	64.541	68.985	74.268
OHIO	2,585.298	2,626.198	2,697.163	2,716.241
OKLAHOMA	708.037	722.779	743.085	753.348
OREGON	168.839	187.244	193.850	205.485
PENNSYLVANIA	1,828.248	1,893.950	1,937.958	1,980.975
RHODE ISLAND	82.484	84.438	86.709	92.474
SOUTH CAROLINA	207.296	217.678	230.126	231.368
SOUTH DAKOTA	93.381	97.847	101.589	106.013
TENNESSEE	409.620	423.304	446.873	459.849
TEXAS	2,856.528	2,820.211	2,856.615	2,857.279
UTAH	249.378	260.570	277.460	291.547
VERMONT	6.853	5.916	4.895	4.034
VIRGINIA	435.588	464.414	502.586	530.777
WASHINGTON	271.432	296.094	309.906	325.384
WEST VIRGINIA	388.571	396.196	409.468	412.348
WISCONSIN	668.743	711.266	757.798	800.184
WYOMING	83.672	86.029	90.531	92.319

Table 3-9
STOCK OF HOUSES HEATED BY FUELS OTHER THAN GAS OR ELECTRICITY
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69
ALABAMA	425,620	493,479	469,859	478,678	456,838	419,606	413,965	414,487	396,473	294,053
ALASKA	59,663	59,377	59,722	64,653	64,167	62,693	59,834	59,021	60,321	57,340
ARIZONA	69,741	70,143	69,040	79,551	75,790	76,412	71,445	73,109	71,756	60,396
ARKANSAS	241,265	350,805	341,976	337,094	309,849	294,338	270,593	251,615	235,168	212,882
CALIFORNIA	517,680	575,231	519,949	594,761	592,099	573,174	512,623	491,061	427,771	289,738
COLORADO	131,797	131,380	126,280	146,773	134,203	124,520	118,145	109,736	106,685	99,016
CONNECTICUT	673,763	668,683	673,971	690,362	692,539	698,689	698,662	689,208	681,771	683,326
DELAWARE	114,998	114,873	114,374	117,702	118,660	118,884	118,913	116,880	115,620	112,771
FLORIDA	1,321,961	1,346,995	1,346,029	1,378,949	1,386,756	1,381,525	1,367,068	1,329,977	1,326,924	1,284,772
GEORGIA	536,853	506,632	476,431	503,333	489,320	477,463	465,647	468,058	458,506	448,184
HAWAII	155,560	159,330	163,120	162,092	170,977	175,671	181,017	185,257	189,976	196,329
IDAHO	173,939	173,179	166,517	163,676	158,502	159,263	152,028	144,502	141,132	134,390
ILLINOIS	2,028,090	1,951,806	1,839,930	1,787,120	1,667,052	1,551,913	1,433,864	1,301,268	1,164,758	1,031,372
INDIANA	1,043,191	1,080,135	1,007,833	995,617	943,980	898,640	854,386	797,341	755,193	681,868
IOWA	500,867	537,352	481,558	470,603	431,566	393,113	351,750	308,960	274,396	221,147
KANSAS	154,532	223,638	208,800	209,876	201,133	184,497	168,117	154,814	137,264	116,156
KENTUCKY	464,459	485,701	494,052	511,201	477,544	456,044	359,915	392,000	415,507	326,109
LOUISIANA	187,875	182,115	150,565	153,926	140,163	127,632	105,412	91,245	85,189	68,892
MAINE	283,694	292,128	290,227	288,658	288,066	287,936	290,697	292,871	295,071	295,571
MARYLAND & D.C.	773,284	827,641	826,464	838,424	834,399	826,650	808,585	783,022	756,003	725,211
MASSACHUSETTS	1,332,008	1,348,570	1,322,167	1,327,693	1,326,675	1,298,247	1,290,738	1,268,279	1,255,256	1,247,301
MICHIGAN	1,254,027	1,205,868	1,124,727	1,112,603	1,071,608	1,032,705	971,323	905,802	851,993	790,239
MINNESOTA	614,951	618,895	596,225	615,495	607,500	592,162	576,550	549,156	545,669	532,798
MISSISSIPPI	288,273	297,517	294,534	309,327	296,370	283,818	273,756	269,249	259,919	243,533
MISSOURI	682,369	804,341	764,965	737,215	697,522	663,089	628,053	579,661	540,352	501,388
MONTANA	76,363	78,936	69,807	70,932	68,482	68,088	66,367	67,286	66,619	62,156
NEBRASKA	177,248	188,459	209,593	188,095	178,312	172,819	169,054	158,911	144,843	124,244
NEVADA	49,951	54,070	57,133	65,239	61,734	57,626	38,092	35,433	20,489	46,879
NEW HAMPSHIRE	174,098	173,696	176,328	181,948	182,686	180,128	184,937	188,912	192,760	194,603
NEW JERSEY	1,387,845	1,383,079	1,371,677	1,376,116	1,370,190	1,358,613	1,339,143	1,318,792	1,294,911	1,271,150
NEW MEXICO	78,508	80,043	82,091	92,561	91,780	85,724	79,225	69,867	65,676	63,189
NEW YORK	4,134,359	4,091,267	4,047,866	4,048,740	3,989,477	3,917,380	3,877,831	3,835,797	3,776,747	3,716,171
NORTH CAROLINA	1,170,998	1,305,599	1,303,724	1,309,130	1,295,441	1,283,638	1,271,499	1,253,352	1,233,090	1,187,206
NORTH DAKOTA	146,638	144,511	142,343	143,939	139,649	136,954	133,894	130,398	128,772	125,659
OHIO	951,441	978,293	932,363	952,206	912,235	887,864	850,383	797,062	764,030	727,193
OKLAHOMA	171,654	173,713	159,076	180,460	178,630	177,479	165,530	161,575	159,389	146,458
OREGON	439,032	430,604	429,301	431,829	422,780	409,989	393,171	374,826	357,283	332,217
PENNSYLVANIA	2,158,589	2,124,366	2,104,509	2,101,324	2,074,898	2,051,794	2,018,995	1,962,391	1,920,490	1,891,632
RHODE ISLAND	218,459	217,319	214,119	215,651	216,042	216,166	216,643	215,115	214,062	212,435
SOUTH CAROLINA	562,883	570,067	552,227	574,654	563,270	559,190	553,278	530,577	522,762	501,474
SOUTH DAKOTA	142,497	142,226	137,242	141,175	134,534	129,395	125,591	123,572	119,704	109,113
TENNESSEE	540,747	533,749	523,381	525,003	507,884	482,720	457,329	447,994	423,564	376,442
TEXAS	605,228	746,750	743,597	795,924	764,935	756,018	730,182	711,942	699,343	556,407
UTAH	75,798	73,593	74,399	78,301	70,661	67,382	63,049	57,274	53,507	48,663
VERMONT	115,356	116,635	115,873	115,689	116,680	119,179	117,898	117,767	119,346	119,096
VIRGINIA	904,677	922,476	924,679	945,645	948,619	942,048	928,450	919,312	907,808	891,375
WASHINGTON	759,010	754,843	734,870	734,764	704,800	675,267	675,501	648,948	636,149	575,751
WEST VIRGINIA	203,737	221,766	211,448	205,940	197,946	190,882	183,274	176,656	166,456	156,848
WISCONSIN	911,221	1,005,619	970,094	956,084	925,023	889,290	847,611	787,896	755,738	708,174
WYOMING	31,906	35,953	25,615	31,074	27,160	25,649	23,747	24,037	23,199	21,611

Table 3-9 (continued)
STOCK OF HOUSES HEATED BY FUELS OTHER THAN GAS OR ELECTRICITY
(THOUSANDS)

	70	71	72	73
ALABAMA	335,891	327,571	306,406	318,531
ALASKA	57,476	57,531	55,634	58,925
ARIZONA	51,024	60,703	46,220	6,658
ARKANSAS	195,998	194,457	158,753	139,363
CALIFORNIA	369,395	231,453	356,431	163,906
COLORADO	83,618	88,789	79,585	62,874
CONNECTICUT	685,152	664,817	678,473	677,092
DELAWARE	111,134	114,755	108,128	108,354
FLORIDA	1,251,824	1,216,525	1,181,519	1,213,747
GEORGIA	429,560	390,707	357,456	279,645
HAWAII	202,323	207,978	215,587	222,585
IDAHO	131,257	129,334	123,022	115,702
ILLINOIS	916,465	762,923	635,578	500,618
INDIANA	617,768	555,022	487,218	439,705
IOWA	325,932	162,010	132,648	90,182
KANSAS	104,502	86,445	69,912	54,029
KENTUCKY	343,015	308,163	287,983	272,363
LOUISIANA	134,914	23,892	-11,111	-26,441
MAINE	300,944	305,063	307,972	316,725
MARYLAND & D.C.	698,286	667,498	625,540	585,397
MASSACHUSETTS	1,224,515	1,187,161	1,155,882	1,128,881
MICHIGAN	737,022	680,034	634,680	609,567
MINNESOTA	513,239	493,545	474,819	472,976
MISSISSIPPI	252,314	250,534	224,520	245,655
MISSOURI	464,865	450,612	396,010	353,411
MONTANA	60,267	62,527	59,039	54,255
NEBRASKA	122,344	112,945	97,328	78,974
NEVADA	43,828	41,306	38,200	33,887
NEW HAMPSHIRE	196,670	203,270	206,004	206,660
NEW JERSEY	1,253,239	1,193,316	1,173,361	1,200,865
NEW MEXICO	59,244	61,728	54,213	57,795
NEW YORK	3,640,495	3,602,094	3,696,847	3,529,848
NORTH CAROLINA	1,157,639	1,122,691	1,060,805	1,028,917
NORTH DAKOTA	122,238	117,279	112,275	105,143
OHIO	677,702	642,744	581,780	552,206
OKLAHOMA	143,188	139,921	109,485	99,941
OREGON	332,998	365,519	363,947	347,313
PENNSYLVANIA	1,808,443	1,759,579	1,730,634	1,715,891
RHODE ISLAND	209,999	209,580	208,253	201,194
SOUTH CAROLINA	490,146	482,727	445,731	424,789
SOUTH DAKOTA	107,563	105,816	101,230	97,127
TENNESSEE	338,728	290,089	226,375	150,128
TEXAS	470,357	521,232	438,868	440,380
UTAH	46,675	40,622	32,766	30,457
VERMONT	121,180	121,142	122,834	120,540
VIRGINIA	868,712	860,476	835,901	818,744
WASHINGTON	536,387	468,096	410,336	333,553
WEST VIRGINIA	150,281	143,815	129,253	121,317
WISCONSIN	661,985	626,051	579,931	530,877
WYOMING	22,283	22,411	18,836	18,426

Table 3-10

RATIO OF DWELLING UNITS HEATED BY OIL HEAT TO
DWELLING UNITS WITH TYPES OF HEAT OTHER THAN ELECTRICITY AND GAS

Rank	State	1960	1970
1	Maine	83.0495	95.3645
2	New Hampshire	85.1920	95.1126
3	Vermont	77.9102	90.3001
4	Connecticut	92.2153	96.9737
5	Rhode Island	93.6256	97.2554
6	Massachusetts	89.4969	96.9656
7	North Carolina	59.7708	83.3617
8	Delaware	86.0861	93.9530
9	New York	84.7058	93.9657
10	Alaska	6.5015	5.9540
11	New Jersey	83.7581	94.8127
12	Virginia	56.7970	80.1411
13	North Dakota	62.3542	73.7640
14	South Carolina	52.8085	69.7170
15	Maryland	80.2346	90.6017
16	Washington	81.0357	88.3112
17	Idaho	58.0263	69.2133
18	Wisconsin	66.5372	80.2933
19	South Dakota	68.0619	67.1569
20	Oregon	72.2799	81.1891
21	Pennsylvania	49.4001	73.2128
22	District of Columbia	65.8335	83.3889
23	Minnesota	70.2425	78.8078
24	Florida	57.8784	55.9043
25	Indiana	58.0012	72.5317
26	Michigan	65.2704	80.0709
27	Iowa	63.0296	58.8305
28	Nevada	64.9109	59.8675
29	Ohio	47.0012	70.1640
30	Illinois	48.8381	53.2239
31	Montana	50.5197	51.7008
32	Nebraska	57.1584	39.7092
33	West Virginia	10.6287	34.4091
34	Kentucky	14.4992	26.6939
35	Missouri	35.4178	29.7755
36	Tennessee	14.4573	23.3454
37	Georgia	20.4739	16.4341
38	Utah	34.0951	32.5754
39	Wyoming	26.9161	16.6581
40	Alabama	6.5015	5.9540
41	Colorado	24.9015	14.5058
42	Kansas	24.2552	10.7007
43	New Mexico	15.7624	7.2214
44	Arizona	19.7772	8.3920
45	Arkansas	3.9084	2.1608
46	California	18.6445	12.4526
47	Mississippi	2.4365	1.7455
48	Louisiana	7.9084	4.3186
49	Texas	8.2047	2.9591
50	Hawaii	.2773	.3099
51	Oklahoma	3.9981	1.4064

Source: U. S. Bureau of Census

Table 3-11

ESTIMATES OF THE NUMBER OF HOMES
HEATED BY FUEL OIL AND KEROSENE

State	1960	% of Dwelling Units Heated by Oil	1970	Dwelling Units Heated by Oil	Difference	Compound Annual Growth
Alabama	26,628	3.0	19,262	1.9	-7,366	-3.2%
Alaska	40,918	71.5	44,728	56.6	3,810	0.9
Arizona	13,047	3.6	4,076	0.8	-8,971	-11.0
Arkansas	9,130	1.7	4,076	0.7	-5,054	-7.7
California	91,802	1.8	44,464	0.7	-47,338	-7.0
Colorado	31,482	5.9	11,749	1.7	-19,733	-9.4
Connecticut	603,668	80.2	671,434	71.9	67,766	1.1
Delaware	95,002	73.9	101,396	61.5	6,394	0.7
District of Columbia	105,772	42.0	91,727	34.9	-14,045	-1.4
Florida	715,181	46.1	667,754	29.2	-47,427	-0.7
Georgia	106,117	9.9	67,956	5.0	-38,161	-4.4
Hawaii	419	0.3	608	0.3	189	3.3
Idaho	96,973	50.0	87,977	40.2	-8,996	-1.0
Illinois	960,164	31.1	494,162	14.1	-466,002	-6.4
Indiana	587,125	42.3	433,271	26.9	-153,854	-3.0
Iowa	308,450	36.7	186,079	20.8	-122,371	-4.9
Kansas	37,410	5.6	11,436	1.6	-25,974	-12.2
Kentucky	65,380	7.7	88,053	9.0	22,673	3.0
Louisiana	14,256	1.6	5,561	0.5	-8,695	-9.0
Maine	227,691	81.2	278,062	92.1	50,371	2.0
Maryland	470,470	54.5	514,594	43.8	44,124	0.9
Massachusetts	1,157,556	75.4	1,158,441	65.8	885	0.0
Michigan	786,215	35.1	583,842	22.0	-202,373	-2.9
Minnesota	421,777	42.5	395,355	34.3	-26,422	-0.6
Mississippi	6,842	1.2	4,070	0.6	-2,772	-5.1
Missouri	233,071	17.1	132,561	8.7	-100,510	-5.5
Montana	38,444	19.0	29,850	13.7	-8,594	-2.5
Nebraska	98,437	22.7	46,864	9.9	-51,573	-7.2
Nevada	30,932	33.8	25,294	15.8	-5,638	-2.0
New Hampshire	143,506	79.7	181,530	80.5	38,024	2.4
New Jersey	1,135,499	62.9	1,167,762	52.6	32,263	0.3
New Mexico	11,844	4.7	4,058	1.4	-7,786	-10.2
New York	3,422,512	65.2	3,351,171	56.8	-71,341	-0.2
North Carolina	678,070	56.3	934,684	61.9	256,614	3.3
North Dakota	89,020	51.3	87,029	47.9	-1,991	-0.2
Ohio	433,104	15.2	462,939	14.1	29,835	0.7
Oklahoma	6,572	0.9	1,912	0.2	-4,660	-11.6
Oregon	304,549	54.6	261,692	37.8	-42,857	-1.5
Pennsylvania	1,039,604	31.0	1,294,817	35.0	255,213	2.2
Rhode Island	201,532	78.3	198,297	67.9	-3,255	-0.2
South Carolina	285,433	47.3	327,416	44.6	41,983	1.4
South Dakota	94,542	48.5	76,258	38.0	-18,284	-2.1
Tennessee	75,750	7.6	76,397	6.3	647	0.1
Texas	46,941	1.7	13,184	0.4	33,757	-11.9
Utah	24,854	10.3	14,871	5.0	-9,983	-5.0
Vermont	85,635	77.3	106,211	80.4	20,576	2.2
Virginia	495,548	46.2	676.033	48.6	180,485	3.2
Washington	583,362	65.2	451,152	40.8	-132,210	-2.5
West Virginia	20,875	4.0	50,077	9.2	29,202	9.1
Wisconsin	591,037	51.6	521,256	39.2	-69,781	-1.2
Wyoming	8,253	8.3	3,572	3.4	-4,681	-8.0

Source: U. S. Bureau of Census

Table 3-12

EVALUATION OF MARKET TRENDS
IN MOST IMPORTANT FUEL OIL MARKETS

Rank	State	Number Dwelling Units Heated by Oil	Growth in Market	Cumulated Percent of U.S. Market
1	New York	3,351,171	-0.2	20.3
2	Pennsylvania	1,294,817	2.2	28.2
3	New Jersey	1,167,762	0.3	35.3
4	Massachusetts	1,158,411	0.0	42.3
5	North Carolina	934,684	3.3	48.0
6	Virginia	676,033	3.2	52.1
7	Connecticut	671,434	1.1	56.2
8	Florida	667,754	-0.7	60.2
9	Michigan	583,842	-2.9	63.8
10	Wisconsin	521,256	-1.2	66.9
11	Maryland	514,594	0.9	70.1
12	Illinois	494,162	-6.4	73.1
13	Ohio	462,939	0.7	75.9
14	Indiana	433,271	-3.0	78.5

Source: U. S. Bureau of Census

each market. In each case where there was a large change in the market size, some outside factor played an important note. In Pennsylvania the number of dwelling units heated by fuel oil increased as the number heated by coal declined. In North Carolina the market increase resulted from rapid expansion in the population and dwelling units (oil had always been the dominant heating fuel there). In Illinois, the increase resulted from the increased availability of natural gas. (The number of occupied dwelling units in Illinois increased from 3.084 million to 3.502 million while the number of units using utility gas for heating increased from 1.111 million to 2.468 million). We indicate on Table 3-13 the ranking of all fifty states in terms of the percent of homes heated by fuel oil and kerosene. Also shown on Table 3-13 is the compound rate of increase in the number of homes heated by fuel oil from 1960 to 1970.

The development of data on heating fuel stocks can be summarized as follows. The determination of the number of dwelling units heated by natural gas could be made easily using data published by the AGA. The determination of the number of units heated by electricity was made with more difficulty using the statistics published by the FPC inflated by the ratio of total customers in a state to customers reporting. The determination of the number of units heated by fuel oil and kerosene was made by determining the relationship of oil-heated homes to all homes not heated by electricity or gas.

WATER HEATING

The use of energy for water heating represents the second most intensive use in the household sector. According to the statisitcs shown on Table 1-2 water heating amounted to 15% of 1970 household use of electricity and 23% of household use of natural gas. In terms of relative fuel shares, electricity has played a much greater role for water heating than it has for heating dwelling units. The use of electricity for water heating was sufficiently important that one of the types of capital analyzed in the Fisher - Kaysen study was water heating. Perhaps this phenomenon is a result of special incentive rates offered by utilities for offpeak water heating or perhaps it is a result of the relative mechanical simplicity of electric water heating. Whatever the reason, use of electricity for water heating has dominated fuel oil.

Due to the relative importance of water heating in energy usage, special attention was given to the development of the data. In particular we tried to

Table 3-13

RANKING OF STATES BY USAGE OF FUEL OIL AND KEROSENE
AS A PERCENT OF ALL TYPES OF HEATING FUELS FOR 1970

Rank	State	Percent Usage of Fuel Oil	Rate of Growth of Fuel Oil
1	Maine	92.1%	2.0
2	New Hampshire	80.5	2.4
3	Vermont	80.4	2.2
4	Connecticut	71.7	1.1
5	Rhode Island	67.9	-0.2
6	Massachusetts	65.8	0.0
7	North Carolina	61.9	3.3
8	Delaware	61.5	0.7
9	New York	56.8	-0.2
10	Alaska	56.6	0.9
11	New Jersey	52.6	0.3
12	Virginia	48.6	3.2
13	North Dakota	47.9	-0.2
14	South Carolina	44.6	1.4
15	Maryland	43.8	0.9
16	Washington	40.8	-2.5
17	Idaho	40.2	-1.0
18	Wisconsin	39.2	-1.2
19	South Dakota	38.0	-2.1
20	Oregon	37.8	-1.5
21	Pennsylvania	35.0	2.2
22	District of Columbia	34.9	-1.4
23	Minnesota	34.3	-0.6
24	Florida	29.2	-0.7
25	Indiana	26.9	-3.0
26	Michigan	22.0	-2.9
27	Iowa	20.8	-4.9
28	Nevada	15.8	-2.0
29	Ohio	14.1	0.7
30	Illinois	14.1	-6.4
31	Montana	13.7	-2.5
32	Nebraska	9.9	-7.2
33	West Virginia	9.2	9.1
34	Kentucky	9.0	3.0
35	Missouri	8.7	-5.5
36	Tennessee	6.3	0.1
37	Georgia	5.0	-4.4
38	Utah	5.0	-5.0
39	Wyoming	3.4	-8.0
40	Alabama	1.9	-3.2
41	Colorado	1.7	-9.6
42	Kansas	1.6	-12.2
43	New Mexico	1.4	-10.2
44	Arizona	0.8	-11.0
45	Arkansas	0.7	-7.7
46	California	0.7	-7.0
47	Mississippi	0.6	-5.1
48	Louisiana	0.5	9.0
49	Texas	0.4	-11.9
50	Hawaii	0.3	3.8
51	Oklahoma	0.2	-11.6

Source: U. S. Bureau of Census

uncover information on inventories of water heaters, by type of fuel, on a state by state basis. We had less success than we had desired. The only data source with yearly estimates we were able to find was Merchandising Week. Unfortunately, there are a number of problems associated with these data. The problems are discussed in the section on appliance data. It is sufficient to note here that they appear to be extremely questionable due to the differences in collection techniques.

As a result of our failure to find adequate yearly data, the estimates of the number of gas, electric, and fuel oil water heaters were based in part on our calculations of the number of dwelling units heated by gas, oil, and electricity. We began by noting that most units with gas heat had gas water heaters. (In 1960 the ratio of gas heat to gas water heating was .90. In 1970 the ratio was 1.0. See Table 3-14). Calculations were made to determine whether there was a systematic bias by state. The calculations, shown on Tables 3-15 and 3-16, suggest that most housing units with gas heat in the west and southwest had gas water heating. For instance, in California there were 87,315 more units with gas water heating than gas heat out of 5,740,154 units with gas water heat. In other regions, such as the upper midwest, there were far more homes with natural gas water heating than gas heat. In Illinois the 1960 Census data show that there were 60% more gas water heating customers than heating customers. (A difference of 654,502 units). This ratio dropped to 6% in 1970 (154,874 units). While further research into the precise cause of the large 1960 discrepancy is required, our analysis suggests that consumers were willingly adding natural gas water heating and cooking in the late 1950's and early 1960's but not changing heating burners from oil to gas until their fuel oil burners wore out. Such a pattern of behavior is plausible because fuel oil was, until 1974, competitive in price with gas for heating but not for water heating. Thus, significant cost savings could apparently be realized by substituting a gas water heater for hot water provided by the heating system.

The speculation on the unattractiveness of fuel oil fired water heating is borne out by the national data shown on Table 3-14 as well as the data for individual states shown on Tables 3-15 and 3-16. In 1960, 10,959,078 dwelling units with fuel oil heat used some other type of fuel for water heating. In 1970, the number of homes had decreased to 10,272,362. This decline of 686,716 dwelling units almost exactly matches the decline in the number of homes heated by oil which was 684,931. One inference one could, but should not, draw from these almost identical estimates is that none of the new homes constructed

Table 3-14

COMPARISON OF NATIONAL DATA ON HEATING
AND WATER HEATING FUELS
(CENSUS DATA)
DWELLING UNITS

	1960		1970	
	Units	Percent of Market	Units	Percent of Market
Natural Gas				
Dwelling Units with Gas Heat	22,851,216	43.1	35,013,745	55.2
Dwelling Units with Gas Water Heat	25,239,442	47.6	34,959,267	55.1
Difference	+2,388,226		-54,478	
Ratio Heat/Water Heat	.905		1.002	
Fuel Oil				
Dwelling Units with Oil Heat	17,158,401	32.4	16,473,470	26.0
Dwelling Units with Oil Water Heat	6,199,323	11.7	6,201,108	9.8
Difference	-10,959,078		-10,272,362	
Ratio Heat/Water Heat	2.768		2.657	
Electricity				
Dwelling Units with Electric Heat	933,023	1.8	4,876,038	7.7
Dwelling Units with Electric Water Heat	10,799,630	20.4	16,102,833	25.4
Difference	+9,866,607		+11,226,795	
Ratio Heat/Water Heat	.086		.303	

Source: U. S. Bureau of Census

Table 3-15

DIFFERENCE BETWEEN WATER HEATING FUELS AND
HEATING FUELS - CENSUS DATA - 1960

State	Gas			Oil			Electricity		
	Heat	Water Heat	Difference	Heat	Water Heat	Difference	Heat	Water Heat	Difference
Alabama	442,153	298,256	-143,897	26,628	1,370	-25,258	32,397	241,548	209,151
Alaska	57	183	126	40,918	18,810	-22,108	107	15,815	15,708
Arizona	290,299	274,260	-16,039	13,047	665	-12,382	10,361	31,667	21,306
Arkansas	286,148	239,533	-46,615	9,130	1,232	-7,898	3,804	25,339	21,535
California	4,347,151	4,338,564	-8,587	91,802	13,235	-78,567	142,576	330,561	187,985
Colorado	401,575	380,492	-21,083	31,482	3,828	-27,654	1,418	63,349	61,931
Connecticut	96,628	216,589	119,961	603,668	313,728	-289,940	1,479	135,463	133,984
Delaware	17,658	42,716	25,058	95,002	32,113	-62,889	567	25,995	25,428
District of Columbia	90,418	138,602	48,184	105,772	62,692	-43,080	982	5,108	4,126
Florida	165,735	186,655	20,920	715,181	40,241	-674,940	149,018	903,898	754,880
Georgia	533,435	381,807	-151,628	106,117	2,708	-103,409	18,585	332,946	314,361
Hawaii	108	35,992	35,884	419	6,136	5,717	1,844	84,705	82,861
Idaho	21,044	8,290	-12,754	96,973	1,502	-95,471	5,676	161,547	155,871
Illinois	1,111,507	1,766,009	654,502	960,164	120,338	-839,826	7,450	380,563	373,113
Indiana	362,812	638,247	275,435	587,125	31,584	-555,541	12,803	416,163	403,360
Iowa	349,629	364,089	14,460	308,450	26,488	-281,962	2,355	239,999	237,664
Kansas	516,865	492,490	-24,375	37,410	2,705	-34,705	1,799	49,654	47,855
Kentucky	388,613	362,941	-25,672	65,380	3,790	-61,590	13,332	161,147	147,815
Louisiana	706,328	580,943	-125,385	14,256	1,004	-13,252	5,753	21,049	15,296
Maine	5,689	18,565	12,876	227,691	94,697	-132,994	503	82,306	81,803
Maryland	272,962	440,105	167,143	470,470	163,621	-306,849	2,671	114,166	111,495
Massachusetts	239,305	498,838	-259,533	1,157,556	707,166	-450,390	2,276	143,683	141,407
Michigan	1,028,768	1,318,205	289,437	786,215	81,231	-704,984	5,760	532,869	527,109
Minnesota	390,127	437,470	47,343	421,777	31,596	-390,181	1,396	296,705	294,309
Mississippi	276,513	208,713	-67,800	6,842	570	-6,272	10,742	56,259	45,517
Missouri	697,199	758,288	61,089	233,071	16,131	-216,940	4,793	172,284	167,491
Montana	123,435	109,726	-13,709	38,444	2,058	-36,386	2,708	60,179	57,471
Nebraska	260,056	254,000	-6,056	98,437	6,887	-91,550	1,174	93,791	92,617
Nevada	23,841	19,655	-4,186	30,932	5,052	-25,880	20,026	47,360	27,334
New Hampshire	11,374	18,736	7,362	143,506	78,663	-64,843	196	40,230	40,034
New Jersey	446,301	756,399	310,098	1,135,499	686,886	-448,613	4,449	161,220	156,771
New Mexico	174,750	156,563	-18,187	11,844	755	11,089	1,318	26,149	24,831
New York	1,199,223	1,503,819	304,596	3,442,512	2,676,638	-765,874	9,018	401,193	392,175
North Carolina	60,767	66,484	5,717	678,070	44,601	-633,469	9,498	649,261	639,763
North Dakota	30,360	36,566	6,206	89,020	8,819	-80,201	237	73,273	73,036
Ohio	1,920,000	1,974,211	54,211	433,104	29,499	-403,605	11,082	526,429	515,347
Oklahoma	568,024	529,350	-38,674	6,576	672	-5,904	2,189	16,024	13,835
Oregon	58,381	47,678	-10,703	304,549	24,890	-279,659	78,486	439,600	361,114
Pennsylvania	1,240,476	1,733,427	492,951	1,039,604	418,159	-621,445	5,906	575,547	569,641
Rhode Island	41,853	61,126	19,273	201,532	140,001	-61,531	229	19,611	19,382
South Carolina	59,364	42,751	-16,613	285,433	13,523	-271,910	3,681	301,556	297,875
South Dakota	54,941	51,416	-3,525	94,542	5,597	-88,945	974	75,872	74,898
Tennessee	280,773	201,496	-79,277	75,750	2,639	-73,111	198,570	494,435	295,865
Texas	2,183,285	1,988,209	-195,076	46,941	4,166	-42,775	22,706	103,786	81,080
Utah	167,705	155,669	-12,036	24,854	1,773	-23,081	931	61,045	60,114
Vermont	552	9,355	8,803	85,635	34,978	-50,657	265	27,347	27,082
Virginia	191,683	268,423	76,740	495,548	123,515	-372,033	8,667	333,755	325,088
Washington	69,297	43,103	-26,194	583,362	51,131	-532,231	104,988	737,684	632,696
West Virginia	321,814	290,987	-30,827	20,875	1,788	-19,087	2,926	74,803	71,877
Wisconsin	255,949	429,429	173,480	591,037	56,699	-534,338	2,113	421,194	419,081
Wyoming	68,286	64,022	-4,264	8,253	753	-7,500	239	13,498	13,259

Source: U. S. Bureau of Census

Table 3-16

DIFFERENCE BETWEEN WATER HEATING FUELS AND
HEATING FUELS - CENSUS DATA - 1970

State	Gas			Oil			Electricity		
	Heat	Water Heat	Difference	Heat	Water Heat	Difference	Heat	Water Heat	Difference
Alabama	569,537	406,782	-162,755	19,262	624	-18,638	141,060	418,128	277,068
Alaska	20,585	17,450	-3,135	44,728	18,858	-25,870	3,794	25,669	21,875
Arizona	424,457	420,346	-4,111	4,076	509	-3,567	66,130	72,500	6,430
Arkansas	399,311	366,372	-32,934	4,076	415	-3,661	27,475	61,848	34,373
California	5,650,839	5,740,154	89,315	44,464	8,813	-35,651	565,956	580,694	14,738
Colorado	585,895	556,955	-28,940	11,749	1,565	-10,184	24,038	78,306	54,268
Connecticut	192,072	279,387	87,315	671,434	388,423	-283,011	48,809	233,079	184,270
Delaware	49,973	73,201	23,228	101,396	33,820	-67,576	6,909	40,529	33,620
District of Columbia	137,252	179,249	41,997	91,727	50,525	-41,202	15,287	15,559	272
Florida	351,778	320,881	-30,897	667,754	34,502	-633,252	738,548	1,630,970	892,422
Georgia	808,597	607,555	-201,042	67,956	1,922	-66,034	147,123	546,703	399,580
Hawaii	800	40,200	39,400	608	1,910	1,302	6,081	141,055	134,974
Idaho	70,460	26,171	-44,289	87,977	1,375	-86,602	21,390	179,698	158,308
Illinois	2,468,259	2,623,133	154,874	494,162	74,759	-419,403	105,421	439,223	333,802
Indiana	917,316	924,910	7,594	433,271	15,289	-417,982	94,824	530,687	435,863
Iowa	563,016	523,098	-39,918	186,079	7,521	-178,558	16,998	246,148	229,150
Kansas	598,095	580,540	-17,555	11,436	564	-10,872	22,397	61,051	38,654
Kentucky	570,324	503,681	-66,643	88,503	2,181	-86,322	81,793	288,957	207,164
Louisiana	859,507	802,806	-56,701	5,561	497	-5,064	63,762	79,564	15,802
Maine	5,552	14,660	9,108	278,062	132,874	-145,188	5,793	104,661	98,868
Maryland	549,483	699,984	150,501	514,594	180,809	-333,785	57,616	201,407	143,791
Massachusetts	493,158	701,112	207,954	1,158,441	780,548	-377,893	71,841	274,683	202,842
Michigan	1,856,238	1,781,620	-74,618	583,842	37,641	-546,201	67,665	681,026	613,361
Minnesota	622,548	608,030	-14,518	395,355	26,433	-368,922	29,728	393,609	363,881
Mississippi	322,892	259,161	-63,731	4,070	319	-3,751	70,664	163,269	92,605
Missouri	1,031,425	1,006,394	-25,031	132,561	6,486	-126,075	43,940	220,569	176,629
Montana	151,104	134,503	-16,601	29,850	726	-29,124	8,464	64,323	55,859
Nebraska	340,584	319,183	-21,401	46,864	2,167	-44,697	15,119	98,117	82,998
Nevada	62,379	53,776	-8,603	25,294	4,711	-20,583	55,423	84,801	29,378
New Hampshire	24,526	32,733	8,207	181,530	99,352	-82,178	9,994	69,435	59,441
New Jersey	914,197	1,194,385	280,188	1,167,762	699,397	-468,365	72,333	238,854	166,521
New Mexico	225,666	209,901	-15,765	4,058	303	-3,755	7,529	27,725	20,196
New York	2,237,007	2,485,201	248,194	3,357,171	2,600,343	-756,828	104,091	514,485	410,394
North Carolina	225,500	159,966	-65,534	934,684	44,662	-890,022	162,825	1,070,448	907,623
North Dakota	57,706	55,161	-2,545	87,029	6,650	-80,379	5,924	92,819	86,895
Ohio	2,517,093	2,416,086	-101,007	462,939	28,949	-433,990	112,543	685,621	573,078
Oklahoma	672,275	645,193	-27,082	1,912	379	-1,533	42,577	74,333	31,756
Oregon	163,411	78,058	-85,353	261,692	16,196	-245,496	205,896	575,149	369,253
Pennsylvania	1,788,010	2,049,452	261,442	1,294,817	554,512	-740,305	145,727	785,392	639,665
Rhode Island	80,088	93,055	12,967	198,297	145,329	-52,968	7,984	40,090	32,106
South Carolina	198,630	96,740	-101,890	327,416	8,983	-318,433	66,107	485,720	419,613
South Dakota	80,531	67,740	-12,791	76,258	3,360	-72,898	6,724	93,178	86,454
Tennessee	395,806	261,736	-134,070	76,397	1,623	-74,774	490,135	812,137	32,002
Texas	2,705,812	2,656,031	-49,781	13,184	2,148	-11,036	282,636	295,858	13,222
Utah	243,844	228,061	-15,783	14,871	1,160	-13,711	8,439	54,538	46,099
Vermont	6,651	10,508	3,857	106,211	35,501	-70,710	7,827	63,157	55,330
Virginia	422,986	454,617	31,631	676,033	141,989	-534,044	124,097	604,469	480,372
Washington	258,892	117,369	-141,523	451,152	26,231	-424,921	335,829	934,947	599,118
West Virginia	376,303	332,129	44,174	50,077	1,920	-48,157	25,077	131,464	106,087
Wisconsin	654,851	668,219	13,368	521,256	36,913	-484,343	24,763	491,803	467,040
Wyoming	80,524	75,878	-4,646	3,572	422	-3,150	2,633	14,378	11,745

Source: U. S. Bureau of Census

between 1960 and 1970 used fuel oil for heat; and that all of the homes switching from fuel oil to other fuels (or homes heated by fuel oil which were demolished) also had hot water systems which used fuel oil to heat the water. In fact, as we saw above, those states where fuel oil was the dominant fuel used for heating (such as the six New England states) also experienced increases in the number of homes heated by fuel oil. The approach used to develop yearly estimates of the number of homes with oil water heat was the following. Let $K_j^H(i,t)$ be the number of housing units with heat of type j (gas, oil or electricity) and let $K_j^W(i,t)$ be the number of units with water heat of type j. For census years we computed the difference between the number of dwelling units with electric water heat and electric heat, the number of dwelling units with gas water heat and gas heat, and oil water heat and oil heat. These differences $D_j(i,t)$ are obviously given by -

$$D_j(i,t) = K_j^H(i,t) - K_j^W(i,t) \tag{18}$$

The values of the differences are shown on Tables 3-15 and 3-16. For convenience they are summarized on Table 3-17. After examination of the data, we concluded that the differences in most states balanced out. That is -

$$D_g(i,t) + D_e(i,t) + D_o(i,t) = 0 \tag{19}$$

Table 3-18 indicates values of the sum of the difference for each state. Thus for trial estimates we could determine yearly estimates of the number of units with different types of water heat from the values of the $D_j(i,t)$. This required though that estimates of $D_j(i,t)$ be calculated for non-census years. This was accomplished by interpolating the 1960 and 1970 values for most states. In certain states, however, the change in the difference was sufficiently substantial that judgmental adjustments had to be made. In general such estimates were used for those states where either the difference as shown on Table 3-18 changed dramatically from 1960 to 1970 or where a large number of units had added gas heat (as in Illinois). Those states where judgmental adjustments were made are listed on the Appendix tables with the summary of the number of units with each type of water heat.

We should note that one other method of determination of the distribution of homes by heating fuel was considered. That method involved the use of Merchandising Week estimates of the number of homes with electric water heat. However, comparison of the MW data to Census estimates indicated such large discrepancies that the approach was rejected. The differences are shown on Table 3-19 and Table 3-20.

Table 3-17

SUMMARY OF TABLES 3-15 AND 3-16
DIFFERENCE BETWEEN DWELLING UNITS WITH HEAT
AND WATER HEAT BY SPECIFIC TYPES OF FUELS

State	Gas - Difference		Oil - Difference		Electricity - Difference	
	1960	1970	1960	1970	1960	1970
Alabama	-143,897	-162,755	-25,258	-18,638	209,151	277,068
Alaska	126	-3,135	-22,108	-25,870	15,708	21,875
Arizona	-16,039	-4,111	-12,382	-3,567	21,306	6,430
Arkansas	-46,615	-32,934	-7,898	-3,661	21,535	34,373
California	-8,587	89,315	-78,567	-35,651	187,985	14,738
Colorado	-21,083	-28,940	-27,654	-10,184	61,931	54,268
Connecticut	119,961	87,315	-289,940	-283,011	133,984	184,270
Delaware	25,058	23,228	-62,889	-67,576	25,428	33,620
District of Columbia	48,184	41,997	-43,080	-41,202	4,126	272
Florida	20,920	-30,897	-674,940	-633,252	754,880	892,422
Georgia	-151,628	-201,042	-103,409	-66,034	314,361	399,580
Hawaii	35,884	39,400	5,717	1,302	82,861	134,974
Idaho	-12,754	-44,289	-95,471	-86,602	155,871	158,308
Illinois	654,502	154,874	-839,826	-419,403	373,113	333,802
Indiana	275,435	7,594	-555,541	-417,982	403,360	435,863
Iowa	14,460	-39,918	-281,962	-178,558	237,664	229,150
Kansas	-24,375	-17,555	-34,705	-10,872	47,855	38,654
Kentucky	-25,672	-66,643	-61,590	-86,322	147,815	207,164
Louisiana	-125,385	-56,701	-13,252	-5,064	15,296	15,802
Maine	12,876	9,108	-132,994	-145,188	81,803	98,868
Maryland	167,143	150,501	-306,849	-333,785	111,495	143,791
Massachusetts	-259,533	207,954	-450,390	-377,893	141,407	202,842
Michigan	289,437	-74,618	-704,984	-546,201	527,109	613,361
Minnesota	47,343	-14,518	-390,181	-368,922	294,309	363,881
Mississippi	-67,800	-63,731	-6,272	-3,751	45,517	92,605
Missouri	61,089	-25,031	-216,940	-126,075	167,491	176,629
Montana	-13,709	-16,601	-36,386	-29,124	57,471	55,859
Nebraska	-6,056	-21,401	-91,550	-44,697	92,617	82,998
Nevada	-4,186	-8,603	-25,880	-20,583	27,334	29,378
New Hampshire	7,362	8,207	-64,843	-82,178	40,034	59,441
New Jersey	310,098	280,188	-448,613	-468,365	156,771	166,521
New Mexico	-18,187	-15,765	11,089	-3,755	24,831	20,196
New York	304,596	248,194	-765,874	-756,828	392,175	410,394
North Carolina	5,717	-65,534	-633,469	-890,022	639,763	907,623
North Dakota	6,206	-2,545	-80,201	-80,379	73,036	86,895
Ohio	54,211	-101,007	-403,605	-433,990	515,347	573,078
Oklahoma	-38,674	-27,082	-5,904	-1,533	13,835	31,756
Oregon	-10,703	-85,353	-279,659	-245,496	361,114	369,253
Pennsylvania	492,951	261,442	-621,445	-740,305	569,641	639,665
Rhode Island	19,273	12,967	-61,531	-52,968	19,382	32,106
South Carolina	-16,613	-101,890	-271,910	-318,433	297,875	419,613
South Dakota	-3,525	-12,791	-88,945	-72,898	74,898	86,454
Tennessee	-79,277	-134,070	-73,111	-74,774	295,865	32,002
Texas	-195,076	-49,781	-42,775	-11,036	81,080	13,222
Utah	-12,036	-15,783	-23,081	-13,711	60,114	46,099
Vermont	8,803	3,857	-50,657	-70,710	27,082	55,330
Virginia	76,740	31,631	-372,033	-534,044	325,088	480,372
Washington	-26,194	-141,523	-532,231	-424,921	632,696	599,118
West Virginia	-30,827	-44,174	-19,087	-48,157	71,877	106,087
Wisconsin	173,480	13,368	-534,338	-484,343	419,081	467,040
Wyoming	-4,264	-4,646	-7,500	-3,150	13,259	11,745

Table 3-18

NUMBER OF WATER HEATING DWELLING UNITS
UNACCOUNTED FOR BY GAS, OIL, AND ELECTRICITY BALANCE PROCEDURES
AND THE RATIO TO TOTAL NUMBER OF HOUSING UNITS

State	1960 Number of Dwelling Units Unaccounted For	1960 Percent of Dwelling Units Unaccounted For	1970 Number of Dwelling Units Unaccounted For	1970 Percent of Dwelling Units Unaccounted For
Alabama	39,996	4.52%	95,675	9.25%
Alaska	6,274	10.96	-7,130	-9.02
Arizona	-17,115	-1.94	-1,248	-.23
Arkansas	-32,978	-6.30	-2,222	-.36
California	100,831	2.02	68,402	1.04
Colorado	13,194	2.49	15,144	2.19
Connecticut	-35,995	-4.78	-11,426	-1.22
Delaware	-12,403	-9.65	-10,728	-6.51
District of Columbia	9,230	3.66	1,067	.41
Florida	100,860	6.51	228,273	9.99
Georgia	59,324	5.54	132,504	9.68
Hawaii	124,462	81.31	175,676	86.50
Idaho	47,646	24.58	27,417	12.52
Illinois	187,789	6.09	69,273	1.98
Indiana	123,254	8.88	25,475	1.58
Iowa	-29,338	-3.49	10,674	1.19
Kansas	-11,225	-1.67	10,227	1.41
Kentucky	60,553	7.11	54,199	5.51
Louisiana	-123,341	-13.82	-45,963	-4.37
Maine	-38,315	-1.87	-37,212	-12.28
Maryland	-28,211	-3.27	-39,493	-3.36
Massachusetts	-568,516	-37.04	-372,781	-21.18
Michigan	111,562	4.98	-7,458	.28
Minnesota	-47,529	-4.79	-19,599	-1.70
Mississippi	-28,555	-5.03	25,123	3.95
Missouri	11,640	.86	25,523	1.68
Montana	7,376	3.65	10,134	4.66
Nebraska	-4,989	-1.15	16,900	3.57
Nevada	-2,732	-2.99	192	.12
New Hampshire	-17,447	-9.71	-14,530	-6.45
New Jersey	18,256	1.01	-21,656	-.98
New Mexico	-4,445	-1.76	676	.23
New York	-69,103	-1.31	-98,240	-1.66
North Carolina	12,011	1.00	-47,933	-3.18
North Dakota	-959	-.55	3,971	2.19
Ohio	165,953	5.82	38,081	1.16
Oklahoma	-30,743	-4.19	3,141	.37
Oregon	70,752	12.67	38,404	5.55
Pennsylvania	441,147	13.17	160,802	4.34
Rhode Island	-22,876	-8.89	-7,895	-2.70
South Carolina	9,352	1.55	-710	-.10
South Dakota	-17,572	-9.02	765	.38
Tennessee	143,477	14.30	-176,842	-14.58
Texas	-156,771	-5.64	-47,595	-1.39
Utah	24,997	10.35	16,605	5.57
Vermont	-14,772	-13.34	-11,523	-8.72
Virginia	29,795	2.78	-22,041	-1.58
Washington	74,271	8.31	32,674	2.96
West Virginia	21,963	4.21	13,756	2.51
Wisconsin	58,223	5.08	-3,935	-2.96
Wyoming	1,495	1.51	3,949	3.78

Source: U. S. Bureau of Census

Table 3-19

COMPARISON OF U. S. CENSUS BUREAU AND MERCHANDISING WEEK ESTIMATES
OF DWELLING UNITS WITH ELECTRIC WATER HEATERS - 1960

State	Census Estimate Percent Of	MW Estimate - Dwelling Unit	Difference	% Difference
Alabama	27.32%	21.60%	5.72	20.94
Alaska	27.62	56.52	-28.90	-104.63
Arizona	8.64	9.50	-.86	-9.95
Arkansas	4.84	6.84	-2.00	-41.32
California	6.63	7.87	-1.24	-18.70
Colorado	11.97	7.84	4.13	34.50
Connecticut	18.00	18.26	-.26	-1.44
Delaware	20.22	15.00	5.22	25.82
District of Columbia	2.03	2.80	-.77	-37.93
Florida	58.30	58.77	-.47	-.81
Georgia	31.11	32.75	-1.64	-5.27
Hawaii	55.34	56.58	-1.24	-2.24
Idaho	83.34	81.56	1.78	2.14
Illinois	12.34	9.66	2.68	21.72
Indiana	29.99	32.23	-2.24	-7.47
Iowa	28.53	26.06	2.47	8.66
Kansas	7.38	5.60	1.78	24.12
Kentucky	18.92	18.63	.29	1.53
Louisiana	2.36	5.35	-2.99	-126.69
Maine	29.36	26.00	3.36	11.44
Maryland	13.23	14.33	-1.10	-8.31
Massachusetts	9.36	8.57	.79	8.44
Michigan	23.80	20.83	2.97	12.48
Minnesota	29.91	26.56	3.35	11.20
Mississippi	9.90	4.01	5.89	59.49
Missouri	12.67	10.35	2.32	18.31
Montana	29.76	49.82	-20.06	-67.41
Nebraska	21.64	23.90	-2.26	-10.44
Nevada	51.75	60.00	-8.25	-15.94
New Hampshire	22.35	18.00	4.35	19.46
New Jersey	8.92	9.56	-.64	-7.17
New Mexico	10.41	28.65	-18.24	-175.22
New York	7.64	13.87	-6.23	-81.54
North Carolina	53.89	61.10	-7.21	-13.38
North Dakota	42.27	55.00	-12.73	-30.12
Ohio	18.45	16.49	1.96	10.62
Oklahoma	2.18	1.63	.55	25.23
Oregon	78.75	75.99	2.76	3.50
Pennsylvania	17.18	17.07	.11	.64
Rhode Island	7.62	35.00	-27.38	-359.32
South Carolina	49.96	31.00	18.96	37.95
South Dakota	38.94	32.02	6.92	17.77
Tennessee	49.28	49.62	-.34	-.69
Texas	3.74	3.95	-.21	-5.61
Utah	25.27	27.52	-2.25	-8.90
Vermont	24.70	15.00	9.70	39.27
Virginia	31.11	26.96	4.15	13.34
Washington	82.50	81.75	.75	.91
West Virginia	14.35	6.29	8.06	56.17
Wisconsin	36.74	27.39	9.35	25.45
Wyoming	13.61	8.88	4.73	34.75

Source: U. S. Bureau of Census

Table 3-20

COMPARISON OF U. S. CENSUS BEREAU AND MERCHANDISING WEEK ESTIMATES
OF DWELLING UNITS WITH ELECTRIC WATER HEATERS - 1970

State	Census Estimate Percent Of	MW Estimate - Dwelling Unit	Difference	% Difference
Alabama	40.43%	33.00%	7.43	18.38
Alaska	32.47	65.67	-33.20	-102.25
Arizona	13.45	14.51	-1.06	-7.88
Arkansas	10.05	9.04	1.01	10.05
California	8.83	7.92	.91	10.31
Colorado	11.33	7.81	3.52	31.07
Connecticut	23.90	21.26	2.64	11.05
Delaware	24.59	25.00	-.41	-1.67
District of Columbia	5.93	8.00	-2.07	-34.91
Florida	71.73	67.79	3.94	5.49
Georgia	39.93	60.00	-20.07	-50.26
Hawaii	69.46	74.74	-5.28	-7.60
Idaho	82.07	85.00	-2.93	-3.57
Illinois	12.54	9.02	3.52	28.07
Indiana	32.97	42.89	-9.92	-30.09
Iowa	27.46	27.50	-.04	-.15
Kansas	8.39	7.88	.51	6.08
Kentucky	27.24	29.00	-1.76	-6.46
Louisiana	7.56	6.53	1.03	13.62
Maine	34.55	42.41	-7.86	-22.75
Maryland	17.14	59.00	-41.86	-244.22
Massachusetts	15.61	13.25	2.38	15.25
Michigan	25.67	23.44	2.23	8.69
Minnesota	34.11	25.42	8.69	25.48
Mississippi	25.64	55.00	-29.36	-114.51
Missouri	14.51	13.37	1.14	7.86
Montana	29.60	35.00	-5.40	-18.24
Nebraska	20.71	26.53	-5.82	-28.10
Nevada	52.98	69.00	-16.02	-30.24
New Hampshire	30.81	24.00	6.81	22.10
New Jersey	10.77	10.67	.10	.93
New Mexico	9.58	10.15	-.57	-5.95
New York	8.70	16.05	-7.35	-84.48
North Carolina	70.81	71.62	-.81	-1.14
North Dakota	51.11	62.36	-11.25	-22.01
Ohio	20.84	18.39	2.45	11.76
Oklahoma	8.74	8.00	.74	8.47
Oregon	83.16	80.98	2.18	2.62
Pennsylvania	21.21	20.57	.64	3.02
Rhode Island	13.73	17.65	-3.92	-28.55
South Carolina	66.14	56.57	9.57	14.47
South Dakota	46.40	29.06	17.34	37.37
Tennessee	66.94	83.71	-16.77	-25.05
Texas	8.62	8.28	.34	3.94
Utah	18.31	23.69	-5.38	-29.38
Vermont	47.81	35.01	12.80	26.77
Virginia	43.47	37.64	5.83	13.41
Washington	84.57	87.77	-3.20	-3.78
West Virginia	24.02	16.52	7.50	31.22
Wisconsin	37.01	31.15	5.86	15.83
Wyoming	13.75	14.01	-.26	-1.89

Source: U. S. Bureau of Census

AIR CONDITIONING

Total residential usage of energy for air conditioning amounted to less than one percent of the sector's total use of energy in 1968 according to SRI estimates. With respect to electricity demand, SRI estimates that air conditioning accounted for 4.6%. By 1970, the DRI estimates made using the SRI methodology and actual Census calculations of the capital stock indicate that air conditioning accounted for 12% of electricity demand and 2% of total residential energy demand. In terms of relative importance, this places air conditioning behind space heating, water heating, refrigeration, and cooking. However, this apparently minor position ignores the fact that use of energy for air conditioning was, next to electric heat, the most rapidly increasing use during the period from 1960 to 1970. Further, growth in air conditioning demand during the 1960's caused the peak experienced by most utilities to shift from winter to summer. The obvious fact is, in short, that the relatively small use of energy on electricity for air conditioning results from the infrequent use of air conditioning and not an unimportant or insignificant potential. For instance, according to estimates prepared by the Air Conditioning and Refrigeration Institute, usage of air conditioners should not exceed 3,300 hours (34% of the year) in Nevada, the hottest state in the country. In the more populous areas of Illinois, New York, and New Jersey, average hours of utilization for a year are estimated to be only 400 to 800 (4.6% to 9.2%). These data are summarized on Table 3-21.*

The data developed on the stock of air conditioners were divided into two categories, central and window. Data on the number of window units were developed from Census data and Merchandising Week reports. They are discussed in the next section which deals with general appliances and analyzes the Merchandising Week data in depth. Data on central air conditioners are discussed here.

Development of yearly estimates of the number of centrally air conditioned homes was the most difficult task undertaken during this project. The problem was that the only data which provided state by state estimates of holdings of air conditioners came from the Census of Housing. Other than these estimates

*It should be noted that the Air Conditioning and Refrigeration Institute data were gathered from utilities on a city by city basis. Inquiries were made to load forecasters who were thought to have the most direct knowledge of air conditioning usage in a particular region. For the purpose of this study, DRI averaged the city estimates to provide averages for states. The averages were weighted by population.

Table 3-21

AVERAGE ANNUAL HOURS
OF USAGE OF AIR CONDITIONERS AS
ESTIMATED BY THE AIR CONDITIONING
AND REFRIGERATION INSTITUTE

State	Sample Size**	Central ==Air Conditioners=== Single	Central ==Air Conditioners=== Multiple	Window ==Air Conditioners=== Single	Window ==Air Conditioners=== Multiple
Alabama	300,918	1,250.00	1,250.00	1,250.00	1,250.00
Alaska	NR	NR	NR	NR	NR
Arizona	581,562*	NR	NR	NR	NR
Arkansas	132,483	1,650.00	1,650.00	1,650.00	1,650.00
California	697,027	769.00	NR	NR	NR
Colorado	514,678	800.00	600.00	600.00	400.00
Connecticut	314,559	600.00	600.00	600.00	600.00
Delaware	NR	NR	NR	NR	NR
District of Columbia	756,510	1,000.00	1,200.00	1,000.00	1,200.00
Florida	725,098	1,693.49	1,693.49	1,604.82	2,063.87
Georgia	118,349	1,450.00	1,450.00	1,450.00	1,450.00
Hawaii	324,871	2,750.00	3,500.00	1,500.00	1,500.00
Idaho	74,990	NR	NR	NR	NR
Illinois	3,530,543	602.66	601.49	407.79	407.51
Indiana	744,743	550.00	600.00	630.00	650.00
Iowa	430,721	1,219.64	1,126.12	1,018.24	971.49
Kansas	401,565	941.74	872.87	941.74	872.87
Kentucky	108,137	1,000.00	1,000.00	1,000.00	1,000.00
Louisiana	775,535	1,947.41	1,947.41	1,350.00	1,350.00
Maine	33,397	404.31	404.31	700.00	700.00
Maryland	941,621	727.86	727.86	NR	NR
Massachusetts	1,151,360	578.19	622.29	453.24	418.49
Michigan	1,559,085	503.50	982.50	250.00	250.00
Minnesota	547,421	421.44	471.80	405.56	405.56
Mississippi	302,264	1,500.00	NR	NR	NR
Missouri	108,422	688.54	946.37	1,100.00	1,100.00
Montana	NR	NR	NR	NR	NR
Nebraska	NR	NR	NR	NR	NR
Nevada	125,787	3,300.00	3,300.00	NR	NR
New Hampshire	6,439	280.00	NR	NR	NR
New Jersey	554,393	522.79	699.08	363.52	363.52
New Mexico	269,776	835.29	1,038.59	816.00	1,019.29
New York	8,228,969	497.54	880.89	779.61	683.89
North Carolina	522,331	1,022.45	1,022.45	1,041.71	1,041.75
North Dakota	NR	NR	NR	NR	NR
Ohio	2,554,560	832.89	915.10	786.00	1,003.28
Oklahoma	699,206	1,230.73	1,230.73	1,288.99	1,288.99
Oregon	380,555	NR	NR	NR	NR
Pennsylvania	640,809	831.02	913.27	841.75	910.66
Rhode Island	NR	NR	NR	NR	NR
South Carolina	139,539	1,208.20	1,452.31	1,452.31	1,452.31
South Dakota	120,051	763.49	637.68	688.42	688.42
Tennessee	NR	NR	NR	NR	NR
Texas	2,098,874	1,563.89	1,450.67	1,634.33	1,539.16
Utah	NR	NR	NR	NR	NR
Vermont	38,633	250.00	NR	225.00	175.00
Virginia	NR	NR	NR	NR	NR
Washington	530,831	400.00	400.00	400.00	400.00
West Virginia	NR	NR	NR	NR	NR
Wisconsin	172,007	600.00	600.00	300.00	300.00
Wyoming	NR	NR	NR	NR	NR

NR - No Report
* - Data reported for commercial but not residential buildings.
**- Population

which provided figures for 1960 and 1970, the only available data were those on factory shipments published by the Air Conditioning and Refrigeration Institute (ACRI). These latter data did not provide regional details. Fortunately, they did distinguish between units supplied for residences and those sold to commercial establishments. Had these latter data not been available, the analysis would have been severely handicapped because it would have been impossible to determine whether a unit was sold to a home or office building.

Initially, the ACRI data caused problems in the analysis. ACRI reports that 5,614,881 units were shipped between 1960 and 1970 for use in residential units. However, according to the Census Bureau the number of centrally air conditioned dwelling units increased by 6,267,108 from 995,874 in 1960 to 7,262,982 in 1970. The initial suggestion was that 652,327 units had been added as if by magic. However, multifamily dwelling units may share the same air conditioner. Since the Census did not provide data on the number of units which shared the same air conditioner, estimates were calculated by aggregating shipments of central air conditioners to residential buildings. The calculation was begun in 1953, the earliest year for which data on shipments were available. Yearly shipment figures were added under the assumption that central air conditioners are subject to continual decay at an 8% per year rate.* Thus calculated stocks of central unit air conditioners (K_c) was given as a function of shipment of units (S_c) by -

$$K_c(t) = \sum_{i=1}^{N} (1-r)^i S_c(t-i) \qquad (20)$$

The ratio R_c of $K_c(t)$ to dwelling units with central air conditioners (U_c) reported by the Census Bureau was then calculated for 1960 and 1970.

$$R_c(t) = \frac{U_c(t)}{K_c(t)} \qquad (21)$$

When a depreciation rate of 8% was used the values of the ratio was 1.54 in 1960 and 1.54 in 1970.** This suggests that the relationship between the number of shipments from 1960 to 1970 and the increase in dwelling units with

*The depreciation rate of 8% (for comparison) was selected because most experts contacted by DRI suggested that central air conditioners had an average life of 12 to 13 years. This suggests that a rate of between 7.7% and 8.5% would be appropriate. However, it should be noted that depreciation rates probably vary by region. Those areas where units are used more it is logical to expect their lifetimes to be shorter.

**We note that the calculation assumes dealers do not hold inventories of central air conditioning units due to the high price of these units. Inventories are in fact very small. This assumption appears to be reasonable.

central air conditioning remained approximately constant during the period of interest. Under this assumption, an estimate of the number of dwelling units with central air conditioning for the nation as a whole was calculated for each year from 1960 to 1974 using the estimated stock of central air conditioning units.

$$U_c(t) = R_c(t) * K_c(t) \tag{22}$$

The ratio $R_c(t)$ was held constant from 1960 to 1974 for these calculations. Table 3-22 provides a tabulation of our calculated inventory of air conditioned units.*

The next problem was to spread the stocks calculated for each year to the states. The procedure used was the following. First, estimates of the incremental additions to the stock of air conditioners were determined from the difference in the yearly stocks. These increments were then assigned to states based upon housing activity. Formally, the procedure was as follows. Letting $K_A(t)$ be the total number of units with central air conditioning on a national basis, investment ((t) was given by

$$I(t) - K_A(t) - K_A(t-1) \tag{23}$$

We note that our net investment series (the number of centrally air conditioned units) for each state for the period 1960 to 1970 can be taken from the Census.

$$\Delta I(i,t) = \sum_{t=60}^{70} I(i,t) = K(i,70) - K(i,60) \tag{24}$$

The problem is to allocate our yearly calculations of I(t) to the states. This was accomplished by first determining the yearly ratio of centrally air conditioned units added nationally to the total number of units added nationally,

$$R(t) = \frac{I(t)}{H(t)} \tag{25}$$

and computing the ratio R(i) of the number of air conditioned units added during the ten year period in state, i, to the total number of units added during the period.

$$R(i) = \frac{\Delta I(i)}{\sum_{t=60}^{70} H(i,t)} \tag{26}$$

Trial estimates of the net addition to the stock $\tilde{I}(i,t)$ were then determined by

*If such data is used in regressions, theory requires the use of a weighted regression, when combined samples such as those described above are used.

Table 3-22

ESTIMATES OF NUMBER OF DWELLING UNITS
WITH CENTRAL AIR CONDITIONERS

Year	(1) Shipments (Units)	(2) Capitalized Number of Shipments	(3) Ratio of Capitalized Shipments to Dwelling Units	(4) Inputed Dwelling Units with Central Air Conditioners
1960	217,148	647,738	1.54	995,874
1961	238,206	813,066	1.54	1,252,122
1962	305,190	986,228	1.54	1,518,791
1963	400,759	1,212,519	1.54	1,867,279
1964	483,593	1,516,277	1.54	2,335,067
1965	580,997	1,878,568	1.54	2,892,995
1966	652,736	2,309,279	1.54	3,556,290
1967	714,625	2,777,273	1.54	4,277,000
1968	847,387	3,269,716	1.54	5,035,363
1969	1,174,570	3,855,526	1.54	5,937,510
1970	1,172,223	4,721,654	1.54	7,262,982
1971	1,408,413	5,516,144	1,54	8,494,862
1972	1,826,519	6,483,226	1.54	9,984,168
1973	2,147,546	7,791,124	1.54	11,998,331
1974	1,889,577	9,315,380	1.54	14,345,685

Source: Column 1 - Air conditioning and refrigerating materials

Column 2 - Computation in this paper

Column 3 - 1960 and 1970 ratio of census estimates to Column 2, other years inputed by DRI

Column 4 - Column 3 X Column 2

$$\tilde{I}(i,t) = R(t) * R(i) * H(i,t) \quad (27)$$

This procedure had the advantage that it assumed that most additions of central air conditioners were in new units and that the propensity to add central air conditioners increased in the same proportion in any state as it did nationally. However, it lacks elegance and it lacks consistency. The lack of elegance could be tolerated.* The lack of consistency indicated by the fact that

$$\sum_{t=60}^{70} \tilde{I}(i,t) \neq \Delta I(i) \quad (28)$$

and

$$\sum_{i=1}^{M} \tilde{I}(i,t) \neq I(t) \quad (29)$$

could not be tolerated. The solution to this problem was to find parameters A(i) and B(t) such that equality was preserved. These parameters were determined by iteration. The resulting estimates were given by -

$$I(i,t) = A(i) * B(t) * \tilde{I}(i,t) \quad (30)$$

The resulting assignment of centrally air conditioned units is given on Table 3-23.

APPLIANCES

The discussion above has concentrated on built-in types of energy using capital (heat, water heating, and central air conditioning). As we indicated in Table 1-2 these types of capital account for 82.8% of energy used in the household sector. Most of the remaining 17.2 percent is accounted for by appliances (stoves, dryers, room air conditioners, freezers, washing machines, etc.). While the energy usage of some of these has remained in constant proportion to the total stock of housing units, increasing saturation of others has played a substantial role in the increase of energy usage experienced in the sector. Further, changes in the proportion of fuel between natural gas and electricity used for two of these appliances (dryers and stoves) may account for some of the shift in the relative use of these fuels.

The basic data sources for data on non-building appliances are the Census of Housing and Merchanding Week. Merchandising Week has published estimates of market saturation by appliances yearly since the end of the Second World War.

*One is hard pressed to find an elegant way of assigning numbers to cells in any reasonable fashion when the array is larger than 3x3.

Table 3-23
STOCK OF CENTRALLY AIR-CONDITIONED HOUSES
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69	70	71
ALABAMA	22,920	33,921	37,874	45,763	55,275	70,773	93,580	112,435	126,048	150,146	172,825	207,742
ALASKA	0,240	0,241	0,250	0,266	0,279	0,289	0,294	0,309	0,339	0,357	0,416	0,445
ARIZONA	63,450	66,236	73,964	83,243	95,215	110,288	128,448	147,761	167,187	204,326	246,782	297,931
ARKANSAS	11,038	21,149	26,585	33,950	37,835	47,953	57,439	67,705	78,578	87,646	102,975	143,429
CALIFORNIA	126,320	134,798	161,717	195,762	260,287	324,016	384,930	450,503	494,377	561,579	632,558	695,491
COLORADO	9,177	10,070	12,349	15,056	16,796	19,021	22,369	25,602	29,909	36,154	45,003	54,699
CONNECTICUT	5,046	5,281	5,710	6,952	8,513	10,850	13,208	15,130	17,029	20,625	24,318	26,246
DELAWARE	2,063	2,335	2,870	4,470	6,705	9,319	13,045	15,464	17,673	20,217	23,753	27,050
DIST. OF COLUMBIA	17,492	-19,013	-26,401	-40,169	-64,510	-144,092	-153,809	-107,810	-83,098	-16,593	25,317	24,104
FLORIDA	44,108	49,476	69,557	91,909	130,627	183,775	240,944	307,667	366,483	469,924	584,106	688,363
GEORGIA	18,440	21,133	24,614	35,178	52,771	75,197	114,322	141,489	165,991	199,883	226,998	250,750
HAWAII	0,108	0,122	0,172	0,173	0,365	0,502	0,687	0,839	0,974	1,253	1,535	1,721
IDAHO	5,561	5,762	6,143	6,491	7,014	8,225	8,833	9,922	11,314	12,918	16,043	20,418
ILLINOIS	50,339	57,958	74,593	92,234	126,610	168,433	218,062	261,414	298,102	366,484	421,528	475,201
INDIANA	16,937	24,411	27,089	37,137	50,178	66,997	93,469	111,283	130,834	150,391	174,489	200,945
IOWA	11,520	18,139	16,129	26,542	32,403	36,703	44,748	54,409	67,518	77,558	101,552	135,192
KANSAS	29,226	41,862	45,592	55,304	66,226	73,884	84,905	100,826	112,190	128,226	152,273	204,615
KENTUCKY	6,768	9,555	16,534	24,813	25,357	32,882	41,789	53,187	62,928	73,200	90,681	98,861
LOUISIANA	27,081	29,956	35,616	51,164	74,681	99,595	128,208	152,301	181,243	208,625	235,369	272,000
MAINE	1,269	1,280	1,284	1,288	1,303	1,323	1,380	1,437	1,482	1,537	1,658	1,805
MARYLAND	16,944	25,593	39,153	55,556	84,555	118,530	156,231	188,085	213,456	253,632	294,619	328,080
MASSACHUSETTS	7,491	7,937	8,613	9,162	11,206	12,712	15,768	18,778	21,222	25,491	29,501	31,475
MICHIGAN	18,735	19,878	22,644	26,604	36,377	50,264	66,787	79,908	92,751	111,945	128,861	145,169
MINNESOTA	7,519	9,299	11,306	16,103	21,512	26,867	33,130	39,138	46,267	52,712	64,518	74,106
MISSISSIPPI	9,796	11,792	15,904	23,783	24,745	31,301	38,431	50,548	58,658	61,635	95,536	119,335
MISSOURI	33,910	56,074	64,604	74,550	100,845	134,519	176,164	203,202	236,012	266,719	306,865	390,495
MONTANA	3,646	3,678	3,807	4,040	4,313	4,736	5,169	5,890	6,395	6,557	7,339	8,394
NEBRASKA	18,962	25,307	59,302	42,082	45,841	62,305	79,882	80,745	78,854	61,246	112,526	152,818
NEVADA	10,226	11,165	15,150	21,272	27,251	33,035	32,686	39,344	44,917	54,578	66,231	75,517
NEW HAMPSHIRE	1,034	1,057	1,134	1,244	1,314	1,469	1,812	2,108	2,381	2,714	3,127	3,561
NEW JERSEY	17,510	19,771	27,951	35,459	51,796	72,044	95,751	115,811	129,894	151,213	173,235	187,095
NEW MEXICO	10,414	12,132	16,795	24,316	33,239	38,843	35,674	34,703	42,371	55,546	72,841	96,098
NEW YORK	32,360	34,973	44,138	55,820	76,301	94,108	117,833	143,945	159,173	182,967	204,733	213,843
NORTH CAROLINA	13,522	19,947	25,771	32,114	42,602	55,893	73,016	89,517	106,064	123,411	146,488	173,591
NORTH DAKOTA	1,210	1,306	1,647	2,150	2,236	2,624	2,940	2,973	3,717	3,729	4,605	6,001
OHIO	30,922	37,162	44,899	56,813	73,815	100,888	126,169	144,290	168,981	205,093	237,348	268,331
OKLAHOMA	25,870	28,107	33,202	43,614	56,029	73,829	85,207	103,890	123,577	146,845	180,469	219,432
OREGON	10,513	10,616	11,351	12,096	13,257	14,592	15,789	16,427	18,092	20,512	22,901	26,231
PENNSYLVANIA	24,171	26,234	30,990	37,301	50,051	67,150	89,832	106,330	122,620	153,929	177,394	199,716
RHODE ISLAND	0,535	0,566	0,643	0,740	0,960	1,236	1,636	1,880	2,248	2,663	3,081	3,310
SOUTH CAROLINA	8,614	10,439	12,787	19,423	24,413	34,328	48,349	55,288	63,153	72,933	89,646	109,750
SOUTH DAKOTA	2,750	3,998	2,861	6,726	5,624	5,840	7,676	9,652	11,847	11,194	15,035	29,654
TENNESSEE	20,507	21,985	27,435	33,442	45,678	60,404	79,895	98,170	114,448	136,426	160,550	194,764
TEXAS	140,851	181,199	231,312	297,539	376,871	491,677	598,994	742,968	888,273	881,402	1,087,539	1,264,970
UTAH	5,618	6,229	7,898	10,068	12,041	15,650	19,046	21,067	24,114	28,697	36,276	42,244
VERMONT	0,797	0,801	0,804	0,809	0,825	0,854	0,893	0,936	0,966	1,001	1,058	1,100
VIRGINIA	15,057	19,575	30,726	44,337	67,522	94,301	122,835	152,921	177,934	221,143	253,980	290,912
WASHINGTON	21,573	21,939	22,738	23,813	24,563	26,405	28,156	31,083	33,937	38,192	41,598	42,803
WEST VIRGINIA	3,338	4,289	4,616	4,983	6,186	7,800	9,708	12,269	14,131	17,376	22,740	35,551
WISCONSIN	11,153	14,347	16,159	18,281	23,157	28,290	33,265	35,425	41,749	49,151	55,937	66,491
WYOMING	1,303	1,501	1,028	1,494	1,581	1,579	1,665	2,104	2,400	2,556	3,422	5,634

Table 3-23 (continued)
STOCK OF CENTRALLY AIR-CONDITIONED HOUSES
(THOUSANDS)

	72	73	74
ALABAMA	245,596	322,952	385,489
ALASKA	0,470	0,555	0,598
ARIZONA	354,798	411,394	481,447
ARKANSAS	174,855	218,099	271,818
CALIFORNIA	779,136	856,093	979,293
COLORADO	68,980	82,914	101,190
CONNECTICUT	28,393	30,633	33,603
DELAWARE	29,610	33,553	36,830
DIST, OF COLUMBIA	65,656	124,867	168,496
FLORIDA	822,011	979,391	1,163,091
GEORGIA	270,349	307,816	360,838
HAWAII	1,986	2,229	2,680
IDAHO	25,378	30,542	38,754
ILLINOIS	550,034	623,433	714,102
INDIANA	224,427	258,524	301,912
IOWA	156,849	188,777	243,367
KANSAS	250,865	313,113	373,356
KENTUCKY	129,740	159,762	194,545
LOUISIANA	314,303	354,453	407,152
MAINE	1,980	2,278	2,078
MARYLAND	370,481	415,323	488,947
MASSACHUSETTS	34,900	38,089	41,570
MICHIGAN	164,345	183,488	208,531
MINNESOTA	80,106	93,843	110,740
MISSISSIPPI	134,109	200,307	240,934
MISSOURI	470,228	553,544	667,114
MONTANA	9,379	10,550	12,449
NEBRASKA	175,295	215,753	287,508
NEVADA	87,987	102,815	115,046
NEW HAMPSHIRE	3,999	4,377	4,877
NEW JERSEY	205,809	222,715	246,122
NEW MEXICO	120,398	150,183	181,684
NEW YORK	227,758	250,244	269,996
NORTH CAROLINA	199,378	237,761	276,614
NORTH DAKOTA	7,845	9,630	12,628
OHIO	309,912	351,544	403,125
OKLAHOMA	249,463	295,786	345,060
OREGON	29,407	32,365	36,393
PENNSYLVANIA	224,875	255,111	296,025
RHODE ISLAND	3,689	3,849	4,181
SOUTH CAROLINA	115,425	135,555	161,641
SOUTH DAKOTA	35,291	46,672	63,821
TENNESSEE	213,564	248,377	309,016
TEXAS	1,426,912	1,653,971	1,930,932
UTAH	52,187	64,187	76,498
VERMONT	1,149	1,212	1,277
VIRGINIA	331,354	379,496	446,874
WASHINGTON	45,616	49,431	53,360
WEST VIRGINIA	49,902	63,550	87,063
WISCONSIN	79,091	92,608	110,664
WYOMING	7,337	10,090	15,568

In fact, Fisher and Kaysen used data published by Merchandising Week's predecessor Electrical Merchandising. The source of these data is the nation's public utilities. The marketing group, or load forecasters, of these organizations are usually the source of the estimates. Sometimes their estimates are based upon scientifically constructed customer surveys. Some utilities even buttress these surveys by monitoring the appliance sales of department stores in their regions. Not all utilities, however, appear to use scientific statistical methodologies. Indeed, our analyses indicate that the published estimates of many substantially from the Census data. Thus, in developing our estimates of the number of appliances in a region we were judicious in our use of the Merchandising Week data. Table 3-24 below presents a summary of the types of appliances included in the Merchandising Week survey. Initially, we had planned to include all types of capital covered by Merchandising Week. However, after consideration of the difficulty of developing the data and the insignificant energy usage generated by certain types of appliances, we limited our analyses to only those appliances designated with an asterisk (*).

RECONCILIATION OF DIFFERENT DATA SOURCES

The use of new data in connection with the Census of Housing imposed certain problems of consistency which, unless solved, would make the data set of questionable value. These problems were:

1. While the Census data was based on a uniform 1/25,000 sample, the trade source data was not,
2. Collection methods differed, and
3. Coverage differed.

In theory, the differences in sampling procedures does not necessarily create problems for merging data sets. If one set of data is based upon a one in one hundred sample while another is based upon one in one thousand, procedures for merging the two are well established. If one is interested only in the mean, as is the case here, and if the data sets are complements in that they cover different regions in different time intervals, one may combine them. *

The use of such a procedure here is more questionable because some of the data sets which must be combined were not collected under identical sampling procedures while others were. For instance, the Census data is based upon a uniform sampling procedure which was applied in every state, while the Merchandising Week data was collected by two hundred utilities, each of whom used its own

*If such data is used in regression, theory requires the use of weighted regression, when combined samples such as those described above are used.

Table 3-24

TYPES OF APPLIANCES COVERED BY MERCHANDISING WEEK

Appliance	Period of Coverage
Refrigerators	1959-1974
Home Freezers*	1959-1974
Room Air Conditioners*	1959-1974
Dehumidifiers	1959-1974
Electric Ranges*	1965-1974
Gas Ranges	1959-1974
Electric Water Heaters*	1965-1974
Gas Water Heaters*	1959-1969
Washers (Automatic)*	1959-1965
Washers (Conventional)*	1965-1969
Washers (Wringer & Others)	1959-1974
Electric Dryers*	1965-1974
Gas Dryers	1959-1974
Vacuum Cleaners	1959-1974
Dishwashers	1959-1974
Food Waste Disposers	1959-1962
Television	1962-1974
Black & White TV	1962-1974
Color TV	1962-1974
Evaporative Coolers	1959-1963
Washer-Dryer Combo	1959-1969
Washers - Total	1969-1974

*Appliances used in DRI's analyses.

unique and unknown sampling procedure where only the sample size and mean are reported.

The second problem in the combination of data sets concerns the difference in collection methods. The Census data is gathered by door to door surveys to which consumers are required by law to respond. Trade surveys on the other hand, are often not based upon such thorough survey methods. While it is probably impossible to generalize, it certainly would appear that the trade data used here will lack the rigorous background found in the Census data.

The problem of coverage refers to a) the lack of uniformity in the trade data which is to be used to fill the gaps in the Census data and b) the differences in concepts. Whereas the Census data provide a complete tabulation for all fifty states for each type of good covered, the trade data will sometimes provide only partial coverage. (For instance, the Merchandising Week data which is based upon reports from utilities provide data for refrigerators for all states but only provide data on washers for forty-two states). The second part of the coverage problem, concepts, refers to differences in what different groups report. The Census will report the number of housing units with one or two or more room air conditioners, while another publication will tabulate the number of housing units with air conditioners. The difference is that the number of houses having two or three are identified by the Census but not by the other source. This tends to complicate the problem of developing capital stock estimates.*

DIFFERENCES IN SAMPLE DEFINITION

The Census Bureau uses a standard statistical sampling approach in developing its estimates of household stocks of energy using capital. Normally, one of every 25,000 households is summarized in each state. The Merchandising Week data, however, is not collected in such a uniform manner. In the first place, while MW requests information from each utility, the utilities are under no obligation to provide MW with any information. Second, the basis of collection by each utility will be different. Some of the utilities will rely on data collected through scientific collection techniques while others may make very rough estimates. About the only fact we can know with any certainty is that the MW data, like the Census, does not provide double coverage where one house would be counted twice.

*It should be noted that there are no data in the Census of Housing on the saturation rate for refreigerators. Most surveys assume that 96% of all units have refrigerators. As can be seen from Table 3-26 this estimate is born out in the MW data.

DIFFERENCE IN COVERAGE

The Census data provides the same coverage (1 in 25,000) for all elements contained in their capital stock data. This type of uniformity is absent in the MW data. Some utilities will survey their customers for all appliances, while others will survey customers for only a few types. Information on coverage can, fortunately, be developed out of the Merchandising Week data. MW reports for each utility the number of customers served by the utility and a saturation rate for each surveyed appliance. This allows us to form an estimate for each state for the number of customers covered in the MW survey. Table 3-25 below presents such "coverage ratios" for the most recent year for each appliance. The coverage ratios are defined as the number of customers surveyed by utilities reporting saturation for a given appliance divided by the total number of customers reported for that state in the most recent FPC data for the same year.

We should make two important notes of caution in discussing the coverage ratios. First, the coverage ratio provides information on the potential, not actual, sample size. It indicates only the percent of the number of customers in a state served by utilities who published estimates of saturation rates on a given appliance. It does not represent sample size. Without data from the individual utilities on their sampling procedures, we are unable to use this data to calculate sampling statistics.

The second note of caution concerns the difference in sampling basis between the Census and MW data. The Census data are collected and tabulated for housing units. The utility data are based on customer counts. In many cases the definitional basis will be identical; A single family housing unit to the Census and one customer to utilities. However, for multi-family housing units, some differences may develop. As we noted above on page 3-9, some utilities engage in multi-metering so that customers and housing units are not identical. The difference occurs where an apartment owner decides to purchase electricity for all units and uses a single meter system rather than metering each unit separately.

Examination of the coverage ratios point out the randomness of utility interest in appliances. In Connecticut the coverage ratios are high as they are in New York, New Jersey, Pennsylvania, Illinois, California, and Oregon. On the otherhand, they are less than 10 percent in Montana, Arkansas, Mississippi, North Dakota, and Georgia.

Table 3-25

COVERAGE RATIOS OF MERCHANDISING WEEK SURVEY
BY APPLIANCE FOR 1970

	Refrigerators	Freezers	Room Air Cond.	Ranges	Water Heaters	Auto. Washers	Conv. Washers	Dryers	Dish-Washers
New England:									
Maine	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925	0.925
New Hampshire	0.704	0.704	0.704	0.704	0.704	0.000	0.000	0.704	0.704
Vermont	0.243	0.243	0.243	0.243	0.723	0.243	0.243	0.243	0.243
Massachusetts	0.741	0.741	0.741	0.822	0.822	0.741	0.741	0.822	0.741
Rhode Island	0.283	0.283	0.283	0.283	0.215	0.283	0.283	0.283	0.283
Connecticut	1.094	1.094	1.094	1.094	1.094	0.804	0.804	1.094	0.804
Middle Atlantic:									
New York	0.957	0.957	0.957	0.957	0.495	0.297	0.070	0.495	0.957
New Jersey	0.968	0.743	0.743	1.417	1.417	0.743	0.743	0.743	0.743
Pennsylvania	0.936	0.827	0.827	0.827	0.936	0.603	0.531	0.827	0.827
South Atlantic:									
Delaware	0.611	0.611	0.611	0.611	0.611	0.611	0.611	0.611	0.611
Maryland & D.C.	0.648	0.648	0.648	0.648	0.648	0.648	0.648	0.648	0.648
Virginia	0.668	0.668	0.668	1.044	1.044	0.668	0.000	1.044	0.668
West Virginia	0.447	0.390	0.390	0.447	0.447	0.390	0.000	0.447	0.390
North Carolina	0.805	0.805	0.805	0.805	0.805	0.805	0.516	0.639	0.639
South Carolina	0.310	0.310	0.310	0.310	0.310	0.026	0.026	0.310	0.310
Georgia	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043
Florida	0.288	0.288	0.744	0.744	0.744	0.127	0.127	0.744	0.744
East North Central:									
Ohio	0.661	0.661	0.661	0.803	0.803	0.423	0.423	0.830	0.803
Indiana	0.431	0.238	0.238	0.431	0.431	0.238	0.238	0.431	0.238
Illinois	0.816	0.816	0.816	0.816	0.816	0.816	0.707	0.816	0.816
Michigan	0.868	0.859	0.868	0.859	0.868	0.848	0.848	0.859	0.859
Wisconsin	0.693	0.322	0.693	0.693	0.322	0.693	0.693	0.693	0.693
West North Central:									
Minnesota	0.703	0.703	0.703	0.703	0.703	0.002	0.002	0.703	0.703
Iowa	0.457	0.457	0.457	0.457	0.457	0.457	0.309	0.457	0.457
Missouri	0.662	0.662	0.662	0.705	0.705	0.662	0.662	0.662	0.662
North Dakota	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036
South Dakota	0.574	0.574	0.574	0.574	0.574	0.574	0.438	0.574	0.574
Nebraska	0.519	0.519	0.519	0.519	0.519	0.519	0.233	0.519	0.519
Kansas	0.600	0.343	0.600	0.600	0.600	0.600	0.600	0.600	0.600

Table 3-25 (Contd)

COVERAGE RATIOS OF MERCHANDISING WEEK SURVEY
BY APPLIANCE FOR 1970

	Refrigerators	Freezers	Room Air Cond.	Ranges	Water Heaters	Auto. Washers	Conv. Washers	Dryers	Dish-Washers
East South Central:									
Kentucky	0.732	0.732	0.732	0.822	0.327	0.732	0.237	0.822	0.732
Tennessee	0.283	0.283	0.283	0.283	0.283	0.078	0.078	0.283	0.264
Alabama	0.658	0.658	0.658	0.658	0.658	0.658	0.611	0.658	0.658
Mississippi	0.039	0.039	0.039	0.039	0.039	0.039	0.000	0.039	0.039
West South Central:									
Arkansas	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065
Louisana	0.624	0.624	0.624	0.624	0.624	0.624	0.624	0.624	0.624
Oklahoma	0.319	0.319	0.319	0.319	0.319	0.319	0.016	0.319	0.319
Texas	0.772	0.772	0.739	0.772	0.772	0.367	0.162	0.772	0.645
Mountain:									
Arizona	0.722	0.722	0.722	0.722	0.722	0.722	0.722	0.722	0.722
Wyoming	0.181	0.181	0.155	0.181	0.181	0.181	0.155	0.181	0.181
Montana	0.016	0.659	0.659	0.659	0.016	0.016	0.016	0.659	0.659
Idaho	0.557	0.557	0.557	0.557	0.557	0.557	0.557	0.557	0.557
Utah	0.872	0.872	0.872	0.872	0.872	0.872	0.829	0.872	0.872
Colorado	0.700	0.700	0.700	0.700	0.700	0.700	0.080	0.700	0.700
Nevada	0.464	0.464	0.464	0.464	0.464	0.464	0.000	0.464	0.464
New Mexico	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463	0.463
Pacific:									
California	0.950	0.950	0.950	0.950	0.950	0.602	0.077	0.950	0.950
Oregon	1.072	1.072	1.072	1.072	1.072	1.072	0.589	1.072	1.072
Washington	0.883	0.883	0.856	0.883	0.892	0.857	0.333	0.883	0.863
Hawaii	0.942	0.942	0.942	0.942	0.942	0.846	0.846	0.942	0.942
Alaska	0.483	0.483	0.483	0.483	0.483	0.483	0.483	0.483	0.483

DIFFERENCES IN DATA

In spite of the differences in collection priorities, calculated saturation rates for those appliances covered by both the Census and Merchandising Week should be the same, at least theoretically, because both reports propose to sample the same distribution. In other words, since the Census of Housing and MW propose to provide estimates of the probability that a given household will have a specific appliance, and it is the intent of both surveys to sample the same universe, the sample means should be the same. As can be seen from Table 3-26, however, such a conclusion is grossly incorrect in some cases. Whereas estimates of saturation for certain appliances which may be considered necessities are very close, estimates for other appliances differ widely. Given this result some procedure to adjust the saturation rates was required.

Examination of the saturation rate data shown on Table 3-26 indicates that, in spite of differences in methodology, the estimates are fairly close in most states. Mean saturation rates (shown on Table 3-27) indicate only a .5 to 24 percent variation. However, utilities in certain states appear to have very poor records. In particular New York, Mississippi, South Dakota, Arkansas, New Mexico, Alaska, Georgia, North Carlina, and South Carolina. The appliances which do the worst are electric ranges and automatic washers.

METHODOLOGY FOR DETERMINING STOCK

At least two steps are required to align the estimates of capital stocks. First, the saturation rates published by Merchandising Week must be corrected to match those calculated using Census data. Then, the saturation rates for non-census years must be corrected to preserve the trend indicated by the MW data. Finally, capital stock estimates can be determined by multiplying the saturation rate times the estimate of dwelling units to produce yearly estimates by state of the stock of each type of appliance. The procedure used here to correct the appliance saturation rate was the following. For each state and for each appliance a constant based on the ratio of 1960 and 1970 Census and MW was determined. Then values of the constant for years 1961 to 1969 and 1971 to 1974 were determined by taking the arithmatic difference between the 1960 and 1970 values of C and dividing by 10 and adding this difference to the proceeding years value of C.* Yearly estimates of the capital stocks are then determined by

*Thus if $C_i(j,60)$ and $C_i(j,70)$ are the two constants,

$$C_i(j,t) = \frac{C_i(j,70) - C_i(j,60)}{10} + C_i(j,t-1)$$

Table 3-26

COMPARISON OF MERCHANDISING WEEK AND CENSUS ESTIMATES OF APPLIANCE SATURATION RATES - 1960

	Refrigerators			Freezers			Room Air Cond.		
	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.
New England:									
Maine	1.000	0.000	100.0	0.161	0.000	100.0	0.009	0.000	100.0
New Hampshire	1.000	0.910	9.0	0.137	0.080	41.5	0.029	0.000	100.0
Vermont	1.000	0.980	2.0	0.213	0.000	100.0	0.017	0.000	100.0
Massachusetts	1.000	0.935	6.5	0.073	0.060	17.7	0.045	0.071	-57.1
Rhode Island	1.000	0.966	3.4	0.055	0.057	-4.3	0.041	0.074	-78.5
Connecticut	1.000	0.986	1.4	0.131	0.144	-9.8	0.062	0.112	-81.4
Middle Atlantic:									
New York	1.000	0.969	3.1	0.096	0.183	-90.6	0.103	0.092	10.5
New Jersey	1.000	0.993	0.7	0.117	0.090	23.1	0.155	0.280	-81.0
Pennsylvania	1.000	0.951	4.9	0.153	0.174	-13.4	0.092	0.158	-71.6
South Atlantic:									
Delaware	1.000	0.970	3.0	0.209	0.080	61.7	0.153	0.210	-37.3
Maryland & D.C.	1.000	0.977	2.3	0.167	0.166	0.8	0.129	0.175	-35.3
Virginia	1.000	0.970	3.0	0.182	0.180	1.1	0.108	0.110	-1.7
West Virginia	1.000	0.955	4.5	0.160	0.193	-21.2	0.051	0.030	41.8
North Carolina	1.000	0.958	4.2	0.219	0.240	-9.7	0.077	0.100	-28.7
South Carolina	1.000	0.980	2.0	0.207	0.240	-16.1	0.107	0.290	-170.5
Georgia	1.000	0.948	5.2	0.201	0.165	17.9	0.106	0.162	-53.1
Florida	1.000	0.968	3.2	0.127	0.111	12.6	0.154	0.221	-43.5
East North Central:									
Ohio	1.000	0.967	3.3	0.186	0.169	9.2	0.061	0.083	-36.1
Indiana	1.000	0.980	2.0	0.241	0.210	13.0	0.075	0.100	-33.6
Illinois	1.000	0.973	2.7	0.168	0.201	-19.6	0.122	0.141	-15.1
Michigan	1.000	0.976	2.4	0.192	0.196	-2.0	0.045	0.051	-13.7
Wisconsin	1.000	0.983	1.7	0.277	0.213	23.2	0.045	0.076	-71.3
West North Central:									
Minnesota	1.000	0.971	2.9	0.318	0.216	32.0	0.052	0.078	-49.5
Iowa	1.000	0.977	2.3	0.306	0.291	4.7	0.103	0.136	-32.5
Missouri	1.000	0.980	2.0	0.202	0.190	5.8	0.147	0.320	-118.1
North Dakota	1.000	0.900	10.0	0.460	0.660	-43.4	0.019	0.010	46.6
South Dakota	1.000	0.957	4.3	0.370	0.193	48.0	0.062	0.062	0.2
Nebraska	1.000	0.876	12.4	0.305	0.232	24.0	0.186	0.256	-37.7
Kansas	1.000	0.969	3.1	0.232	0.295	-27.0	0.252	0.450	-78.6

Table 3-26 (Contd)

COMPARISON OF MERCHANDISING WEEK
AND CENSUS ESTIMATES OF APPLIANCE
SATURATION RATES - 1960

	Refrigerators			Freezers			Room Air Cond.		
	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.
East South Central:									
Kentucky	1.000	0.973	2.7	0.171	0.183	-6.6	0.076	0.137	-80.0
Tennessee	1.000	0.965	3.5	0.210	0.266	-26.8	0.185	0.500	-170.2
Alabama	1.000	0.940	6.0	0.193	0.170	12.0	0.141	0.160	-13.8
Mississippi	1.000	0.965	3.5	0.249	0.239	4.1	0.140	0.340	-142.9
West South Central:									
Arkansas	1.000	0.920	8.0	0.216	0.294	-36.2	0.119	0.332	-180.4
Louisana	1.000	0.966	3.4	0.241	0.263	-9.1	0.201	0.376	-87.3
Oklahoma	1.000	0.980	2.0	0.185	0.174	5.9	0.262	0.300	-14.3
Texas	1.000	0.949	5.1	0.218	0.239	-9.8	0.253	0.400	-58.4
Mountain:									
Arizona	1.000	0.961	3.9	0.180	0.180	-0.1	0.102	0.114	-11.4
Wyoming	1.000	0.902	9.8	0.351	0.244	30.5	0.035	0.073	-108.2
Montana	1.000	0.863	13.7	0.388	0.504	-29.7	0.030	0.000	100.0
Idaho	1.000	0.978	2.2	0.387	0.425	-9.8	0.048	0.120	-149.4
Utah	1.000	0.960	4.0	0.260	0.236	9.1	0.059	0.031	47.2
Colorado	1.000	0.981	1.9	0.247	0.240	2.6	0.041	0.038	6.6
Nevada	1.000	0.000	100.0	0.211	0.000	100.0	0.052	0.000	100.0
New Mexico	1.000	0.751	24.9	0.234	0.626	-167.0	0.054	0.020	62.7
Pacific:									
California	1.000	0.913	8.7	0.160	0.182	-13.4	0.070	0.064	9.6
Oregon	1.000	0.985	1.5	0.325	0.404	-24.3	0.031	0.030	0.6
Washington	1.000	0.959	4.1	0.264	0.309	-16.8	0.263	0.067	74.5
Hawaii	1.000	0.970	3.0	0.187	0.190	-1.4	0.014	0.029	-110.2
Alaska	1.000	0.000	100.0	0.255	0.000	100.0	0.007	0.000	100.0

Table 3-26 (Contd)

COMPARISON OF MERCHANDISING WEEK AND CENSUS ESTIMATES OF APPLIANCE SATURATION RATES - 1960

	Electric Ranges			Water Heaters			Auto. Washers		
	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.
New England:									
Maine	0.375	0.000	100.0	0.294	0.258	12.3	0.329	0.000	100.0
New Hampshire	0.455	0.460	-1.1	0.223	0.180	19.5	0.422	0.220	47.9
Vermont	0.385	0.450	-17.0	0.247	0.200	19.0	0.358	0.000	100.0
Massachusetts	0.301	0.337	-12.0	0.094	0.085	9.1	0.489	0.450	7.9
Rhode Island	0.305	0.272	10.8	0.076	0.100	-31.6	0.382	0.406	-6.3
Connecticut	0.419	0.461	-10.0	0.180	0.173	3.7	0.545	0.624	-14.5
Middle Atlantic:									
New York	0.157	0.336	-114.0	0.076	0.130	-70.2	0.400	0.431	-7.8
New Jersey	0.160	0.197	-23.4	0.089	0.098	-9.7	0.497	0.520	-4.7
Pennsylvania	0.302	0.390	-29.3	0.172	0.171	0.4	0.381	0.433	-13.9
South Atlantic:									
Delaware	0.344	0.360	-4.5	0.202	0.170	15.9	0.507	0.920	-81.3
Maryland & D.C.	0.228	0.288	-26.0	0.132	0.172	-29.8	0.433	0.250	42.3
Virginia	0.422	0.504	-19.2	0.311	0.288	7.4	0.346	0.450	-30.0
West Virginia	0.293	0.313	-6.9	0.144	0.085	40.9	0.265	0.233	12.0
North Carolina	0.618	0.734	-18.7	0.539	0.623	-15.7	0.330	0.360	-9.0
South Carolina	0.575	0.410	28.7	0.500	0.320	36.0	0.333	0.430	-29.3
Georgia	0.464	0.557	-20.0	0.311	0.328	-5.5	0.370	0.402	-8.5
Florida	0.529	0.590	-11.7	0.583	0.612	-5.0	0.411	0.500	-21.7
East North Central:									
Ohio	0.330	0.467	-41.5	0.185	0.168	9.2	0.388	0.448	-15.6
Indiana	0.336	0.551	-64.0	0.300	0.326	-8.6	0.341	0.470	-37.9
Illinois	0.182	0.300	-64.4	0.123	0.199	-61.0	0.305	0.361	-18.4
Michigan	0.407	0.448	-10.1	0.238	0.221	7.1	0.404	0.466	-15.4
Wisconsin	0.404	0.397	1.9	0.367	0.281	23.5	0.282	0.324	-14.7
West North Central:									
Minnesota	0.354	0.388	-9.6	0.299	0.246	17.8	0.279	0.328	-17.8
Iowa	0.286	0.285	0.5	0.285	0.154	46.2	0.280	0.380	-35.5
Missouri	0.219	0.270	-23.5	0.127	0.130	-2.6	0.299	0.430	-43.7
North Dakota	0.538	0.450	16.4	0.423	0.520	-23.0	0.198	0.100	49.5
South Dakota	0.419	0.536	-27.7	0.389	0.346	11.2	0.218	0.363	-67.0
Nebraska	0.357	0.414	-15.8	0.216	0.244	-12.9	0.333	0.398	-19.4
Kansas	0.275	0.330	-19.7	0.074	0.055	25.2	0.413	0.631	-52.8

Table 3-26 (Contd)

COMPARISON OF MERCHANDISING WEEK AND CENSUS ESTIMATES OF APPLIANCE SATURATION RATES - 1960

	Electric Ranges			Water Heaters			Auto. Washers		
	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.
East South Central:									
Kentucky	0.301	0.397	-31.7	0.189	0.199	-5.1	0.241	0.300	-24.6
Tennessee	0.657	0.579	11.8	0.493	0.446	9.4	0.308	0.650	-110.8
Alabama	0.480	0.450	6.2	0.273	0.230	15.8	0.348	0.400	-15.1
Mississippi	0.206	0.320	-55.4	0.099	0.048	52.0	0.294	0.540	-83.8
West South Central:									
Arkansas	0.134	0.371	-177.4	0.048	0.092	-89.9	0.297	0.359	-20.8
Louisana	0.075	0.117	-56.3	0.024	0.037	-55.6	0.446	0.542	-21.6
Oklahoma	0.124	0.211	-70.7	0.022	0.020	8.3	0.359	0.300	16.4
Texas	0.144	0.226	-56.8	0.037	0.049	-31.7	0.422	0.567	-34.5
Mountain:									
Arizona	0.191	0.228	-19.5	0.086	0.097	-12.5	0.444	0.485	-9.1
Wyoming	0.365	0.469	-28.4	0.136	0.241	-77.2	0.414	0.293	29.0
Montana	0.555	0.678	-22.1	0.298	0.472	-58.8	0.413	0.227	45.2
Idaho	0.839	0.849	-1.1	0.833	0.826	0.8	0.476	0.670	-40.6
Utah	0.616	0.622	-0.9	0.253	0.276	-9.3	0.493	0.549	-11.4
Colorado	0.326	0.334	-2.7	0.120	0.074	38.4	0.446	0.637	-42.8
Nevada	0.573	0.000	100.0	0.517	0.000	100.0	0.496	0.000	100.0
New Mexico	0.221	0.380	-72.4	0.104	0.364	-249.7	0.405	0.301	25.6
Pacific:									
California	0.179	0.204	-13.8	0.066	0.074	-12.1	0.497	0.608	-22.4
Oregon	0.804	0.840	-4.4	0.788	0.784	0.4	0.510	0.627	-23.1
Washington	0.843	0.880	-4.4	0.825	0.822	0.4	0.526	0.534	-1.4
Hawaii	0.611	0.619	-1.3	0.553	0.595	-7.6	0.517	0.655	-26.6
Alaska	0.511	0.000	100.0	0.276	0.000	100.0	0.340	0.000	100.0

Table 3-26 (Contd)

COMPARISON OF MERCHANDISING WEEK AND CENSUS ESTIMATES OF APPLIANCE SATURATION RATES - 1960

	Conv. Washers			Electric Dryers			Dishwashers		
	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.
New England:									
Maine	0.500	0.000	100.0	0.110	0.000	100.0	0.000	0.000	100.0
New Hampshire	0.373	0.000	100.0	0.116	0.090	22.2	0.000	0.000	100.0
Vermont	0.477	0.000	100.0	0.122	0.000	100.0	0.000	0.000	100.0
Massachusetts	0.225	0.367	-63.0	0.089	0.099	-11.1	0.000	0.055	NC
Rhode Island	0.256	0.390	-52.2	0.080	0.173	-116.5	0.000	0.039	NC
Connecticut	0.239	0.309	-29.6	0.138	0.176	-28.1	0.000	0.104	NC
Middle Atlantic:									
New York	0.173	0.470	-171.0	0.084	0.210	-149.5	0.000	0.096	NC
New Jersey	0.271	0.220	18.7	0.086	0.086	-0.2	0.000	0.070	NC
Pennsylvania	0.457	0.512	-11.9	0.144	0.217	-50.1	0.000	0.068	NC
South Atlantic:									
Delaware	0.296	0.000	100.0	0.167	0.170	-1.9	0.000	0.090	NC
Maryland & D.C.	0.308	0.640	-108.0	0.103	0.097	6.2	0.000	0.068	NC
Virginia	0.387	0.000	100.0	0.086	0.128	-48.4	0.000	0.060	NC
West Virginia	0.599	0.708	-18.2	0.174	0.218	-25.1	0.000	0.025	NC
North Carolina	0.386	0.340	11.8	0.040	0.050	-23.8	0.000	0.043	NC
South Carolina	0.280	0.000	100.0	0.039	0.080	-107.3	0.000	0.100	NC
Georgia	0.270	0.269	0.3	0.055	0.088	-59.3	0.000	0.056	NC
Florida	0.179	0.293	-64.2	0.066	0.081	-23.5	0.000	0.053	NC
East North Central:									
Ohio	0.434	0.468	-7.9	0.226	0.298	-32.0	0.000	0.065	NC
Indiana	0.430	0.400	7.0	0.196	0.377	-92.4	0.000	0.080	NC
Illinois	0.397	0.585	-47.5	0.095	0.185	-95.3	0.000	0.035	NC
Michigan	0.420	0.399	5.0	0.184	0.165	10.2	0.000	0.048	NC
Wisconsin	0.570	0.611	-7.1	0.199	0.214	-7.6	0.000	0.056	NC
West North Central:									
Minnesota	0.553	0.629	-13.6	0.156	0.216	-38.5	0.000	0.061	NC
Iowa	0.556	0.444	20.1	0.160	0.128	20.1	0.000	0.052	NC
Missouri	0.450	0.370	17.7	0.089	0.180	-102.6	0.000	0.080	NC
North Dakota	0.650	0.860	-32.2	0.292	0.430	-47.0	0.000	0.040	NC
South Dakota	0.610	0.541	11.2	0.215	0.186	13.5	0.000	0.051	NC
Nebraska	0.486	0.570	-17.3	0.174	0.219	-25.7	0.000	0.059	NC
Kansas	0.374	0.301	19.3	0.131	0.212	-62.0	0.000	0.121	NC

Table 3-26 (Contd)

COMPARISON OF MERCHANDISING WEEK AND CENSUS ESTIMATES OF APPLIANCE SATURATION RATES - 1960

	Conv. washers			Electric Dryers			Dishwashers		
	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.
East South Central:									
Kentucky	0.551	0.450	18.4	0.085	0.135	-58.4	0.000	0.065	NC
Tennessee	0.433	0.300	30.7	0.107	0.221	-106.3	0.000	0.120	NC
Alabama	0.336	0.290	13.8	0.057	0.060	-5.7	0.000	0.030	NC
Mississippi	0.324	0.170	47.5	0.037	0.089	-141.5	0.000	0.044	NC
West South Central:									
Arkansas	0.397	0.409	-2.9	0.038	0.136	-257.5	0.000	0.047	NC
Louisana	0.282	0.230	18.5	0.058	0.093	-60.1	0.000	0.089	NC
Oklahoma	0.266	0.300	-12.8	0.057	0.096	-69.0	0.000	0.047	NC
Texas	0.205	0.226	-10.0	0.059	0.098	-65.2	0.000	0.089	NC
Mountain:									
Arizona	0.234	0.397	-69.4	0.041	0.082	-102.3	0.000	0.082	NC
Wyoming	0.355	0.280	21.4	0.193	0.227	-17.9	0.000	0.124	NC
Montana	0.389	0.612	-57.3	0.274	0.251	8.6	0.000	0.000	100.0
Idaho	0.360	0.303	15.9	0.291	0.561	-92.8	0.000	0.140	NC
Utah	0.318	0.341	-7.0	0.182	0.258	-41.7	0.000	0.087	NC
Colorado	0.299	0.299	-0.2	0.114	0.190	-67.6	0.000	0.121	NC
Nevada	0.140	0.000	100.0	0.099	0.000	100.0	0.000	0.000	100.0
New Mexico	0.271	0.525	-93.6	0.086	0.226	-162.1	0.000	0.100	NC
Pacific:									
California	0.168	0.267	-58.6	0.098	0.152	-55.4	0.000	0.109	NC
Oregon	0.278	0.358	-28.7	0.371	0.454	-22.5	0.000	0.133	NC
Washington	0.247	0.381	-54.1	0.364	0.448	-23.1	0.000	0.160	NC
Hawaii	0.271	0.256	5.5	0.071	0.116	-62.9	0.000	0.091	NC
Alaska	0.245	0.000	100.0	0.222	0.000	100.0	0.000	0.000	100.0

Table 3-26 (Contd)

COMPARISON OF MERCHANDISING WEEK AND CENSUS ESTIMATES OF APPLIANCE SATURATION RATES - 1970

	Refrigerators			Freezers			Room Air Cond.		
	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.
New England:									
Maine	1.000	0.991	0.9	0.252	0.291	-15.4	0.000	0.053	NC
New Hampshire	1.000	0.990	1.0	0.220	0.150	31.8	0.000	0.070	NC
Vermont	1.000	0.990	1.0	0.307	0.150	51.2	0.000	0.090	NC
Massachusetts	1.000	0.990	1.0	0.132	0.101	23.6	0.000	0.210	NC
Rhode Island	1.000	0.992	0.8	0.110	0.130	-17.9	0.000	0.176	NC
Connecticut	1.000	1.000	0.0	0.214	0.212	0.9	0.000	0.315	NC
Middle Atlantic:									
New York	1.000	0.998	0.2	0.162	0.208	-28.4	0.000	0.342	NC
New Jersey	1.000	0.973	2.7	0.178	0.173	2.7	0.000	0.877	NC
Pennsylvania	1.000	0.995	0.5	0.236	0.259	-9.8	0.000	0.388	NC
South Atlantic:									
Delaware	1.000	0.990	1.0	0.277	0.240	13.4	0.000	0.520	NC
Maryland & D.C.	1.000	0.985	1.5	0.267	0.314	-17.5	0.000	0.347	NC
Virginia	1.000	0.980	2.0	0.293	0.360	-22.9	0.000	0.360	NC
West Virginia	1.000	0.999	0.1	0.280	0.350	-25.0	0.000	0.150	NC
North Carolina	1.000	0.980	2.0	0.379	0.392	-3.6	0.000	0.324	NC
South Carolina	1.000	0.998	0.2	0.355	0.380	-7.2	0.000	0.545	NC
Georgia	1.000	0.990	1.0	0.352	0.320	9.0	0.000	0.300	NC
Florida	1.000	0.992	0.8	0.200	0.247	-23.7	0.000	0.460	NC
East North Central:									
Ohio	1.000	0.992	0.8	0.289	0.299	-3.3	0.000	0.262	NC
Indiana	1.000	0.995	0.5	0.331	0.370	-11.8	0.000	0.350	NC
Illinois	1.000	0.998	0.2	0.246	0.252	-2.2	0.000	0.411	NC
Michigan	1.000	0.996	0.4	0.292	0.274	6.1	0.000	0.212	NC
Wisconsin	1.000	0.969	3.1	0.399	0.405	-1.5	0.000	0.272	NC
West North Central:									
Minnesota	1.000	0.999	0.1	0.435	0.480	-10.3	0.000	0.335	NC
Iowa	1.000	0.994	0.6	0.426	0.425	0.3	0.000	0.375	NC
Missouri	1.000	0.980	2.0	0.327	0.300	8.2	0.000	0.410	NC
North Dakota	1.000	0.962	3.8	0.586	0.658	-12.4	0.000	0.043	NC
South Dakota	1.000	0.995	0.5	0.512	0.338	33.9	0.000	0.358	NC
Nebraska	1.000	0.941	5.9	0.444	0.346	22.1	0.000	0.536	NC
Kansas	1.000	0.989	1.1	0.366	0.422	-15.1	0.000	0.671	NC

Table 3-26 (Contd)

COMPARISON OF MERCHANDISING WEEK
AND CENSUS ESTIMATES OF APPLIANCE
SATURATION RATES - 1970

	Refrigerators			Freezers			Room Air Cond.		
	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.
East South Central:									
Kentucky	1.000	0.923	7.7	0.308	0.313	-1.6	0.000	0.394	NC
Tennessee	1.000	0.987	1.3	0.373	0.358	4.1	0.000	0.515	NC
Alabama	1.000	0.981	1.9	0.399	0.417	-4.6	0.000	0.426	NC
Mississippi	1.000	0.900	10.0	0.461	0.850	-84.4	0.000	0.520	NC
West South Central:									
Arkansas	1.000	0.900	10.0	0.384	0.400	-4.2	0.000	0.570	NC
Louisana	1.000	0.991	0.9	0.399	0.431	-8.1	0.000	0.529	NC
Oklahoma	1.000	0.981	1.9	0.309	0.424	-37.0	0.000	0.635	NC
Texas	1.000	0.984	1.6	0.317	0.376	-18.6	0.000	0.457	NC
Mountain:									
Arizona	1.000	0.980	2.0	0.230	0.256	-11.1	0.000	0.100	NC
Wyoming	1.000	0.997	0.3	0.495	0.374	24.6	0.000	0.195	NC
Montana	1.000	0.990	1.0	0.506	0.496	1.9	0.000	0.050	NC
Idaho	1.000	0.990	1.0	0.524	0.610	-16.4	0.000	0.140	NC
Utah	1.000	0.986	1.4	0.392	0.405	-3.3	0.000	0.255	NC
Colorado	1.000	0.988	1.2	0.341	0.297	12.7	0.000	0.090	NC
Nevada	1.000	1.000	0.0	0.271	0.300	-10.7	0.000	0.100	NC
New Mexico	1.000	0.982	1.8	0.341	0.425	-24.7	0.000	0.076	NC
Pacific:									
California	1.000	0.971	2.9	0.210	0.232	-10.8	0.000	0.167	NC
Oregon	1.000	0.995	0.5	0.464	0.352	24.0	0.000	0.118	NC
Washington	1.000	0.990	1.0	0.417	0.447	-7.1	0.000	0.076	NC
Hawaii	1.000	0.997	0.3	0.210	0.260	-24.1	0.000	0.127	NC
Alaska	1.000	0.998	0.2	0.413	0.376	9.1	0.000	0.010	NC

Table 3-26 (Contd)

COMPARISON OF MERCHANDISING WEEK
AND CENSUS ESTIMATES OF APPLIANCE
SATURATION RATES - 1970

	Electric Ranges			Water Heaters			Auto. Washers		
	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.
New England:									
Maine	0.545	0.680	-24.8	0.346	0.427	-23.6	0.630	0.709	-12.5
New Hampshire	0.603	0.630	-4.4	0.308	0.250	18.9	0.683	0.000	100.0
Vermont	0.592	0.700	-18.3	0.478	0.364	24.0	0.653	0.800	-22.5
Massachusetts	0.414	0.444	-7.2	0.156	0.149	4.5	0.676	0.703	-4.1
Rhode Island	0.438	0.473	-8.0	0.137	0.120	12.6	0.606	0.786	-29.8
Connecticut	0.555	0.591	-6.6	0.239	0.239	0.1	0.713	0.803	-12.6
Middle Atlantic:									
New York	0.210	0.261	-24.4	0.087	0.157	-80.0	0.523	0.765	-46.4
New Jersey	0.215	0.241	-11.9	0.108	0.109	-0.9	0.651	0.666	-2.2
Pennsylvania	0.385	0.447	-16.1	0.212	0.206	2.8	0.613	0.792	-29.1
South Atlantic:									
Delaware	0.434	0.500	-15.3	0.246	0.250	-1.7	0.732	0.850	-16.2
Maryland & D.C.	0.292	0.353	-21.0	0.171	0.225	-31.2	0.619	0.614	0.8
Virginia	0.538	0.629	-16.9	0.435	0.386	11.1	0.576	0.720	-24.9
West Virginia	0.382	0.428	-12.0	0.240	0.159	33.9	0.524	0.500	4.6
North Carolina	0.742	0.821	-10.7	0.709	0.724	-2.0	0.625	0.628	-0.6
South Carolina	0.695	0.615	11.5	0.661	0.567	14.3	0.597	0.750	-25.7
Georgia	0.548	0.570	-4.0	0.399	0.600	-50.3	0.635	0.800	-25.9
Florida	0.658	0.715	-8.7	0.714	0.725	-1.6	0.570	0.695	-22.0
East North Central:									
Ohio	0.431	0.525	-21.8	0.208	0.186	10.9	0.620	0.657	-5.9
Indiana	0.393	0.597	-51.9	0.330	0.406	-23.1	0.566	0.620	-9.6
Illinois	0.218	0.234	-7.4	0.125	0.098	22.3	0.523	0.584	-11.8
Michigan	0.459	0.511	-11.5	0.257	0.230	10.4	0.636	0.622	2.2
Wisconsin	0.489	0.457	6.5	0.370	0.312	15.8	0.570	0.593	-4.1
West North Central:									
Minnesota	0.478	0.543	-13.5	0.341	0.257	24.7	0.548	0.200	63.5
Iowa	0.394	0.419	-6.6	0.275	0.227	17.2	0.571	0.680	-18.9
Missouri	0.305	0.390	-27.9	0.145	0.140	3.5	0.558	0.560	-0.4
North Dakota	0.688	0.647	5.9	0.511	0.766	-50.0	0.501	0.535	-6.7
South Dakota	0.561	0.678	-20.8	0.464	0.275	40.7	0.483	0.750	-55.2
Nebraska	0.504	0.594	-17.9	0.207	0.264	-27.7	0.638	0.373	41.5
Kansas	0.420	0.500	-18.9	0.084	0.083	0.6	0.651	0.704	-8.1

Table 3-26 (Contd)

COMPARISON OF MERCHANDISING WEEK
AND CENSUS ESTIMATES OF APPLIANCE
SATURATION RATES - 1970

	Electric Ranges			Water Heaters			Auto. Washers		
	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.
East South Central:									
Kentucky	0.441	0.490	-11.1	0.294	0.299	-1.8	0.498	0.634	-27.3
Tennessee	0.768	0.899	-17.1	0.669	0.842	-25.8	0.586	0.643	-9.6
Alabama	0.572	0.572	0.1	0.404	0.371	8.3	0.617	0.636	-3.0
Mississippi	0.360	0.650	-80.8	0.256	0.600	-134.0	0.551	0.500	9.3
West South Central:									
Arkansas	0.219	0.730	-233.8	0.100	0.310	-208.5	0.571	0.590	-3.4
Louisana	0.161	0.252	-56.3	0.076	0.068	9.8	0.680	0.801	-17.8
Oklahoma	0.258	0.477	-85.1	0.087	0.117	-33.7	0.587	0.735	-25.3
Texas	0.265	0.336	-26.8	0.086	0.098	-13.9	0.586	0.643	-9.7
Mountain:									
Arizona	0.369	0.453	-22.6	0.134	0.150	-11.4	0.604	0.719	-18.9
Wyoming	0.483	0.461	4.6	0.137	0.128	7.1	0.694	0.891	-28.4
Montana	0.657	0.724	-10.3	0.296	0.300	-1.3	0.655	0.400	38.9
Idaho	0.860	0.970	-12.8	0.821	0.840	-2.4	0.686	0.850	-23.9
Utah	0.678	0.733	-8.0	0.183	0.229	-25.0	0.724	0.753	-4.0
Colorado	0.522	0.547	-4.9	0.113	0.079	30.7	0.678	0.729	-7.6
Nevada	0.610	0.930	-52.3	0.530	0.600	-13.2	0.614	0.950	-54.7
New Mexico	0.329	0.600	-82.7	0.096	0.112	-16.4	0.601	0.740	-23.2
Pacific:									
California	0.306	0.329	-7.6	0.088	0.078	11.9	0.619	0.663	-7.0
Oregon	0.869	0.942	-8.3	0.832	0.822	1.2	0.713	0.811	-13.7
Washington	0.899	0.932	-3.7	0.846	0.865	-2.3	0.723	0.815	-12.6
Hawaii	0.726	0.788	-8.4	0.695	0.764	-10.0	0.698	0.656	6.1
Alaska	0.589	0.560	4.9	0.325	0.664	-104.7	0.584	0.851	-45.6

Table 3-26 (Contd)

COMPARISON OF MERCHANDISING WEEK AND CENSUS ESTIMATES OF APPLIANCE SATURATION RATES - 1970

	Conv. Washers			Electric Dryers			Dishwashers		
	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.
New England:									
Maine	0.146	0.267	-83.3	0.345	0.390	-13.2	0.127	0.154	-21.3
New Hampshire	0.076	0.000	100.0	0.372	0.350	6.0	0.164	0.130	20.9
Vermont	0.131	0.100	23.9	0.392	0.430	-9.7	0.171	0.180	-5.5
Massachusetts	0.050	0.060	-18.1	0.269	0.303	-12.7	0.191	0.183	3.9
Rhode Island	0.064	0.090	-41.3	0.282	0.307	-9.1	0.149	0.113	23.8
Connecticut	0.058	0.078	-35.1	0.379	0.391	-3.1	0.249	0.248	0.3
Middle Atlantic:									
New York	0.050	0.096	-92.8	0.199	0.501	-152.0	0.181	0.191	-5.2
New Jersey	0.055	0.062	-11.7	0.217	0.183	15.3	0.217	0.216	0.4
Pennsylvania	0.194	0.157	19.1	0.323	0.343	-6.0	0.163	0.210	-28.6
South Atlantic:									
Delaware	0.063	0.100	-57.8	0.392	0.390	0.4	0.240	0.150	37.5
Maryland & D.C.	0.097	0.157	-62.4	0.286	0.266	7.1	0.267	0.204	23.5
Virginia	0.148	0.000	100.0	0.292	0.324	-10.9	0.185	0.160	13.7
West Virginia	0.309	0.000	100.0	0.405	0.415	-2.6	0.089	0.150	-67.7
North Carolina	0.116	0.090	22.2	0.236	0.243	-3.0	0.111	0.120	-7.9
South Carolina	0.085	0.050	41.1	0.222	0.344	-54.8	0.112	0.263	-134.4
Georgia	0.068	0.050	26.3	0.296	0.400	-35.2	0.185	0.280	-51.7
Florida	0.043	0.038	10.5	0.245	0.245	-0.2	0.177	0.170	3.9
East North Central:									
Ohio	0.172	0.178	-3.1	0.412	0.478	-15.9	0.184	0.230	-24.9
Indiana	0.153	0.170	-11.2	0.347	0.529	-52.5	0.131	0.160	-22.3
Illinois	0.150	0.144	4.4	0.201	0.188	6.4	0.134	0.184	-37.4
Michigan	0.152	0.178	-17.4	0.311	0.287	7.9	0.175	0.150	14.4
Wisconsin	0.262	0.355	-35.7	0.396	0.342	13.7	0.155	0.182	-17.3
West North Central:									
Minnesota	0.258	0.650	-152.2	0.350	0.369	-5.3	0.177	0.233	-31.1
Iowa	0.231	0.217	6.2	0.349	0.410	-17.6	0.140	0.209	-49.5
Missouri	0.168	0.300	-78.3	0.244	0.290	-19.0	0.145	0.170	-17.5
North Dakota	0.299	0.305	-2.1	0.532	0.572	-7.6	0.133	0.076	43.1
South Dakota	0.298	0.050	83.2	0.453	0.443	2.1	0.108	0.138	-27.7
Nebraska	0.167	0.380	-126.9	0.443	0.470	-6.2	0.173	0.152	12.3
Kansas	0.117	0.140	-19.1	0.347	0.404	-16.3	0.180	0.185	-3.0

Table 3-26 (Contd)

COMPARISON OF MERCHANDISING WEEK
AND CENSUS ESTIMATES OF APPLIANCE
SATURATION RATES - 1970

	Conv. Washers			Electric Dryers			Dishwashers		
	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.	Census	Merch. Week	Percent Diff.
East South Central:									
Kentucky	0.253	0.190	24.8	0.269	0.450	-67.1	0.104	0.322	-210.6
Tennessee	0.149	0.168	-13.1	0.373	0.507	-35.8	0.147	0.182	-23.7
Alabama	0.115	0.309	-169.4	0.289	0.110	61.9	0.135	0.170	-25.8
Mississippi	0.131	0.000	100.0	0.235	0.300	-27.5	0.119	0.100	16.1
West South Central:									
Arkansas	0.140	0.200	-43.1	0.239	0.380	-59.3	0.130	0.280	-114.6
Louisana	0.092	0.110	-19.2	0.224	0.280	-25.0	0.170	0.271	-59.4
Oklahoma	0.074	0.300	-307.5	0.274	0.367	-34.0	0.205	0.387	-88.4
Texas	0.064	0.122	-91.0	0.246	0.316	-28.1	0.231	0.257	-11.6
Mountain:									
Arizona	0.068	0.172	-154.7	0.189	0.200	-5.7	0.204	0.242	-18.4
Wyoming	0.115	0.050	56.5	0.458	0.335	26.9	0.205	0.417	-103.2
Montana	0.121	0.500	-312.4	0.519	0.526	-1.3	0.230	0.228	0.7
Idaho	0.101	0.140	-38.1	0.543	0.720	-32.7	0.227	0.100	56.0
Utah	0.086	0.150	-75.1	0.400	0.491	-22.7	0.216	0.260	-20.4
Colorado	0.077	0.157	-103.6	0.368	0.340	7.6	0.297	0.364	-22.5
Nevada	0.022	0.000	100.0	0.303	0.650	-114.7	0.252	0.250	0.7
New Mexico	0.110	0.104	5.8	0.271	0.422	-55.8	0.197	0.351	-78.4
Pacific:									
California	0.036	0.062	-73.7	0.253	0.259	-2.5	0.269	0.268	0.3
Oregon	0.069	0.182	-165.4	0.616	0.641	-4.1	0.325	0.315	3.1
Washington	0.056	0.180	-219.2	0.624	0.644	-3.2	0.330	0.318	3.6
Hawaii	0.049	0.027	45.0	0.270	0.284	-5.5	0.171	0.243	-42.5
Alaska	0.085	0.064	25.1	0.483	0.666	-38.0	0.219	0.407	-85.8

Table 3-27

COMPARISON OF MEAN SATURATION RATES
1960 AND 1970

	1960				1970			
	Census	MW	Diff.	% Diff.	Census	MW	Diff.	5 Diff.
Freezers	.2199	.2119	.0080	3.64	.3466	.3449	.0017	.49
Room AC	.0958	.1396	-.0438	-45.72	.2670	.3062	-.0392	-14.68
Elec. Ranges	.3839	.4054	-.0215	-5.60	.4905	.5714	-.0809	-16.49
W. Heaters	.2648	.2526	.0122	4.61	.3206	.3447	-.0241	-7.52
Auto Washers	.4802	.4114	.0688	14.33	.6152	.6694	-.0542	-8.81
Con. Washers	.3593	.3418	.0177	4.92	.1239	.1530	-.0291	-23.49
Elec. Dryers	.1344	.1733	-.0389	28.94	.3397	.3899	-.0502	-14.78

taking the product of the constant, saturation rate ($S_{i,MW}(i,r)$) and the stock of housing, K(j,t).

$$K_i(j,t) = C_i(j,t) * S_{i,MW}(j,t) * K(j,t) \quad (31)$$

This procedure is very similar to that used in the earlier part of the analysis. However, unlike the case with other types of appliances, we were able to use further information to refine our estimates. Specifically, using the estimates of the number of national shipments of appliances for domestic consumption between 1960 and 1970 we were able to first determine national depreciation rates and hence yearly estimates of the national stock of a particular appliance.* Depreciation rates for each type of appliance except for room air conditioners are given below on Table 3-28. Depreciation rates for room air conditioners could not be calculated because the Census data do not provide an adequate base period estimate and we were unable to calculate the number of room air conditioners going to commercial establishments.**

The estimates of national appliance stocks were then used to revise the estimates of state by state holdings of a particular type of capital. The simplest possible procedure was employed. For each non-census year the ratio of the sum of all state holdings of a particular capital good to the estimated national capital stock was computed.

$$R_i(T) = \frac{\sum_{j=1}^{50} K_i(j,t)}{K_i(T)} \quad (32)$$

Differences were then allocated on a proportional basis to all states.

*This procedure involved first the calculations of a depreciation rate, r_i, for each type of appliance from the formula -

$$K_i(70) = \sum_{j=60}^{70} (1-r_i)^{70-j} V_i(j) + K_i(60) (1-r_i)^{10}$$

where $V_i(T)$ represents shipments in year T. Then the national stock of appliances type i for year T was determined by $K_i(T) = (1-r_i) K_i(T-1) + V_i(T-1)$

**The Census reports on dwelling units with one and dwelling units with two or more air conditioners. Unless some assumption is made with respect to the average number of room air conditioners held by families owning two or more units, no calculation can be made.

Table 3-28

NATIONAL DEPRECIATION RATES FOR APPLIANCES

Appliances	Depreciation Rate
Refrigerators	.0603
Home Freezers	.0215
Electric Ranges	.0484
Electric Water Heaters	.0433
Clothes Washers	.0843
Electric Dryers	.0130

Source: Investment series from Merchandising Week, 1960 and 1970 Benchmarks from Census.

Section 4

ESTIMATED ANNUAL USAGE RATES BY TYPE OF APPLIANCE

Average unit consumption rates in kilowatt hours by type of appliance are presented on Table 4-1. For seven of the ten appliances listed, usage rates are assumed to be constant across states and were obtained from the study done by SRI.

Table 4-1

ESTIMATED ANNUAL USAGE RATES BY TYPE OF APPLIANCE (Kilowatt Hours)

Appliance	Usage
Refrigerators	1,270
Freezers	1,478
Room Air Conditioners	1,375
Electric Ranges	1,180
Water Heaters	4,490
Automatic Washers	
Conventional Washers	98
Electric Dryers	990
Central Heating	14,153
Central Air Conditioners	3,600

Source: Stanford Research Institute

A national usage rate was considered inappropriate in three cases: room air conditioners, central air conditioners, and central heating. For the first two, average annual hours used by state were available from the Air Conditioning & Refrigeration Institute (see Table 3-21 of this report). National figures for hours used annually were calculated to be 959 and 867 for central and room air conditioning respectively. The assumption of national KWH usage levels of 3600 for central and 1375 for room air conditioners (as given by SRI) led to the calculation of average wattage levels per unit of 3743 and 1586. These figures agree substantially with average wattage levels given by SRI, and so the calculation seems reasonable. State usage patterns in KWH were thus calculated from the information given on Table 3-21 and were regressed on state data on cooling degree days to obtain weights for each state.

Information on KWH usage by state for all-electric homes was obtained from the 1970 edition of Typical Electric Bills. This information was regressed on state heating degree day data and, again, the predicted values were used as weights for each state. The weights thus derived for room and central air conditioners and central heating are presented on Table 4-2.

Table 4-2

WEIGHTS FOR ROOM AIR CONDITIONERS,
CENTRAL AIR CONDITIONERS, & CENTRAL HEATING

	ROOM AIR CONDITIONERS	CENTRAL AIR CONDITIONERS	CENTRAL HEATING
ALABAMA	2,010.1173	4,893.8506	7,463.0731
ARIZONA	2,512.9572	5,887.4084	6,237.0976
ARKANSAS	1,975.1300	4,821.1202	8,316.1745
CALIFORNIA	1,028.8472	2,561.2981	6,637.8480
COLORADO	687.9251	1,466.1053	15,350.6844
CONNECTICUT	888.0846	2,143.4934	13,759.3374
DELAWARE	1,347.8007	3,404.3027	11,196.9374
FLORIDA	3,088.2125	6,931.3989	2,806.7775
GEORGIA	1,952.3477	4,773.4703	7,297.4087
IDAHO	815.6692	1,912.3582	14,755.7608
ILLINOIS	1,216.8020	3,071.9888	13,597.1455
INDIANA	1,194.8332	3,014.5415	13,079.5649
IOWA	1,184.2557	2,986.6896	14,942.1719
KANSAS	1,734.2876	4,304.7901	11,486.8942
KENTUCKY	1,483.6814	3,732.9410	10,531.8077
LOUISIANA	2,451.1192	5,769.8601	5,333.4249
MAINE	658.6334	1,354.3756	16,916.8324
MARYLAND	1,355.9373	3,424.4113	11,226.1958
MASSACHUSETTS	825.4331	1,944.2980	14,160.2516
MICHIGAN	962.9410	2,370.1955	14,594.5508
MINNESOTA	888.8983	2,146.0196	18,416.6174
MISSISSIPPI	2,192.3764	5,264.5366	6,864.8506
MISSOURI	1,516.2276	3,809.5456	11,642.9993
MONTANA	687.9251	1,466.1053	17,338.3439
NEBRASKA	1,244.4663	3,143.5889	13,264.3392
NEVADA	1,650.4810	4,117.9313	10,183.3284
NEW HAMPSHIRE	714.7757	1,564.9659	16,032.5814
NEW JERSEY	1,178.5601	2,971.6395	12,622.8713
NEW MEXICO	1,176.9328	2,967.3326	11,107.2198
NEW YORK	1,043.4931	2,602.8130	13,239.7383
NORTH CAROLINA	1,659.4312	4,138.0834	8,506.1302
NORTH DAKOTA	870.1842	2,087.5394	19,838.3389
OHIO	1,126.4861	2,832.2504	12,968.4026
OKLAHOMA	600.8638	1,119.2914	11,710.0073
OREGON	2,101.2468	5,080.8532	8,921.6960
PENNSYLVANIA	1,054.8843	2,634.8790	12,987.8283

Table 4-2 (contd)

	ROOM AIR CONDITIONERS	CENTRAL AIR CONDITIONERS	CENTRAL HEATING
RHODE ISLAND	811.6009	1,898.9725	13,542.9792
SOUTH CAROLINA	2,020.6948	4,915.7345	7,147.1338
SOUTH DAKOTA	1,203.7834	3,038.0103	16,666.0502
TENNESSEE	1,576.4382	3,949.3120	9,597.3498
TEXAS	2,421.0140	5,712.2059	5,720.8717
UTAH	926.3265	2,260.7039	14,384.6852
VERMONT	709.0801	1,544.2567	16,777.4347
VIRGINIA	1,415.3342	3,569.4947	10,302.9094
WASHINGTON	577.2677	1,016.1147	12,849.9319
WEST VIRGINIA	1,185.0693	2,988.8365	11,559.5637
WISCONSIN	914.9353	2,226.1080	16,116.4899
WYOMING	736.7445	1,643.6224	16,808.9892

Section 5

RECOMMENDATIONS FOR FURTHER RESEARCH

This study suffered from a lack of information on four critical elements that determine household energy use. These include the number of appliances held by consumers, estimates of the age distribution of those appliances, estimates of the size distribution of the appliances and estimates of the historical utilization rates for the appliances. The discussion in Section 3 has outlined in great detail the efforts required to offset the lack of adequate data on consumer holdings of capital, the first deficiency. Fortunately, enough data were collected to allow for the construction of a reasonable data set. However, we were unable to gather adequate data to construct estimates of either the age, size or usage types of capital. This is thought to be a major deficiency. Thus our major recommendation is that some organization should undertake the development of periodic systematic censuses of consumer holdings of capital. This study should focus on regional (perhaps state) consumer ownership of major energy using capital. At a minimum it should identify:

1. The number of each type of capital good held in the region,
2. The year of manufacture of each type of capital good,
3. The size of each type of capital good (cubic feet for refrigerators, tons for air conditioners, etc.),
4. The average energy requirements per hour for each type of capital good,
5. The average number of hours of use for each type of capital good, and
5. The price of equivalent new capital goods.

These periodic censuses could be made by the U. S. Census Bureau. Alternately, the Nation's electric utilities could find it in their interests to perform the census. In the latter case, however, the quality of the data developed will depend upon the willingness of the separate utilities to adopt a common survey methodology. Failure to adopt a consistent, scientifically sound procedure would unfortunately substantially reduce the value of the results of the survey.

The discussion in this report has amply demonstrated the need for such a survey. For instance, while we are able to estimate the number of refrigerators held by consumers, we are, at present, unable to make inferences as to the energy

needs of these refrigerators because we lack data on (1) the distribution by size, (2) the distribution between "frost free" and nondefrosting refrigerators, (3) the distribution by age and (4) average patterns of use. The distribution by size is probably the most critical unknown. A sixteen cubic foot refrigerator with a five cubic foot freezer undoubtedly consumes several times the amount of energy used by a two cubic foot utility refrigerator. Yet our study (as well as all other studies) must count them as equals. The incidence of automatic defrosting refrigerators is equally important since the automatic defrosters may consume twice as much energy as refrigerators lacking this device. The distribution by age will also be critical for determining future energy requirements because new refrigerators may require less energy per cubic foot than older models. The impact of such a technical change on consumption of energy cannot be determined without the recommended survey because it will be impossible to determine whether replacement purchases offset any gain in efficiency through increases in average size. Also, the pattern of scrappage (such as first in first out) will be an important factor in the rate of energy growth. In short, without periodic snapshots of the details of the stock, it is impossible to determine its energy requirements.*

The census of consumer holdings of capital represents one important requirement for the further development of our knowledge of future energy demand. A second important element concerns knowledge about the present state of the stock of housing. In particular, this study suffers from the poor quality of data on housing starts in many states, as well as from an inability to determine the ultimate location of mobile homes. The study further suffers from a total lack of data on the average age of housing units. Both defects should be easily remediable. It is recommended that EPRI ask the appropriate U. S. government agency (presumably the Department of Housing and Urban Development) to provide yearly reports on the number of housing units completed by state, the number of units removed, and the total number of mobile homes in each state. This information could then be combined with data from the decennial census of housing to provide a better estimate of the stock of housing. As a second step, EPRI should consider asking that HUD begin to monitor removals of dwelling units by the age of the dwelling unit so that an accurate estimate of scrappage can be developed. It would be particularly useful to know, for instance, whether housing units constructed after World War II have a shorter service life than those built prior to World War II.

*It should be noted that studies that purport to estimate energy usage by type of capital good, such as the previously discussed SRI report, can provide only a rough indication of such usage because they lack the detail.

Finally, it is recommended that information on the average size of existing dwelling units be collected and that estimates of the size of new units, such as those now collected by F. W. Dodge, be included in public reports. These data would enable economists to project future changes in energy demand due to adjustments in the average size of buildings.

To conclude, it is recommended that two types of surveys be made. The first would survey periodically the number, size, age, and usage patterns of energy using capital. The second would provide information on the number, size, age and rate of change in the housing stock. Both types of data would aid immensely in the development of better estimates of future energy requirements.

APPENDIX

TABLE A1
STOCK OF HOUSES
CALCULATED FROM ELECTRICITY CUSTOMERS
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69
ALABAMA	918.772	1,052.720	1,046.728	1,053.796	1,051.537	1,055.570	1,064.555	1,068.529	1,069.484	1,072.295
ALASKA	59.835	59.652	62.966	68.626	70.418	71.222	70.691	71.904	76.495	77.360
ARIZONA	387.509	409.662	425.997	444.738	457.322	470.463	483.408	497.818	516.627	539.498
ARKANSAS	540.698	664.569	667.174	674.825	664.191	662.151	656.366	651.841	651.202	642.275
CALIFORNIA	5,237.730	5,428.287	5,593.954	5,796.378	6,014.823	6,186.681	6,314.809	6,460.061	6,574.213	6,680.499
COLORADO	551.877	584.584	606.149	630.629	635.675	641.281	649.609	657.746	675.026	689.740
CONNECTICUT	774.735	791.180	798.626	822.555	838.995	859.922	877.041	891.070	908.843	930.185
DELAWARE	133.990	137.378	138.759	144.535	148.832	152.917	157.896	160.797	164.220	166.288
FLORIDA	1,658.715	1,717.213	1,778.543	1,842.805	1,904.544	1,976.273	2,037.030	2,113.075	2,197.086	2,289.477
GEORGIA	1,108.635	1,141.087	1,147.589	1,181.176	1,212.090	1,244.938	1,295.859	1,329.376	1,367.739	1,399.040
HAWAII	157.569	161.594	165.676	164.899	174.238	179.324	185.133	189.831	195.107	202.168
IDAHO	201.750	206.103	207.697	208.850	209.592	212.396	212.649	214.415	218.105	220.273
ILLINOIS	3,182.294	3,258.156	3,296.320	3,334.203	3,377.880	3,421.768	3,464.157	3,499.874	3,538.292	3,585.974
INDIANA	1,430.261	1,528.950	1,525.959	1,551.325	1,565.868	1,582.152	1,607.465	1,620.188	1,642.713	1,650.715
IOWA	861.086	930.227	909.336	929.210	925.849	918.328	914.320	912.587	918.915	914.560
KANSAS	695.289	774.612	768.765	773.680	771.792	765.076	759.636	757.933	754.857	750.502
KENTUCKY	879.387	923.544	950.413	981.216	970.342	976.048	981.188	991.697	1,003.320	1,006.331
LOUISIANA	929.865	947.747	954.399	982.645	1,005.565	1,024.587	1,042.113	1,056.162	1,080.760	1,091.788
MAINE	290.102	298.669	296.919	295.450	295.024	294.786	297.867	301.015	304.103	305.724
MARYLAND & D.C.	1,152.642	1,233.904	1,262.264	1,295.618	1,329.038	1,363.968	1,392.502	1,414.573	1,437.037	1,458.177
MASSACHUSETTS	1,580.787	1,614.833	1,628.664	1,639.026	1,662.350	1,676.164	1,700.320	1,724.988	1,749.987	1,777.345
MICHIGAN	2,331.075	2,362.382	2,379.878	2,407.463	2,450.546	2,503.210	2,554.665	2,594.366	2,645.200	2,691.284
MINNESOTA	1,015.910	1,057.284	1,065.525	1,092.730	1,107.370	1,117.981	1,127.929	1,137.607	1,155.303	1,161.835
MISSISSIPPI	583.141	598.938	606.190	622.590	619.667	623.376	626.245	634.509	640.573	638.489
MISSOURI	1,410.334	1,566.403	1,562.070	1,559.494	1,566.930	1,575.827	1,585.040	1,583.127	1,591.926	1,586.889
MONTANA	202.960	204.222	205.741	209.062	210.904	213.551	215.626	219.947	223.542	223.364
NEBRASKA	446.132	466.770	498.729	480.331	480.271	485.510	489.883	498.098	485.100	477.933
NEVADA	95.932	104.963	115.737	131.732	139.410	144.950	142.280	147.483	152.824	158.584
NEW HAMPSHIRE	186.056	190.016	193.583	198.645	200.061	203.210	209.490	215.022	221.442	226.129
NEW JERSEY	1,849.278	1,890.985	1,933.590	1,970.794	2,016.757	2,064.243	2,110.565	2,151.332	2,187.221	2,221.228
NEW MEXICO	262.481	271.691	278.076	288.888	295.269	297.359	292.722	289.587	293.729	298.259
NEW YORK	5,370.629	5,439.262	5,507.110	5,589.648	5,671.960	5,730.704	5,796.100	5,871.083	5,924.812	5,977.126
NORTH CAROLINA	1,243.527	1,393.136	1,412.382	1,431.951	1,447.943	1,465.206	1,484.431	1,502.545	1,530.397	1,538.749
NORTH DAKOTA	178.064	180.396	182.702	186.300	185.675	186.285	186.347	185.390	187.744	186.692
OHIO	2,945.476	3,057.542	3,082.481	3,127.956	3,160.254	3,209.445	3,242.104	3,260.193	3,306.081	3,345.324
OKLAHOMA	767.184	781.991	789.223	808.539	819.463	833.472	837.834	849.522	866.651	877.354
OREGON	581.647	588.884	606.696	623.470	637.765	651.117	659.985	663.094	681.781	698.173
PENNSYLVANIA	3,437.004	3,473.945	3,493.095	3,520.416	3,553.580	3,591.906	3,635.267	3,664.249	3,702.956	3,751.856
RHODE ISLAND	267.145	270.202	272.257	274.746	278.085	281.579	285.866	288.425	293.589	297.091
SOUTH CAROLINA	628.538	658.708	663.059	690.516	696.007	711.352	730.559	734.766	744.859	749.875
SOUTH DAKOTA	199.854	207.873	204.278	210.601	208.125	207.080	207.234	207.538	208.426	206.788
TENNESSEE	1,035.476	1,052.747	1,070.716	1,089.528	1,112.081	1,134.413	1,159.362	1,183.096	1,209.949	1,231.171
TEXAS	2,938.506	3,147.103	3,296.191	3,284.323	3,330.188	3,389.019	3,429.288	3,492.957	3,577.877	3,551.878
UTAH	251.146	259.716	265.782	273.590	276.591	282.147	285.969	287.474	292.115	296.267
VERMONT	114.198	117.551	116.881	116.949	118.108	120.920	124.201	127.889	130.838	132.349
VIRGINIA	1,112.420	1,156.784	1,186.259	1,220.768	1,253.876	1,285.350	1,312.554	1,342.493	1,373.546	1,407.182
WASHINGTON	942.759	976.986	994.236	1,018.238	1,022.055	1,039.160	1,050.444	1,076.420	1,109.524	1,139.026
WEST VIRGINIA	540.622	562.296	558.984	555.850	555.093	554.889	554.538	556.264	557.206	558.665
WISCONSIN	1,175.941	1,305.837	1,309.773	1,315.832	1,329.157	1,337.835	1,340.573	1,330.738	1,347.055	1,353.067
WYOMING	103.213	112.095	103.893	108.821	108.100	106.719	105.805	106.757	107.309	106.569

TABLE A1 (continued)
STOCK OF HOUSES
CALCULATED FROM ELECTRICITY CUSTOMERS
(THOUSANDS)

	70	71	72	73	74
ALABAMA	1,073.691	1,078.903	1,083.028	1,115.627	1,117.840
ALASKA	83.104	85.585	87.219	96.307	97.603
ARIZONA	566.531	613.874	660.833	709.446	741.593
ARKANSAS	639.432	649.202	648.584	656.229	655.934
CALIFORNIA	6,796.917	6,944.592	7,128.172	7,302.529	7,456.775
COLORADO	713.503	747.422	794.134	841.335	874.051
CONNECTICUT	952.621	968.956	985.387	1,003.574	1,016.655
DELAWARE	169.708	173.908	176.421	181.252	182.783
FLORIDA	2,394.509	2,524.836	2,677.102	2,868.078	2,983.500
GEORGIA	1,422.457	1,450.381	1,467.810	1,513.368	1,547.593
HAWAII	209.418	215.872	224.443	232.573	241.185
IDAHO	226.099	234.998	244.048	253.976	262.691
ILLINOIS	3,620.656	3,659.873	3,714.758	3,771.301	3,803.613
INDIANA	1,664.449	1,682.084	1,692.846	1,717.071	1,729.913
IOWA	923.573	927.312	923.047	924.396	925.159
KANSAS	750.612	752.700	751.564	755.077	751.031
KENTUCKY	1,020.642	1,019.369	1,045.918	1,072.531	1,085.003
LOUISIANA	1,102.589	1,124.394	1,147.217	1,169.605	1,183.956
MAINE	312.652	318.795	325.532	339.582	330.046
MARYLAND & D.C.	1,481.183	1,511.459	1,544.677	1,581.169	1,616.442
MASSACHUSETTS	1,803.559	1,823.011	1,854.343	1,884.973	1,903.525
MICHIGAN	2,731.109	2,782.039	2,836.635	2,894.066	2,932.988
MINNESOTA	1,180.507	1,197.371	1,203.381	1,228.691	1,243.825
MISSISSIPPI	651.694	677.825	684.692	734.224	748.022
MISSOURI	1,587.855	1,602.956	1,612.092	1,623.838	1,627.119
MONTANA	226.856	232.787	237.576	243.806	249.421
NEBRASKA	491.135	502.708	507.436	518.253	529.148
NEVADA	166.013	173.874	183.691	196.263	200.346
NEW HAMPSHIRE	232.240	241.745	253.320	257.986	263.526
NEW JERSEY	2,257.168	2,294.361	2,339.737	2,382.951	2,417.368
NEW MEXICO	305.079	315.925	325.868	339.245	346.054
NEW YORK	6,025.855	6,056.277	6,099.609	6,175.508	6,211.937
NORTH CAROLINA	1,558.602	1,585.037	1,602.975	1,644.848	1,656.196
NORTH DAKOTA	188.161	190.350	193.150	195.981	198.620
OHIO	3,378.595	3,415.042	3,463.692	3,515.356	3,544.271
OKLAHOMA	896.057	922.098	937.884	967.462	982.274
OREGON	714.565	747.098	774.304	800.535	819.671
PENNSYLVANIA	3,785.692	3,825.337	3,865.205	3,919.469	3,957.680
RHODE ISLAND	300.701	303.474	307.839	309.523	311.593
SOUTH CAROLINA	766.436	787.553	784.061	802.556	812.639
SOUTH DAKOTA	207.906	212.554	213.332	216.382	218.792
TENNESSEE	1,255.590	1,305.002	1,325.431	1,372.127	1,417.998
TEXAS	3,625.233	3,706.997	3,769.595	3,872.009	3,934.925
UTAH	304.682	312.463	325.199	341.762	350.280
VERMONT	136.097	137.881	139.881	143.140	144.082
VIRGINIA	1,432.081	1,475.355	1,517.974	1,572.297	1,614.368
WASHINGTON	1,160.843	1,163.630	1,180.902	1,209.529	1,221.539
WEST VIRGINIA	565.056	573.635	582.196	590.526	598.398
WISCONSIN	1,357.037	1,368.251	1,391.383	1,398.062	1,405.312
WYOMING	108.692	111.665	113.250	116.852	121.028

TABLE A2
STOCK OF OIL HEATED HOUSES
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69
ALABAMA	27.672	31.833	30.015	30.311	28.674	26.107	25.530	25.338	24.025	17.662
ALASKA	42.765	43.126	43.953	48.215	48.489	48.005	46.425	46.403	48.056	46.288
ARIZONA	13.793	12.733	11.503	12.165	10.638	9.844	8.448	7.935	7.148	5.522
ARKANSAS	9.430	12.922	11.872	11.029	9.554	8.554	7.411	6.495	5.721	4.881
CALIFORNIA	96.519	103.036	89.424	98.244	93.935	87.336	75.020	69.021	57.747	37.566
COLORADO	32.819	30.995	28.224	31.079	26.922	23.666	21.273	18.720	17.242	15.161
CONNECTICUT	621.313	619.738	627.790	646.302	651.609	660.712	664.019	658.338	654.518	659.320
DELAWARE	98.997	99.758	100.197	104.019	105.786	106.916	107.882	106.969	106.745	105.029
FLORIDA	765.130	776.918	773.672	789.848	791.569	785.851	774.934	751.297	746.976	720.742
GEORGIA	109.915	101.472	93.349	96.476	91.751	87.582	83.558	82.164	78.738	75.292
HAWAII	0.431	0.447	0.463	0.465	0.497	0.516	0.538	0.557	0.578	0.604
IDAHO	100.930	102.277	100.092	100.134	98.693	100.930	98.059	94.863	94.298	91.391
ILLINOIS	990.481	961.458	914.176	895.606	842.650	791.226	737.354	674.947	609.359	544.237
INDIANA	605.063	640.655	611.285	617.528	598.738	582.866	566.691	540.811	523.804	483.638
IOWA	315.694	336.364	299.367	290.547	264.615	239.381	212.722	195.561	163.679	131.001
KANSAS	37.482	49.982	42.999	39.824	35.167	29.723	24.956	21.176	17.300	13.489
KENTUCKY	67.343	74.855	80.934	89.013	88.386	89.719	75.264	87.132	98.169	81.897
LOUISIANA	14.858	13.557	10.550	10.153	8.702	7.459	5.799	4.725	4.152	3.161
MAINE	235.606	245.989	247.791	249.882	252.842	256.247	262.306	267.946	273.718	277.999
MARYLAND & D.C.	595.330	646.774	655.681	675.255	682.131	685.769	680.771	669.064	655.509	638.061
MASSACHUSETTS	1,192.106	1,216.641	1,202.419	1,217.161	1,226.015	1,209.398	1,212.078	1,200.572	1,197.806	1,199.793
MICHIGAN	818.509	803.326	764.743	772.119	759.025	746.574	716.697	682.152	654.877	619.953
MINNESOTA	431.957	439.758	428.552	447.522	446.821	440.580	433.928	418.093	420.246	415.082
MISSISSIPPI	7.024	7.011	6.713	6.819	6.319	5.853	5.460	5.194	4.850	4.395
MISSOURI	241.680	279.979	261.692	247.860	230.481	215.334	200.448	181.820	166.575	151.904
MONTANA	38.578	39.970	35.430	36.084	34.918	34.798	33.996	34.547	34.284	32.061
NEBRASKA	101.312	103.867	111.383	96.383	88.102	82.334	77.659	70.388	61.862	51.166
NEVADA	32.424	34.815	36.490	41.332	38.797	35.923	23.554	21.734	12.466	28.293
NEW HAMPSHIRE	148.318	149.614	153.563	160.212	162.645	162.144	168.316	173.839	179.343	183.063
NEW JERSEY	1,162.433	1,172.891	1,177.732	1,196.282	1,205.988	1,210.715	1,208.250	1,204.732	1,197.671	1,190.361
NEW MEXICO	12.375	11.669	11.069	11.544	10.587	9.146	7.818	6.377	5.544	4.934
NEW YORK	3,502.042	3,501.682	3,500.668	3,537.940	3,522.510	3,494.925	3,495.721	3,493.892	3,475.981	3,455.899
NORTH CAROLINA	699.915	806.764	832.857	864.601	884.500	906.089	927.881	945.577	961.760	957.295
NORTH DAKOTA	91.435	91.635	91.790	94.392	93.131	92.882	92.345	91.458	91.848	91.146
OHIO	447.189	478.606	474.783	504.710	503.290	509.869	508.308	495.913	494.794	490.190
OKLAHOMA	6.863	6.256	5.161	5.274	4.702	4.208	3.536	3.109	2.763	2.287
OREGON	317.332	314.879	317.596	323.201	320.128	314.072	304.709	293.889	283.408	266.606
PENNSYLVANIA	1,066.345	1,091.549	1,124.736	1,168.096	1,199.688	1,233.932	1,262.928	1,276.777	1,299.653	1,331.491
RHODE ISLAND	204.534	204.241	202.001	204.222	205.372	206.272	207.516	206.838	206.609	205.820
SOUTH CAROLINA	297.250	309.524	308.282	329.838	332.410	339.298	345.167	340.328	344.760	340.036
SOUTH DAKOTA	96.986	96.672	93.160	95.701	91.078	87.481	84.796	83.321	80.605	73.375
TENNESSEE	78.177	80.954	83.278	87.636	88.940	88.683	88.142	90.582	89.846	83.770
TEXAS	49.657	55.328	49.753	48.091	41.737	37.251	32.490	28.607	25.376	18.232
UTAH	25.843	24.977	25.136	26.334	23.656	22.456	20.916	18.914	17.590	15.925
VERMONT	88.316	92.222	92.981	94.214	96.434	99.964	100.359	101.739	104.636	105.969
VIRGINIA	513.830	542.292	562.629	595.542	618.342	635.569	648.338	664.445	679.114	690.180
WASHINGTON	615.069	616.974	605.835	610.979	591.124	571.245	576.377	558.501	552.214	504.101
WEST VIRGINIA	21.655	26.509	28.426	31.137	33.659	36.504	39.418	42.731	45.283	47.988
WISCONSIN	606.301	681.804	670.195	673.046	663.533	650.002	631.291	597.948	584.422	558.030
WYOMING	8.598	9.224	6.264	7.243	6.034	5.431	4.793	4.624	4.254	3.777

TABLE A2 (continued)
STOCK OF OIL HEATED HOUSES
(THOUSANDS)

	70	71	72	73
ALABAMA	19.999	19.333	17.925	18.471
ALASKA	47.015	47.686	46.726	50.149
ARIZONA	4.282	4.676	3.268	0.432
ARKANSAS	4.235	3.960	3.047	2.521
CALIFORNIA	45.999	27.682	40.943	18.083
COLORADO	12.129	12.202	10.362	7.755
CONNECTICUT	662.477	647.950	664.594	666.587
DELAWARE	104.414	108.763	103.382	104.508
FLORIDA	699.825	677.736	555.954	671.512
GEORGIA	70.595	62.814	56.719	43.025
HAWAII	9.627	9.655	9.687	9.717
IDAHO	99.847	91.111	38.204	84.430
ILLINOIS	487.779	409.565	344.149	273.413
INDIANA	448.979	411.669	369.548	341.050
IOWA	191.747	94.656	76.969	51.968
KANSAS	11.182	8.523	6.352	4.523
KENTUCKY	91.564	87.438	86.954	87.313
LOUISIANA	5.826	0.971	-0.425	-0.952
MAINE	286.993	294.973	301.931	314.836
MARYLAND & D.C.	623.343	604.523	574.768	545.672
MASSACHUSETTS	1,187.353	1,160.396	1,139.914	1,121.260
MICHIGAN	590.142	555.754	529.399	518.950
MINNESOTA	404.471	393.452	392.904	385.831
MISSISSIPPI	4.494	4.230	3.666	3.880
MISSOURI	138.416	131.964	113.892	99.892
MONTANA	31.159	32.402	30.665	28.246
NEBRASKA	48.582	43.245	35.933	28.114
NEVADA	26.238	24.530	22.502	19.801
NEW HAMPSHIRE	187.053	195.476	200.300	203.182
NEW JERSEY	1,188.227	1,145.526	1,140.420	1,181.712
NEW MEXICO	4.274	4.123	3.349	3.302
NEW YORK	3,420.831	3,420.046	3,546.616	3,421.720
NORTH CAROLINA	965.033	967.556	945.146	947.745
NORTH DAKOTA	90.168	87.976	85.649	81.568
OHIO	475.504	469.412	442.259	436.937
OKLAHOMA	2.014	1.773	1.249	1.027
OREGON	270.357	300.230	302.434	291.985
PENNSYLVANIA	1,324.013	1,339.930	1,370.770	1,413.628
RHODE ISLAND	204.236	204.605	204.084	197.918
SOUTH CAROLINA	341.716	346.023	327.030	321.888
SOUTH DAKOTA	72.236	70.968	67.801	64.966
TENNESSEE	79.378	71.047	58.164	40.467
TEXAS	13.918	13.928	10.590	9.596
UTAH	15.205	13.173	10.577	9.787
VERMONT	109.426	111.019	114.242	113.776
VIRGINIA	596.195	713.751	717.655	727.548
WASHINGTON	473.691	416.952	368.658	302.262
WEST VIRGINIA	51.710	55.654	56.254	59.382
WISCONSIN	531.529	512.212	483.479	450.979
WYOMING	3.712	3.558	2.851	2.658

TABLE A3
STOCK OF HOUSES
CALCULATED FROM DEPRECIATION RATES
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69
ALABAMA	918.772	928.631	939.798	953.554	970.818	986.658	1,003.241	1,017.432	1,034.303	1,053.446
ALASKA	59.835	61.330	63.279	65.040	67.180	69.455	72.026	74.093	76.968	79.647
ARIZONA	387.509	408.929	427.987	448.258	471.895	489.041	499.136	507.600	518.374	536.174
ARKANSAS	540.698	546.213	552.404	561.120	570.953	582.429	594.904	604.156	614.897	627.109
CALIFORNIA	5,237,730	5,397.436	5,568.786	5,781.115	6,050.799	6,272.772	6,410.359	6,466.498	6,530.982	6,652.119
COLORADO	551.877	566.069	585.646	602.618	617.319	631.348	644.502	654.702	670.056	690.596
CONNECTICUT	774.735	787.007	799.189	813.717	829.866	851.290	872.246	890.281	908.688	930.768
DELAWARE	133.990	135.355	136.329	138.271	141.293	145.903	151.238	154.637	159.679	165.397
DIST. OF COLUMBIA	259.913	259.797	259.549	260.810	265.055	270.358	275.675	277.384	276.461	274.911
FLORIDA	1,658.715	1,719.106	1,772.812	1,828.832	1,891.035	1,959.704	2,025.626	2,084.076	2,153.473	2,263.544
GEORGIA	1,108.635	1,125.653	1,143.388	1,169.339	1,203.479	1,235.085	1,267.614	1,292.110	1,329.240	1,372.955
HAWAII	157.569	162.138	165.030	170.140	173.181	176.835	184.243	190.416	193.333	200.432
IDAHO	201.750	203.408	205.196	207.339	209.486	211.907	214.876	217.005	219.375	222.416
ILLINOIS	3,182.293	3,214.399	3,250.273	3,288.520	3,324.763	3,363.158	3,407.931	3,448.160	3,499.969	3,564.908
INDIANA	1,430.261	1,444.485	1,458.932	1,477.627	1,499.698	1,523.653	1,552.059	1,575.581	1,600.815	1,630.987
IOWA	861.386	865.183	868.442	872.082	875.996	882.165	891.658	897.172	906.462	915.353
KANSAS	701.546	703.653	706.316	710.985	714.905	720.688	727.626	732.382	738.659	748.007
KENTUCKY	879.387	887.854	895.698	905.728	919.028	935.872	955.158	967.300	982.833	1,001.353
LOUISIANA	929.365	941.171	951.562	965.035	980.646	1,000.241	1,023.645	1,039.719	1,056.424	1,077.378
MAINE	290.102	291.615	292.725	293.918	295.266	296.748	299.021	301.308	303.946	307.592
MARYLAND	892.729	909.095	931.944	962.031	1,003.592	1,040.538	1,087.898	1,126.814	1,152.964	1,179.737
MASSACHUSETTS	1,580.787	1,595.676	1,612.952	1,633.776	1,657.153	1,686.076	1,710.560	1,728.195	1,748.634	1,777.046
MICHIGAN	2,331.076	2,353.967	2,373.573	2,398.072	2,429.200	2,470.440	2,523.157	2,567.514	2,620.563	2,676.442
MINNESOTA	1,015.910	1,026.784	1,037.332	1,051.180	1,066.479	1,082.640	1,097.013	1,106.767	1,125.542	1,153.443
MISSISSIPPI	583.141	587.681	591.976	597.897	604.753	612.478	621.149	628.797	637.395	646.735
MISSOURI	1,410.334	1,421.707	1,432.930	1,445.155	1,462.540	1,486.119	1,509.090	1,523.951	1,541.470	1,565.915
MONTANA	202.960	205.232	207.604	209.656	211.913	214.436	217.262	219.327	221.420	223.513
NEBRASKA	446.132	450.493	455.065	460.253	464.344	467.824	472.285	473.988	478.831	485.134
NEVADA	95.932	101.202	108.718	127.293	142.358	148.434	152.919	154.495	155.875	160.061
NEW HAMPSHIRE	186.056	188.647	191.908	195.482	199.418	203.648	208.579	213.490	219.229	225.394
NEW JERSEY	1,849.278	1,881.478	1,919.473	1,956.771	2,002.760	2,062.256	2,115.651	2,155.121	2,191.665	2,225.710
NEW MEXICO	262.481	267.252	270.762	275.642	282.031	287.381	291.968	294.659	297.331	301.697
NEW YORK	5,370.630	5,435.638	5,520.824	5,615.765	5,692.457	5,743.710	5,807.963	5,859.759	5,914.812	5,976.140
NORTH CAROLINA	1,243.526	1,263.115	1,283.925	1,307.239	1,332.930	1,362.587	1,393.827	1,424.494	1,463.100	1,508.271
NORTH DAKOTA	178.064	178.416	178.580	179.131	180.310	181.635	182.879	183.462	184.549	186.043
OHIO	2,945.475	2,982.089	3,013.525	3,053.721	3,100.452	3,146.712	3,193.959	3,227.933	3,273.328	3,326.894
OKLAHOMA	767.184	774.964	783.852	796.341	811.007	824.273	837.292	845.639	858.586	876.795
OREGON	581.547	590.217	599.204	609.446	623.235	638.384	653.584	666.659	680.964	698.524
PENNSYLVANIA	3,437.303	3,460.228	3,481.777	3,510.890	3,537.327	3,570.000	3,610.369	3,647.133	3,692.554	3,738.547
RHODE ISLAND	267.145	269.704	272.153	275.047	278.157	281.918	286.596	289.767	292.936	297.011
SOUTH CAROLINA	628.538	634.388	640.253	648.582	658.576	670.360	683.676	696.311	717.948	740.784
SOUTH DAKOTA	199.354	200.474	201.270	202.327	203.537	204.415	205.361	205.304	205.911	206.565
TENNESSEE	1,035.476	1,050.211	1,065.162	1,080.302	1,099.118	1,120.786	1,145.240	1,167.166	1,194.147	1,225.593
TEXAS	2,938.507	2,983.664	3,037.191	3,110.717	3,186.848	3,254.168	3,308.567	3,352.516	3,423.042	3,527.647
UTAH	251.146	257.511	264.575	272.208	279.889	284.753	288.754	291.299	295.241	299.507
VERMONT	114.198	115.358	116.556	117.888	119.227	120.703	123.014	125.577	128.866	132.132
VIRGINIA	1,112.420	1,133.136	1,156.455	1,189.739	1,225.587	1,265.129	1,308.290	1,335.560	1,365.458	1,399.900
WASHINGTON	942.759	950.614	960.386	979.290	996.008	1,008.884	1,023.889	1,044.738	1,084.145	1,129.770
WEST VIRGINIA	540.622	541.719	542.216	543.078	544.635	546.968	549.874	552.698	555.450	559.572
WISCONSIN	1,175.941	1,191.075	1,202.903	1,214.938	1,231.024	1,251.983	1,275.266	1,291.895	1,311.768	1,334.909
WYOMING	103.213	104.523	105.188	106.291	106.859	107.672	108.006	107.853	107.970	108.165

TABLE A3 (continued)
STOCK OF HOUSES
CALCULATED FROM DEPRECIATION RATES
(THOUSANDS)

	70	71	72	73	74
ALABAMA	1,073.694	1,096.869	1,130.030	1,169.615	1,203.722
ALASKA	83.115	86.903	90.408	94.263	97.909
ARIZONA	566.527	621.311	663.748	735.801	796.690
ARKANSAS	639.441	652.638	672.404	693.897	713.248
CALIFORNIA	6,796.824	6,949.150	7,174.982	7,423.776	7,598.997
COLORADO	713.504	743.525	798.835	866.336	908.697
CONNECTICUT	952.514	971.456	992.512	1,013.896	1,032.725
DELAWARE	169.710	174.667	180.011	187.967	195.302
DIST. OF COLUMBIA	273.969	273.099	271.157	269.329	268.474
FLORIDA	2,394.511	2,508.254	2,686.682	2,986.944	3,266.263
GEORGIA	1,422.438	1,481.145	1,560.208	1,631.455	1,683.831
HAWAII	209.416	215.146	222.330	232.334	244.744
IDAHO	225.101	232.025	239.721	249.826	258.367
ILLINOIS	3,620.626	3,662.226	3,734.011	3,802.980	3,857.455
INDIANA	1,664.459	1,692.831	1,736.185	1,781.508	1,825.188
IOWA	923.561	932.623	944.279	955.317	963.956
KANSAS	757.372	763.342	773.771	787.335	797.473
KENTUCKY	1,023.632	1,042.945	1,076.057	1,111.674	1,136.642
LOUISIANA	1,102.596	1,122.208	1,160.086	1,202.711	1,236.155
MAINE	312.657	319.475	326.600	334.792	341.122
MARYLAND	1,207.229	1,237.200	1,276.154	1,324.739	1,367.567
MASSACHUSETTS	1,803.568	1,835.228	1,881.538	1,922.128	1,956.174
MICHIGAN	2,731.111	2,778.815	2,849.464	2,921.200	2,986.059
MINNESOTA	1,180.496	1,200.503	1,236.730	1,258.311	1,276.558
MISSISSIPPI	661.696	676.484	695.955	723.243	751.325
MISSOURI	1,587.160	1,606.123	1,636.090	1,669.449	1,691.997
MONTANA	226.868	229.719	234.161	239.525	243.623
NEBRASKA	491.131	496.332	507.496	518.670	525.882
NEVADA	166.015	175.136	189.092	207.751	222.875
NEW HAMPSHIRE	232.218	239.309	248.187	258.724	268.360
NEW JERSEY	2,257.153	2,290.287	2,340.309	2,396.655	2,440.800
NEW MEXICO	305.263	312.605	327.672	348.214	364.240
NEW YORK	6,025.351	6,074.698	6,150.716	6,238.899	6,296.685
NORTH CAROLINA	1,553.583	1,614.271	1,696.058	1,774.299	1,847.022
NORTH DAKOTA	188.162	189.869	192.878	196.842	199.825
OHIO	3,378.579	3,430.770	3,511.119	3,590.370	3,641.742
OKLAHOMA	896.060	914.903	948.177	982.694	1,001.157
OREGON	714.568	731.453	764.496	801.925	832.504
PENNSYLVANIA	3,785.708	3,832.021	3,891.164	3,963.924	4,032.642
RHODE ISLAND	300.701	303.552	310.053	317.156	322.421
SOUTH CAROLINA	766.432	797.502	834.200	883.784	927.187
SOUTH DAKOTA	207.904	209.527	211.672	216.045	218.823
TENNESSEE	1,255.585	1,282.940	1,329.437	1,387.364	1,439.124
TEXAS	3,625.214	3,718.224	3,845.634	3,985.805	4,086.503
UTAH	304.593	313.230	326.472	345.817	360.334
VERMONT	136.098	139.477	142.634	146.733	150.375
VIRGINIA	1,432.097	1,470.239	1,533.835	1,609.885	1,678.775
WASHINGTON	1,160.822	1,181.143	1,206.180	1,230.133	1,254.366
WEST VIRGINIA	565.357	572.669	581.224	592.287	602.743
WISCONSIN	1,357.029	1,376.878	1,405.313	1,438.166	1,469.058
WYOMING	108.694	109.778	111.032	113.530	116.046

TABLE A4
STOCK OF SINGLE-UNIT HOUSES
CALCULATED FROM DEPRECIATION RATES
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69
ALABAMA	808.272	816.814	825.883	836.456	847.721	858.026	867.296	873.903	881.110	888.150
ALASKA	37.693	38.085	38.364	38.721	39.138	39.548	39.928	40.295	40.930	41.469
ARIZONA	323.573	340.330	353.997	363.894	371.679	378.327	383.336	387.706	393.871	403.461
ARKANSAS	494.459	498.716	503.350	509.395	515.483	521.584	527.761	532.488	537.749	543.249
CALIFORNIA	3,884.093	3,975.548	4,063.868	4,157.388	4,256.096	4,337.417	4,400.851	4,433.831	4,469.345	4,523.737
COLORADO	428.497	437.003	446.999	458.623	467.873	476.096	482.999	487.922	494.843	503.083
CONNECTICUT	473.176	482.731	491.435	500.713	510.694	521.468	531.681	540.409	548.724	557.028
DELAWARE	112.786	113.971	114.951	116.192	118.403	120.732	123.061	124.241	125.907	127.735
DIST. OF COLUMBIA	104.246	103.971	103.696	103.381	103.093	102.908	102.578	102.234	101.886	101.451
FLORIDA	1,305.475	1,359.617	1,406.752	1,448.204	1,489.098	1,525.559	1,557.886	1,584.298	1,614.977	1,650.953
GEORGIA	923.302	936.208	949.824	965.736	982.632	999.206	1,014.881	1,025.359	1,040.533	1,057.011
HAWAII	116.249	118.870	120.676	122.799	124.715	126.859	129.894	131.338	132.726	134.974
IDAHO	173.141	174.368	175.476	176.577	177.453	178.268	179.195	179.748	180.600	181.332
ILLINOIS	1,952.422	1,975.100	1,996.236	2,016.621	2,035.132	2,053.649	2,074.025	2,090.780	2,112.133	2,136.678
INDIANA	1,212.437	1,222.282	1,233.352	1,243.868	1,254.343	1,263.870	1,274.753	1,281.394	1,290.510	1,299.520
IOWA	746.107	747.428	748.312	749.096	750.223	751.688	753.546	753.960	755.912	757.641
KANSAS	611.196	612.769	613.920	615.941	617.173	618.175	619.040	618.619	619.456	620.397
KENTUCKY	758.861	763.856	768.484	774.522	781.667	789.783	797.801	801.808	807.297	812.111
LOUISIANA	766.771	776.560	785.719	795.359	804.716	814.848	826.056	835.609	845.472	856.040
MAINE	200.791	201.500	202.164	202.868	203.521	204.045	204.758	205.447	206.253	207.291
MARYLAND	705.488	715.603	727.674	741.958	755.145	770.304	786.261	797.153	809.049	820.388
MASSACHUSETTS	819.605	829.295	838.283	848.517	858.776	868.923	879.282	886.248	893.182	900.742
MICHIGAN	1,868.285	1,888.316	1,905.746	1,923.433	1,943.042	1,965.146	1,990.301	2,008.810	2,033.284	2,055.198
MINNESOTA	793.188	801.365	807.662	814.898	822.360	829.502	835.630	839.869	846.465	856.066
MISSISSIPPI	525.238	528.625	532.154	536.724	540.944	545.069	549.337	552.837	557.803	562.381
MISSOURI	1,073.365	1,083.118	1,091.645	1,100.949	1,111.028	1,122.384	1,133.926	1,140.785	1,150.061	1,160.612
MONTANA	166.683	167.489	168.163	168.628	169.075	169.408	169.680	169.553	169.439	169.277
NEBRASKA	371.825	375.032	378.660	382.072	384.593	386.282	388.180	388.523	389.507	390.457
NEVADA	68.431	71.401	75.419	82.802	91.080	93.870	95.911	96.197	96.547	97.991
NEW HAMPSHIRE	124.397	125.642	126.960	128.872	130.883	132.928	135.314	137.515	139.855	142.435
NEW JERSEY	1,148.303	1,167.474	1,185.532	1,202.929	1,219.588	1,235.666	1,254.709	1,267.236	1,280.459	1,293.399
NEW MEXICO	224.503	228.332	231.462	234.817	238.231	241.026	243.421	244.675	245.814	247.112
NEW YORK	2,196.349	2,219.814	2,241.317	2,267.015	2,291.327	2,316.521	2,342.848	2,361.624	2,380.176	2,397.906
NORTH CAROLINA	1,124.214	1,138.341	1,153.116	1,168.666	1,184.331	1,200.238	1,216.756	1,231.542	1,250.478	1,270.720
NORTH DAKOTA	144.749	144.283	143.628	143.088	142.563	141.974	141.329	140.319	139.528	138.700
OHIO	2,280.068	2,305.759	2,325.400	2,345.436	2,362.609	2,378.813	2,394.353	2,404.546	2,417.695	2,431.287
OKLAHOMA	690.876	697.842	705.732	715.440	725.250	733.524	741.284	746.612	753.569	760.043
OREGON	488.702	494.387	500.832	507.589	514.559	521.968	529.268	534.796	541.328	548.030
PENNSYLVANIA	2,786.684	2,786.499	2,783.611	2,781.542	2,777.972	2,774.018	2,772.091	2,765.963	2,764.624	2,762.495
RHODE ISLAND	134.697	136.966	139.078	141.525	143.914	146.462	149.164	151.271	153.276	155.215
SOUTH CAROLINA	563.946	567.473	570.739	575.329	580.853	587.169	594.049	600.249	612.338	624.966
SOUTH DAKOTA	168.982	169.136	169.442	169.404	169.311	169.025	168.615	167.925	167.196	166.560
TENNESSEE	910.921	920.385	929.624	938.715	948.258	957.843	967.801	975.768	987.504	997.935
TEXAS	2,575.810	2,618.320	2,662.804	2,705.789	2,744.011	2,779.641	2,812.544	2,837.012	2,867.694	2,898.249
UTAH	200.467	204.307	208.547	212.978	216.781	219.263	221.637	222.915	224.968	227.033
VERMONT	81.664	81.886	82.179	82.478	82.805	83.141	83.853	84.424	85.445	86.492
VIRGINIA	922.012	936.758	951.158	966.893	983.383	1,000.004	1,017.518	1,027.424	1,039.308	1,054.118
WASHINGTON	763.719	771.137	780.059	793.390	804.475	812.008	821.419	831.987	848.762	868.830
WEST VIRGINIA	485.870	484.234	482.337	480.435	478.636	476.794	475.026	472.937	471.003	468.884
WISCONSIN	872.807	880.379	886.316	892.720	900.548	909.194	917.962	924.472	933.538	943.031
WYOMING	78.883	79.870	80.515	81.454	81.813	82.130	82.105	81.805	81.557	81.387

TABLE A4 (continued)
STOCK OF SINGLE-UNIT HOUSES
CALCULATED FROM DEPRECIATION RATES
(THOUSANDS)

	70	71	72	73	74
ALABAMA	893.546	901.881	912.123	923.495	931.107
ALASKA	42.215	43.168	44.199	45.429	46.478
ARIZONA	419.949	438.429	467.306	500.051	527.147
ARKANSAS	548.384	553.829	561.363	570.026	576.474
CALIFORNIA	4,571.167	4,610.108	4,691.114	4,783.211	4,851.634
COLORADO	511.427	524.061	544.064	569.052	585.641
CONNECTICUT	563.102	566.663	573.108	581.461	589.258
DELAWARE	128.794	130.027	132.368	134.859	137.614
DIST. OF COLUMBIA	101.337	100.564	100.108	99.696	99.274
FLORIDA	1,686.195	1,724.070	1,781.056	1,854.834	1,919.232
GEORGIA	1,071.487	1,091.737	1,120.257	1,151.616	1,176.396
HAWAII	137.252	139.981	143.084	146.218	148.977
IDAHO	181.975	183.469	185.616	190.024	194.375
ILLINOIS	2,153.730	2,167.317	2,193.299	2,220.901	2,243.286
INDIANA	1,306.715	1,312.937	1,325.645	1,341.890	1,355.083
IOWA	757.860	757.642	759.730	760.481	760.684
KANSAS	619.967	619.921	621.202	623.662	625.674
KENTUCKY	815.995	821.298	829.413	837.947	845.064
LOUISIANA	865.049	876.743	894.492	910.779	920.790
MAINE	208.500	209.970	212.137	215.378	218.111
MARYLAND	833.362	843.615	861.252	883.780	902.502
MASSACHUSETTS	906.757	911.518	920.838	931.592	940.898
MICHIGAN	2,071.042	2,090.837	2,122.754	2,152.454	2,177.349
MINNESOTA	863.110	868.955	879.064	895.314	906.592
MISSISSIPPI	566.973	573.911	582.993	594.061	601.891
MISSOURI	1,167.361	1,173.435	1,184.300	1,197.089	1,206.191
MONTANA	169.319	169.027	169.367	170.074	170.486
NEBRASKA	391.170	392.592	395.891	399.561	402.717
NEVADA	100.962	105.840	112.617	119.903	126.763
NEW HAMPSHIRE	144.813	147.051	149.861	153.688	157.584
NEW JERSEY	1,303.794	1,312.082	1,329.355	1,348.622	1,365.237
NEW MEXICO	248.037	251.522	256.952	263.965	268.776
NEW YORK	2,411.181	2,419.680	2,436.370	2,456.505	2,473.581
NORTH CAROLINA	1,289.879	1,310.227	1,335.458	1,365.878	1,394.601
NORTH DAKOTA	137.749	137.073	136.657	136.432	136.148
OHIO	2,439.534	2,446.314	2,464.250	2,487.038	2,501.747
OKLAHOMA	765.494	772.798	784.032	795.851	803.210
OREGON	554.621	561.808	572.115	584.951	596.506
PENNSYLVANIA	2,757.474	2,751.485	2,752.331	2,760.285	2,770.609
RHODE ISLAND	156.114	156.770	158.490	160.885	162.949
SOUTH CAROLINA	636.953	653.003	669.771	691.346	708.192
SOUTH DAKOTA	165.991	165.553	165.366	165.722	166.078
TENNESSEE	1,005.823	1,017.408	1,031.878	1,046.746	1,058.898
TEXAS	2,923.710	2,952.697	2,998.371	3,045.986	3,079.416
UTAH	228.989	233.124	238.603	246.059	252.003
VERMONT	87.451	88.272	89.371	91.393	93.224
VIRGINIA	1,067.269	1,080.458	1,105.383	1,141.344	1,172.619
WASHINGTON	882.194	892.464	905.233	919.200	930.527
WEST VIRGINIA	466.583	464.249	462.132	460.214	458.572
WISCONSIN	950.320	957.572	968.499	981.879	994.229
WYOMING	81.243	81.287	81.540	82.205	83.027

TABLE A5
STOCK OF MULTIPLE-UNIT HOUSES
CALCULATED FROM DEPRECIATION RATES
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69
ALABAMA	100.568	101.458	102.745	104.452	108.619	111.507	114.557	117.180	121.534	127.989
ALASKA	19.103	19.869	20.741	21.814	23.186	24.530	26.028	27.239	28.631	30.011
ARIZONA	40.693	43.970	48.309	57.220	70.617	78.321	81.055	83.247	86.069	90.512
ARKANSAS	41.359	42.469	43.612	45.661	47.981	50.336	53.606	56.183	59.178	62.757
CALIFORNIA	1,252.036	1,312.812	1,391.154	1,504.487	1,665.431	1,795.330	1,861.332	1,877.274	1,901.801	1,955.827
COLORADO	110.401	115.356	124.488	129.072	133.492	137.525	142.164	145.907	151.857	161.721
CONNECTICUT	295.103	297.944	301.563	306.916	312.988	323.424	333.736	342.663	352.246	365.525
DELAWARE	17.635	17.846	18.035	18.691	19.215	20.613	22.989	24.587	27.186	30.420
DIST. OF COLUMBIA	155.590	155.732	155.738	157.287	161.789	167.238	172.837	174.831	174.186	172.983
FLORIDA	288.153	293.032	298.889	309.400	324.676	348.698	375.453	400.453	428.130	484.758
GEORGIA	172.644	176.995	180.877	188.543	202.063	212.237	223.468	232.533	247.984	265.271
HAWAII	41.295	43.237	44.316	47.295	48.409	49.907	54.263	58.974	60.479	65.301
IDAHO	21.846	22.349	22.924	23.641	24.485	25.284	26.106	26.842	27.617	28.826
ILLINOIS	1,197.401	1,205.835	1,220.095	1,236.729	1,252.247	1,268.526	1,287.509	1,306.603	1,333.681	1,369.452
INDIANA	189.830	193.022	197.093	202.972	212.349	223.166	235.706	248.198	261.726	278.214
IOWA	103.244	105.104	106.930	109.522	111.878	115.955	122.614	126.541	132.367	137.978
KANSAS	78.567	79.186	80.648	83.072	85.282	88.708	93.443	97.373	101.001	107.043
KENTUCKY	110.450	112.808	115.414	118.327	122.437	128.529	135.895	140.758	147.647	157.393
LOUISIANA	153.649	154.874	156.528	159.510	163.953	170.261	177.072	182.393	187.515	194.503
MAINE	83.131	83.636	84.122	84.595	85.098	85.571	86.098	86.767	87.664	88.515
MARYLAND	177.720	183.605	194.262	209.600	237.363	257.932	288.400	315.269	328.444	342.698
MASSACHUSETTS	754.416	759.199	767.446	777.964	790.827	809.638	823.474	833.946	847.087	867.341
MICHIGAN	433.391	436.460	439.897	447.038	457.803	473.743	496.788	517.253	540.880	566.907
MINNESOTA	212.020	214.432	218.648	225.318	232.693	240.497	247.423	250.900	260.318	274.939
MISSISSIPPI	51.577	52.616	53.349	54.087	55.603	57.502	58.969	60.728	62.514	64.479
MISSOURI	320.356	320.655	322.301	324.341	329.963	338.811	347.305	352.474	357.535	366.053
MONTANA	29.200	30.276	31.435	32.590	33.973	35.236	36.732	38.008	39.285	40.829
NEBRASKA	67.192	67.757	68.724	70.583	71.775	73.104	75.521	76.766	79.539	84.081
NEVADA	19.475	20.938	23.588	33.318	38.617	40.710	42.408	43.018	43.656	44.866
NEW HAMPSHIRE	58.763	59.792	61.482	62.669	64.052	65.556	67.162	68.933	71.200	73.699
NEW JERSEY	691.819	704.411	724.028	743.599	772.245	815.132	849.409	876.006	899.316	920.129
NEW MEXICO	25.041	25.857	26.691	28.271	31.009	33.321	34.812	35.808	37.175	39.159
NEW YORK	3,142.975	3,184.042	3,245.775	3,312.356	3,361.374	3,383.261	3,416.412	3,445.048	3,476.647	3,512.927
NORTH CAROLINA	100.179	103.533	108.756	113.541	118.789	125.840	134.369	144.116	155.140	169.156
NORTH DAKOTA	28.298	29.159	30.046	31.085	32.332	33.549	34.720	35.840	37.126	39.167
OHIO	622.515	632.534	644.901	664.699	692.612	718.972	746.057	766.290	795.391	829.746
OKLAHOMA	68.222	68.785	69.337	71.491	75.349	78.892	82.421	84.300	88.400	97.114
OREGON	78.855	81.356	83.558	86.494	91.627	96.987	102.115	107.196	113.344	121.132
PENNSYLVANIA	618.985	640.198	664.566	693.840	721.683	755.157	793.009	829.933	870.854	911.331
RHODE ISLAND	130.935	131.309	131.748	132.213	132.926	134.117	135.942	136.987	138.115	140.263
SOUTH CAROLINA	53.520	55.094	56.750	58.501	60.796	63.205	66.198	69.030	73.958	78.855
SOUTH DAKOTA	23.943	24.375	24.879	25.440	26.083	26.664	27.771	28.392	29.238	30.210
TENNESSEE	114.763	119.104	123.967	128.690	136.302	145.527	155.557	165.181	177.379	193.113
TEXAS	325.819	330.650	341.008	371.698	409.674	439.885	458.513	476.045	508.160	565.192
UTAH	45.821	47.064	49.160	51.810	55.222	57.546	59.246	60.552	62.573	64.797
VERMONT	30.199	30.949	31.724	32.532	33.405	34.288	35.395	36.471	37.811	39.077
VIRGINIA	173.151	177.320	184.250	199.603	216.537	236.778	259.467	273.565	287.971	303.619
WASHINGTON	164.100	164.378	165.373	169.493	173.673	177.437	180.911	188.200	206.711	226.573
WEST VIRGINIA	49.507	51.376	53.309	55.284	57.622	60.176	62.658	65.577	68.248	71.383
WISCONSIN	292.070	299.009	304.668	310.191	317.903	329.359	342.285	350.214	359.454	373.277
WYOMING	18.165	18.138	18.132	18.194	18.153	18.265	18.294	18.263	18.406	18.470

TABLE A5 (continued)
STOCK OF MULTIPLE-UNIT HOUSES
CALCULATED FROM DEPRECIATION RATES
(THOUSANDS)

	70	71	72	73	74
ALABAMA	133.253	139.565	151.135	165.271	175.516
ALASKA	31.996	34.005	36.094	38.697	40.892
ARIZONA	98.542	107.587	125.468	145.507	161.020
ARKANSAS	66.375	71.537	77.786	84.403	90.958
CALIFORNIA	2,041.281	2,144.447	2,264.690	2,396.156	2,486.339
COLORADO	172.533	186.373	214.322	249.905	272.555
CONNECTICUT	381.054	396.180	410.977	424.321	435.506
DELAWARE	33.198	36.134	38.709	43.192	46.811
DIST. OF COLUMBIA	172.348	171.823	170.174	168.561	167.887
FLORIDA	556.764	606.512	692.346	881.358	1,059.025
GEORGIA	283.674	309.329	349.162	376.861	392.385
HAWAII	71.972	74.930	78.957	85.763	95.333
IDAHO	29.995	31.989	34.908	37.380	39.580
ILLINOIS	1,401.854	1,424.774	1,464.864	1,499.245	1,524.858
INDIANA	297.108	311.805	334.005	355.353	379.975
IOWA	143.280	149.316	156.658	163.825	170.296
KANSAS	113.212	117.495	124.971	133.544	139.780
KENTUCKY	167.287	177.839	192.346	209.196	216.853
LOUISIANA	203.534	210.226	227.347	246.489	262.521
MAINE	89.633	91.492	94.472	98.022	100.077
MARYLAND	355.606	373.636	393.940	418.692	441.359
MASSACHUSETTS	887.330	913.910	950.961	980.936	1,005.573
MICHIGAN	594.627	614.452	643.248	678.252	713.164
MINNESOTA	290.300	300.733	314.258	327.711	332.145
MISSISSIPPI	67.319	73.171	78.705	86.275	96.075
MISSOURI	374.624	382.078	395.558	408.087	414.722
MONTANA	42.793	44.893	47.607	50.289	52.973
NEBRASKA	87.093	89.955	96.283	102.677	106.173
NEVADA	46.209	49.126	54.415	63.134	68.487
NEW HAMPSHIRE	76.413	79.810	84.657	90.618	95.284
NEW JERSEY	939.752	963.319	995.155	1,032.363	1,059.685
NEW MEXICO	40.583	43.624	49.963	57.824	62.480
NEW YORK	3,542.384	3,576.269	3,631.284	3,695.371	3,731.851
NORTH CAROLINA	182.035	199.350	225.204	255.225	277.235
NORTH DAKOTA	41.547	43.623	45.955	49.565	52.233
OHIO	863.545	898.790	951.117	998.205	1,027.309
OKLAHOMA	105.686	114.574	131.950	148.469	155.551
OREGON	128.796	136.442	150.414	166.335	175.688
PENNSYLVANIA	953.436	994.712	1,043.459	1,095.381	1,142.677
RHODE ISLAND	142.526	144.849	149.620	154.330	157.517
SOUTH CAROLINA	84.570	92.188	103.691	118.267	129.635
SOUTH DAKOTA	31.257	33.009	34.840	37.203	39.340
TENNESSEE	206.897	217.608	238.627	269.341	296.430
TEXAS	618.382	668.751	732.057	799.374	853.270
UTAH	67.466	71.006	77.246	86.196	92.490
VERMONT	40.495	42.255	43.957	46.056	47.812
VIRGINIA	318.266	338.359	371.665	405.828	436.900
WASHINGTON	239.741	247.715	255.900	261.368	266.903
WEST VIRGINIA	74.700	78.617	82.441	86.497	90.692
WISCONSIN	380.397	390.319	405.768	423.004	439.147
WYOMING	18.431	18.734	19.095	19.755	20.355

TABLE A6
STOCK OF MOBILE HOMES
CALCULATED FROM DEPRECIATION RATES
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69	70	71
ALABAMA	9,932	10,359	11,170	12,645	14,478	17,124	21,388	26,349	31,659	37,307	46,895	55,423
ALASKA	3,039	3,377	4,174	4,505	4,856	5,377	6,070	6,559	7,408	8,167	8,903	9,730
ARIZONA	23,243	24,628	25,681	27,144	29,600	32,393	34,745	36,647	38,433	42,200	48,037	55,294
ARKANSAS	4,880	5,028	5,442	6,064	7,489	10,509	13,537	15,485	17,969	21,104	24,982	27,272
CALIFORNIA	101,601	109,076	113,764	119,241	129,272	140,025	148,176	155,393	159,836	172,555	184,376	194,596
COLORADO	12,979	13,710	14,158	14,923	15,954	17,727	19,338	20,872	23,356	25,792	29,544	33,091
CONNECTICUT	6,456	6,332	6,191	6,087	6,185	6,398	6,829	7,209	7,718	8,215	8,458	8,614
DELAWARE	3,569	3,538	3,293	3,388	3,676	4,558	5,189	5,810	6,586	7,242	7,718	8,506
DIST. OF COLUMBIA	0,077	0,094	0,115	0,141	0,173	0,212	0,260	0,318	0,389	0,477	0,584	0,715
FLORIDA	65,087	66,457	67,172	71,228	77,261	85,447	92,288	99,325	110,366	127,833	151,552	177,672
GEORGIA	12,689	12,450	12,687	15,059	18,784	23,643	29,265	34,218	40,723	50,673	67,277	80,078
HAWAII	0,025	0,031	0,038	0,046	0,057	0,069	0,085	0,104	0,128	0,157	0,192	0,235
IDAHO	6,763	6,691	6,795	7,120	7,548	8,356	9,575	10,415	11,158	12,257	14,131	16,568
ILLINOIS	32,470	33,464	33,942	35,170	37,384	40,983	46,398	50,777	54,154	58,778	65,043	70,135
INDIANA	27,994	29,181	29,487	30,787	33,007	36,617	41,599	45,988	48,579	53,253	60,636	68,088
IOWA	11,735	12,650	13,200	13,464	13,895	14,522	15,499	16,671	18,183	19,734	22,421	25,665
KANSAS	11,783	11,759	11,748	11,971	12,451	13,806	15,144	16,391	18,202	20,568	24,193	25,927
KENTUCKY	10,076	11,189	11,800	12,879	14,924	17,560	21,462	24,734	27,889	31,849	37,351	43,809
LOUISIANA	9,445	9,737	9,314	10,136	11,977	15,133	20,516	21,717	23,437	26,836	34,012	35,240
MAINE	6,180	6,478	6,439	6,455	6,646	7,133	8,165	9,095	10,028	11,787	14,523	18,013
MARYLAND	9,521	9,887	10,008	10,473	11,085	12,302	13,237	14,393	15,470	16,651	18,262	19,949
MASSACHUSETTS	6,766	7,182	7,223	7,295	7,550	7,515	7,804	8,001	8,365	8,963	9,482	9,800
MICHIGAN	29,400	29,191	27,929	27,601	28,355	31,551	36,068	41,452	46,398	54,337	65,441	73,526
MINNESOTA	10,702	10,987	11,022	10,964	11,425	12,640	13,960	15,998	18,759	22,438	27,086	30,815
MISSISSIPPI	6,326	6,439	6,473	7,086	8,207	9,907	12,843	15,232	17,078	19,875	26,905	29,401
MISSOURI	16,613	17,933	18,984	19,865	21,549	24,924	27,860	30,692	33,875	39,249	45,875	50,610
MONTANA	7,077	7,467	8,006	8,439	8,866	9,791	10,850	11,766	12,696	13,407	15,055	15,799
NEBRASKA	7,115	7,704	7,681	7,598	7,975	8,438	8,583	8,699	9,784	10,596	12,868	13,786
NEVADA	8,026	8,863	9,712	11,174	12,662	13,854	14,600	15,280	15,672	17,204	18,843	20,170
NEW HAMPSHIRE	2,896	3,213	3,566	3,941	4,483	5,164	6,103	7,042	8,174	9,259	10,992	12,448
NEW JERSEY	9,156	9,593	9,914	10,244	10,927	11,458	11,533	11,878	11,889	12,183	13,607	14,886
NEW MEXICO	12,937	13,064	12,609	12,554	12,791	13,035	13,734	14,175	14,342	15,425	16,442	17,459
NEW YORK	31,306	32,781	33,731	36,393	39,756	43,928	48,703	53,087	57,988	65,306	72,286	78,749
NORTH CAROLINA	19,133	21,241	22,053	25,032	29,810	36,509	42,703	48,837	57,482	68,396	86,669	104,694
NORTH DAKOTA	5,017	4,973	4,905	4,957	5,415	6,112	6,830	7,303	7,895	8,175	8.867	9,173
OHIO	42,892	43,796	43,224	43,586	45,231	48,926	53,550	57,097	60,241	65,861	75,500	85,667
OKLAHOMA	8,086	8,337	8,784	9,411	10,408	11,857	13,587	14,727	16,617	19,637	24,881	27,531
OREGON	14,090	14,473	14,814	15,364	17,049	19,428	22,201	24,667	26,292	29,362	31,151	33,203
PENNSYLVANIA	31,434	33,531	33,600	35,508	37,672	40,826	45,268	51,237	57,076	64,720	74,798	85,824
RHODE ISLAND	1,513	1,429	1,328	1,309	1,317	1,338	1,489	1,510	1,545	1,533	1,961	1,933
SOUTH CAROLINA	11,072	11,820	12,763	14,752	16,928	19,986	23,429	27,032	31,652	36,963	44,910	52,311
SOUTH DAKOTA	6,929	6,962	6,949	7,483	8,143	8,726	8,976	8,987	9,477	9,794	10,657	10,965
TENNESSEE	9,792	10,722	11,571	12,896	14,558	17,415	21,882	26,217	29,264	34,544	42,865	47,924
TEXAS	36,878	34,714	33,379	33,230	33,163	34,642	37,510	39,460	47,187	64,206	83,122	96,777
UTAH	4,858	6,140	6,869	7,420	7,886	7,944	7,871	7,833	7,700	7,677	8,238	9,099
VERMONT	2,335	2,523	2,653	2,878	3,016	3,274	3,767	4,683	5,611	6,562	8,152	8,951
VIRGINIA	17,257	19,058	21,046	23,243	25,668	28,346	31,304	34,571	38,179	42,162	46,562	51,421
WASHINGTON	14,940	15,099	15,454	16,408	17,859	19,458	21,559	24,551	28,672	34,366	38,887	40,964
WEST VIRGINIA	5,245	6,110	6,570	7,359	8,377	9,998	12,190	14,185	16,199	19,305	23,774	29,802
WISCONSIN	11,064	11,687	11,918	12,027	12,572	13,429	15,020	17,209	18,776	21,601	26,411	28,987
WYOMING	6,165	6,514	6,541	6,644	6,894	7,277	7,607	7,785	8,006	8,309	9,020	9,758

TABLE A6 (continued)
STOCK OF MOBILE HOMES
CALCULATED FROM DEPRECIATION RATES
(THOUSANDS)

	72	73	74
ALABAMA	66,772	80,849	97,099
ALASKA	10,115	10,137	10,539
ARIZONA	70,974	90,244	108,524
ARKANSAS	33,255	39,467	45,816
CALIFORNIA	219,178	244,409	261,023
COLORADO	40,449	47,380	50,502
CONNECTICUT	8,427	8,114	7,961
DELAWARE	8,936	9,916	10,876
DIST. OF COLUMBIA	0,876	1,073	1,313
FLORIDA	213,261	250,752	288,007
GEORGIA	90,788	102,978	115,050
HAWAII	0,289	0,354	0,434
IDAHO	19,197	22,421	24,412
ILLINOIS	75,848	82,834	89,310
INDIANA	76,536	84,266	90,130
IOWA	28,891	31,011	32,977
KANSAS	27,598	30,129	32,018
KENTUCKY	53,799	64,531	74,725
LOUISIANA	38,246	45,442	52,845
MAINE	19,992	21,392	22,934
MARYLAND	20,962	22,267	23,706
MASSACHUSETTS	9,739	9,600	9,703
MICHIGAN	83,461	90,494	95,546
MINNESOTA	33,408	35,285	37,822
MISSISSIPPI	34,258	42,907	53,359
MISSOURI	56,233	64,274	71,084
MONTANA	17,187	19,161	20,164
NEBRASKA	15,322	16,432	16,992
NEVADA	22,060	24,714	27,625
NEW HAMPSHIRE	13,668	14,419	15,493
NEW JERSEY	15,499	15,671	15,879
NEW MEXICO	20,857	26,426	32,984
NEW YORK	83,063	87,023	91,253
NORTH CAROLINA	125,396	153,196	175,215
NORTH DAKOTA	10,266	10,845	11,444
OHIO	95,752	105,127	112,687
OKLAHOMA	32,195	38,374	42,397
OREGON	41,967	50,639	60,310
PENNSYLVANIA	95,375	108,258	119,356
RHODE ISLAND	1,943	1,940	1,954
SOUTH CAROLINA	60,738	74,171	89,361
SOUTH DAKOTA	11,466	13,120	13,405
TENNESSEE	58,931	71,277	83,795
TEXAS	115,206	141,444	153,818
UTAH	10,624	13,561	15,841
VERMONT	9,306	9,284	9,340
VIRGINIA	56,787	62,712	69,256
WASHINGTON	45,047	49,565	56,937
WEST VIRGINIA	36,651	45,576	53,479
WISCONSIN	31,046	33,283	35,683
WYOMING	10,396	11,570	12,663

TABLE A7
STOCK OF REFRIGERATORS
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69
ALABAMA	918,772	1,059,431	1,059,980	1,060,494	1,053,150	1,048,146	1,059,688	1,070,071	1,078,135	1,097,320
ALASKA	59,835	59,594	62,367	68,852	70,037	70,215	69,075	69,633	74,193	78,052
ARIZONA	387,509	410,093	427,243	448,659	462,286	470,218	483,493	504,941	518,692	542,838
ARKANSAS	540,698	665,786	697,796	716,101	713,612	670,237	698,326	693,624	698,596	702,089
CALIFORNIA	5,237,730	5,371,222	5,473,620	5,739,180	5,968,298	6,154,697	6,432,371	6,539,106	6,636,021	6,706,778
COLORADO	551,877	583,122	606,079	633,983	638,822	644,284	652,544	660,341	677,302	690,623
CONNECTICUT	774,735	793,648	802,144	827,146	840,257	860,747	876,609	894,976	909,312	931,544
DELAWARE	133,990	138,514	139,623	145,140	147,645	151,715	157,960	161,792	165,647	166,631
FLORIDA	1,658,715	1,718,132	1,790,111	1,851,735	1,917,037	1,983,510	2,042,947	2,120,172	2,198,754	2,284,341
GEORGIA	1,108,635	1,136,308	1,138,216	1,193,159	1,214,159	1,269,259	1,265,812	1,347,264	1,393,809	1,419,369
HAWAII	157,569	161,154	164,959	163,853	174,113	180,361	184,975	189,431	194,785	202,532
IDAHO	201,750	206,312	207,651	191,522	211,161	211,562	213,710	215,218	218,649	220,547
ILLINOIS	3,182,294	3,212,932	3,282,843	3,349,953	3,392,831	3,428,220	3,492,387	3,519,424	3,550,412	3,594,464
INDIANA	1,430,261	1,506,624	1,505,984	1,548,479	1,560,707	1,581,196	1,609,662	1,620,016	1,649,231	1,652,991
IOWA	861,086	932,754	913,891	933,428	931,775	921,710	913,354	912,750	922,338	916,217
KANSAS	695,289	767,247	765,465	772,151	774,806	769,881	762,869	761,783	757,925	753,092
KENTUCKY	879,387	907,153	963,854	1,023,279	988,988	1,009,037	1,034,898	1,051,461	1,069,329	1,079,074
LOUISIANA	929,865	954,057	952,317	987,394	1,018,666	918,306	1,053,369	1,064,717	1,086,596	1,094,735
MAINE	290,102	299,761	299,044	299,087	291,462	299,130	303,708	304,628	305,442	305,648
MARYLAND & D.C.	1,152,642	1,217,381	1,243,382	1,271,206	1,332,754	1,374,397	1,388,171	1,416,286	1,432,460	1,468,243
MASSACHUSETTS	1,580,787	1,621,050	1,631,050	1,679,675	1,682,224	1,698,155	1,712,350	1,737,407	1,776,278	1,787,700
MICHIGAN	2,331,075	2,366,794	2,380,230	2,419,369	2,461,152	2,520,609	2,574,677	2,609,348	2,655,030	2,696,015
MINNESOTA	1,015,910	1,058,555	1,068,719	1,075,952	1,054,805	1,082,103	1,110,787	1,127,577	1,151,265	1,153,637
MISSISSIPPI	583,141	607,195	614,997	613,053	640,316	654,553	653,882	672,754	631,956	634,195
MISSOURI	1,410,334	1,534,436	1,530,191	1,527,668	1,550,941	1,575,827	1,585,040	1,583,127	1,591,926	1,586,889
MONTANA	202,960	186,964	210,252	186,405	185,530	226,588	226,058	222,732	223,171	217,505
NEBRASKA	446,132	475,211	494,079	477,323	476,747	481,761	490,369	483,709	476,123	478,741
NEVADA	95,932	103,914	113,424	138,077	148,695	148,420	148,597	152,394	156,216	160,344
NEW HAMPSHIRE	186,056	188,481	190,454	208,739	208,486	210,064	214,667	218,463	225,336	228,117
NEW JERSEY	1,849,278	1,847,732	1,922,341	1,964,915	2,032,840	2,083,874	2,134,734	2,174,211	2,227,917	2,221,560
NEW MEXICO	262,481	273,469	282,405	302,980	310,642	309,859	302,808	297,211	299,099	300,939
NEW YORK	5,370,629	5,438,833	5,456,449	5,342,815	5,686,406	5,728,702	5,788,454	5,895,563	5,936,955	5,994,699
NORTH CAROLINA	1,243,527	1,416,561	1,427,615	1,438,490	1,473,436	1,487,625	1,513,353	1,528,334	1,562,998	1,542,282
NORTH DAKOTA	178,064	189,196	192,382	189,008	197,816	198,160	197,091	185,662	193,068	193,503
OHIO	2,945,476	3,083,517	3,105,827	3,152,589	3,186,695	3,231,598	3,256,087	3,281,372	3,319,625	3,351,336
OKLAHOMA	767,184	781,912	774,971	788,992	819,128	833,472	837,322	849,782	883,528	849,716
OREGON	581,647	570,079	604,197	625,143	638,516	651,232	659,441	665,026	683,014	698,804
PENNSYLVANIA	3,437,004	3,481,230	3,494,426	3,511,608	3,533,657	3,612,278	3,677,378	3,715,682	3,735,230	3,769,916
RHODE ISLAND	267,155	268,737	263,494	271,113	280,362	283,290	286,823	288,546	292,912	297,907
SOUTH CAROLINA	628,538	657,500	660,628	687,279	628,651	711,449	729,307	732,147	747,791	751,350
SOUTH DAKOTA	199,854	209,394	205,026	211,147	207,859	207,944	207,288	206,781	206,851	206,003
TENNESSEE	1,035,476	1,057,435	1,076,463	1,105,555	1,124,376	1,137,818	1,166,573	1,190,734	1,214,459	1,233,405
TEXAS	2,938,506	3,141,764	3,221,433	3,342,451	3,312,508	3,429,253	3,456,621	3,511,482	3,553,959	3,553,138
UTAH	251,146	259,049	268,548	276,939	279,652	284,239	289,745	290,510	293,714	296,867
VERMONT	114,198	117,433	117,835	118,165	120,019	122,752	124,708	128,281	131,105	133,809
VIRGINIA	1,112,731	1,155,895	1,196,311	1,229,819	1,261,844	1,292,157	1,318,115	1,346,759	1,376,455	1,408,673
WASHINGTON	942,759	986,912	1,010,438	1,033,126	1,033,172	1,046,469	1,061,863	1,083,856	1,112,685	1,139,270
WEST VIRGINIA	540,622	568,214	553,617	548,020	544,841	542,210	537,175	559,006	562,318	561,227
WISCONSIN	1,175,941	1,307,778	1,309,926	1,317,936	1,333,251	1,349,148	1,354,316	1,346,498	1,361,132	1,348,157
WYOMING	103,213	120,221	111,814	112,785	112,947	111,519	110,423	109,224	104,979	103,119

TABLE A7 (continued)
STOCK OF REFRIGERATORS
(THOUSANDS)

	70	71	72	73	74
ALABAMA	1,073,691	1,078,134	1,092,518	1,136,657	1,138,912
ALASKA	83,104	85,576	87,192	94,975	96,214
ARIZONA	566,531	613,874	667,446	723,562	756,425
ARKANSAS	639,432	655,404	713,442	721,852	721,527
CALIFORNIA	6,796,917	6,939,586	7,121,566	7,273,954	7,434,506
COLORADO	713,500	748,481	802,494	850,958	884,403
CONNECTICUT	952,621	968,956	985,387	1,003,574	1,016,655
DELAWARE	169,708	173,908	176,421	181,563	183,060
FLORIDA	2,394,509	2,526,363	2,661,715	2,856,510	2,974,474
GEORGIA	1,422,457	1,450,081	1,467,810	1,513,368	1,531,961
HAWAII	209,418	215,850	224,421	232,433	241,137
IDAHO	226,099	234,998	244,048	253,976	262,691
ILLINOIS	3,620,656	3,629,444	3,683,873	3,739,946	3,771,989
INDIANA	1,664,449	1,682,084	1,692,846	1,717,071	1,642,591
IOWA	923,573	928,038	922,954	923,187	923,763
KANSAS	750,612	754,222	753,844	757,444	752,246
KENTUCKY	1,020,642	1,079,247	1,110,870	1,144,715	1,164,141
LOUISIANA	1,102,589	1,129,386	1,152,310	1,174,562	1,185,270
MAINE	312,652	318,795	325,302	339,342	329,813
MARYLAND & D.C.	1,481,190	1,515,219	1,562,442	1,603,483	1,653,872
MASSACHUSETTS	1,803,559	1,823,011	1,854,343	1,886,877	1,905,448
MICHIGAN	2,731,109	2,781,760	2,836,350	2,892,032	2,931,221
MINNESOTA	1,180,507	1,196,652	1,202,658	1,215,776	1,245,070
MISSISSIPPI	661,694	715,482	745,553	799,489	814,512
MISSOURI	1,587,855	1,602,956	1,612,092	1,623,838	1,627,119
MONTANA	226,856	232,787	237,576	243,806	249,421
NEBRASKA	491,135	502,334	483,210	507,838	556,998
NEVADA	166,013	173,874	183,691	196,263	200,346
NEW HAMPSHIRE	232,240	244,162	250,320	256,344	263,526
NEW JERSEY	2,257,168	2,340,560	2,386,608	2,447,825	2,483,179
NEW MEXICO	305,079	315,893	328,623	345,499	352,433
NEW YORK	6,025,856	6,008,332	6,094,719	6,169,320	6,144,084
NORTH CAROLINA	1,558,602	1,601,211	1,613,444	1,655,589	1,673,096
NORTH DAKOTA	188,161	193,972	198,833	201,749	204,465
OHIO	3,378,595	3,408,504	3,467,182	3,510,751	3,548,199
OKLAHOMA	896,057	922,098	937,884	986,101	1,001,199
OREGON	714,565	747,023	771,658	804,639	823,873
PENNSYLVANIA	3,785,692	3,837,333	3,876,854	3,930,494	3,975,572
RHODE ISLAND	300,701	303,474	307,839	309,523	311,593
SOUTH CAROLINA	766,436	788,815	785,318	803,842	813,941
SOUTH DAKOTA	207,906	211,914	210,053	215,447	205,712
TENNESSEE	1,255,590	1,305,399	1,331,742	1,377,549	1,423,600
TEXAS	3,625,233	3,720,179	3,791,425	3,931,803	3,954,913
UTAH	304,682	313,224	326,024	343,149	355,362
VERMONT	136,097	137,881	139,881	143,140	144,082
VIRGINIA	1,432,081	1,490,410	1,533,464	1,588,341	1,630,841
WASHINGTON	1,160,843	1,162,572	1,183,169	1,212,095	1,223,144
WEST VIRGINIA	565,056	568,638	582,896	590,585	593,185
WISCONSIN	1,357,037	1,345,937	1,419,311	1,435,005	1,444,767
WYOMING	108,692	111,307	112,602	111,508	121,368

TABLE A8
STOCK OF HOME FREEZERS
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69	70
ALABAMA	177,575	212,010	230,446	242,230	239,694	243,051	273,739	302,329	329,776	323,895	428,276
ALASKA	15,261	17,841	22,296	28,346	27,420	25,768	26,684	28,270	27,365	28,465	34,341
ARIZONA	69,752	83,305	101,910	101,133	107,453	107,254	115,008	106,631	114,044	122,770	130,476
ARKANSAS	116,679	143,297	170,870	206,353	229,957	183,490	176,294	219,750	228,786	236,157	245,504
CALIFORNIA	839,862	926,160	994,280	1,005,845	1,102,880	1,130,348	1,208,886	1,270,175	1,310,300	1,505,880	1,423,955
COLORADO	136,261	150,928	193,181	216,727	202,812	188,410	213,991	255,377	257,552	240,543	243,104
CONNECTICUT	101,505	114,247	116,996	131,441	141,684	174,292	187,518	191,190	167,996	188,795	203,609
DELAWARE	27,988	33,869	32,190	37,710	58,664	55,978	57,968	48,634	61,088	49,748	47,049
FLORIDA	210,617	228,423	210,658	226,265	248,814	212,563	260,130	276,743	268,652	295,802	478,924
GEORGIA	222,513	230,905	233,069	364,887	396,470	474,886	668,710	603,412	644,984	699,326	500,168
HAWAII	29,536	29,580	29,982	30,012	36,865	35,423	39,411	42,143	37,000	41,614	43,934
IDAHO	78,112	84,012	87,921	95,383	102,634	90,244	95,438	97,542	104,325	114,258	118,522
ILLINOIS	533,672	739,072	791,295	444,424	398,117	601,223	704,068	791,066	824,677	953,047	891,813
INDIANA	345,187	360,824	368,713	437,545	411,477	415,989	464,160	475,219	508,630	546,686	550,856
IOWA	263,423	289,336	294,252	327,438	374,999	367,251	370,057	374,029	354,468	386,645	393,371
KANSAS	161,420	159,075	177,655	158,866	166,395	206,502	214,037	214,290	236,200	251,161	275,094
KENTUCKY	150,500	205,324	181,201	192,947	200,934	203,386	213,696	232,911	239,223	345,121	314,520
LOUISIANA	224,003	272,874	289,423	338,104	378,144	382,356	406,361	435,321	448,971	416,835	439,920
MAINE	46,748	46,939	48,729	48,770	39,780	71,874	81,761	80,227	81,436	75,161	78,891
MARYLAND & D.C.	78,914	95,817	109,696	146,293	189,822	215,559	243,845	277,022	293,105	427,473	363,234
MASSACHUSETTS	115,638	109,160	123,808	128,404	146,427	160,819	175,605	188,981	197,878	211,457	237,396
MICHIGAN	448,273	482,771	511,663	493,450	532,638	639,292	686,065	709,502	718,245	786,765	797,285
MINNESOTA	322,913	341,266	362,039	379,607	510,173	505,009	504,729	549,414	531,051	521,833	513,919
MISSISSIPPI	145,165	149,435	136,426	135,461	176,341	162,273	200,250	193,138	349,790	302,603	305,077
MISSOURI	284,337	316,652	333,288	417,036	369,726	372,815	393,081	410,761	448,646	465,651	519,065
MONTANA	78,773	89,856	89,788	90,490	90,532	110,472	111,495	112,765	113,629	113,042	114,805
NEBRASKA	136,111	151,439	166,185	168,641	174,345	183,077	193,425	198,439	201,872	209,617	218,204
NEVADA	20,210	26,300	33,023	42,561	49,307	34,688	49,569	47,862	49,231	45,464	44,991
NEW HAMPSHIRE	25,429	28,803	32,137	42,247	45,144	41,167	42,416	43,029	46,974	50,575	51,101
NEW JERSEY	216,376	264,770	289,040	309,064	312,340	406,599	388,738	310,372	436,631	368,052	402,435
NEW MEXICO	61,513	71,074	69,332	65,961	65,753	59,848	73,051	75,428	92,613	96,573	104,025
NEW YORK	514,174	566,045	669,338	686,228	1,404,023	969,680	1,123,049	1,178,250	1,368,406	911,646	978,273
NORTH CAROLINA	272,314	346,612	394,765	416,256	475,237	491,930	511,534	546,062	601,860	541,187	590,372
NORTH DAKOTA	81,974	103,437	115,637	110,372	94,210	125,132	98,456	106,098	100,178	146,266	110,225
OHIO	547,818	652,633	667,459	737,323	778,985	780,383	847,073	879,477	935,332	973,163	977,016
OKLAHOMA	142,123	142,823	163,778	190,053	213,310	234,588	227,057	221,626	276,110	267,836	277,309
OREGON	189,121	218,152	225,350	273,365	334,717	368,352	370,753	414,145	272,333	297,867	331,379
PENNSYLVANIA	527,390	565,866	611,173	656,542	673,154	751,866	737,264	792,501	837,988	865,420	893,620
RHODE ISLAND	14,619	20,863	20,547	10,601	11,162	12,488	12,651	20,461	27,158	31,677	33,053
SOUTH CAROLINA	129,982	143,075	145,206	166,113	166,249	183,026	204,535	215,377	239,007	255,266	271,788
SOUTH DAKOTA	74,041	84,448	91,939	96,361	93,217	106,891	116,213	108,665	101,357	98,892	106,420
TENNESSEE	217,169	228,669	230,296	249,438	270,688	280,154	314,983	367,949	408,746	443,593	468,786
TEXAS	639,315	722,542	767,383	818,718	1,130,174	910,036	967,395	999,341	1,146,704	1,144,694	1,148,563
UTAH	65,252	76,186	76,534	83,387	88,962	94,918	100,906	102,880	116,251	115,787	119,482
VERMONT	24,318	22,770	40,780	36,302	48,173	42,337	60,524	73,520	92,580	73,595	41,791
VIRGINIA	202,407	217,834	218,935	220,725	280,431	281,381	292,830	292,884	328,026	422,075	419,366
WASHINGTON	249,218	293,775	301,302	315,085	317,336	338,118	365,235	401,103	426,948	480,607	483,948
WEST VIRGINIA	86,235	121,758	108,571	112,771	113,451	129,254	139,291	153,943	157,050	152,489	158,278
WISCONSIN	326,285	373,746	415,316	437,213	451,762	404,228	453,448	430,696	556,784	476,084	541,213
WYOMING	36,250	53,952	39,711	70,331	66,276	67,288	82,031	65,371	58,915	57,976	53,835

TABLE A8 (continued)
STOCK OF HOME FREEZERS
(THOUSANDS)

	71	72	73	74
ALABAMA	498,865	414,289	469,435	502,437
ALASKA	40,783	36,320	47,683	56,133
ARIZONA	144,586	145,056	144,803	169,860
ARKANSAS	255,093	186,763	220,459	232,951
CALIFORNIA	1,480,582	1,504,286	1,564,801	1,607,272
COLORADO	296,449	329,351	390,856	428,085
CONNECTICUT	222,257	239,052	378,160	383,089
DELAWARE	50,222	50,948	66,266	74,828
FLORIDA	508,663	549,074	592,416	642,536
GEORGIA	748,889	755,787	831,461	1,666,518
HAWAII	50,890	55,606	52,016	55,983
IDAHO	125,207	130,029	135,318	139,961
ILLINOIS	1,051,479	948,422	1,000,118	1,048,127
INDIANA	541,646	605,680	629,706	665,362
IOWA	405,064	421,480	451,490	453,533
KANSAS	280,045	286,153	301,071	302,590
KENTUCKY	287,030	310,467	385,947	489,566
LOUISIANA	456,319	481,504	522,610	512,481
MAINE	86,767	86,062	97,339	97,923
MARYLAND & D.C.	379,015	403,346	417,357	460,752
MASSACHUSETTS	255,805	317,669	387,351	419,834
MICHIGAN	862,838	893,975	934,276	1,036,212
MINNESOTA	518,655	473,693	485,215	564,713
MISSISSIPPI	330,897	352,818	382,325	389,509
MISSOURI	506,535	526,988	548,522	567,360
MONTANA	128,154	133,212	136,705	157,654
NEBRASKA	228,703	245,384	263,858	305,756
NEVADA	45,550	48,122	51,415	54,295
NEW HAMPSHIRE	70,923	51,407	86,284	57,985
NEW JERSEY	478,895	459,016	491,996	468,778
NEW MEXICO	109,040	109,703	129,954	133,589
NEW YORK	995,006	953,183	1,610,171	1,693,708
NORTH CAROLINA	623,341	667,696	650,515	718,329
NORTH DAKOTA	118,553	137,481	148,216	150,211
OHIO	1,011,037	1,032,820	1,073,078	1,089,112
OKLAHOMA	286,445	291,965	458,997	466,025
OREGON	350,498	480,748	545,073	598,121
PENNSYLVANIA	909,180	914,150	810,575	817,396
RHODE ISLAND	34,671	38,590	53,318	60,308
SOUTH CAROLINA	287,360	295,818	329,233	361,959
SOUTH DAKOTA	112,854	101,898	195,833	184,434
TENNESSEE	509,413	512,413	516,589	590,482
TEXAS	1,204,151	1,333,462	1,380,459	1,288,801
UTAH	168,019	175,465	199,066	189,982
VERMONT	47,984	116,460	124,946	125,797
VIRGINIA	396,035	358,084	370,899	485,878
WASHINGTON	533,458	515,465	550,773	564,226
WEST VIRGINIA	169,863	172,398	174,864	177,195
WISCONSIN	559,567	590,109	593,378	623,586
WYOMING	52,836	82,555	46,927	80,205

TABLE A9
STOCK OF ROOM AIR-CONDITIONERS
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69
ALABAMA	171,524	208,039	218,208	277,467	268,098	296,037	303,623	364,321	405,639	314,445
ALASKA	0,523	0,692	0,728	0,790	0,808	0,814	0,804	0,815	0,864	0,435
ARIZONA	51,088	58,307	65,752	75,561	79,025	88,852	78,151	72,218	88,852	93,917
ARKANSAS	84,057	101,336	132,759	155,316	187,534	121,320	118,076	218,129	175,344	198,137
CALIFORNIA	449,072	522,785	582,893	923,658	1,008,204	977,331	1,423,795	1,556,457	1,655,898	1,061,262
COLORADO	26,565	20,074	75,928	79,135	96,767	71,345	82,359	94,369	141,576	68,282
CONNECTICUT	57,424	70,014	55,601	69,386	89,415	113,424	138,457	164,663	160,671	258,352
DELAWARE	25,948	31,885	33,717	40,793	43,649	45,301	53,943	62,104	64,328	81,312
FLORIDA	336,145	384,591	472,946	483,323	682,437	722,260	836,448	814,607	981,286	1,010,628
GEORGIA	150,482	173,602	173,441	187,861	239,528	397,008	533,729	617,116	708,315	868,222
HAWAII	2,476	1,923	2,154	2,744	2,649	5,701	7,813	9,045	21,421	24,635
IDAHO	12,244	16,778	18,060	15,455	17,809	11,734	13,924	16,393	19,229	24,010
ILLINOIS	472,433	517,820	602,481	632,658	838,692	915,092	1,060,076	1,321,427	1,265,451	1,379,099
INDIANA	128,738	149,909	161,613	236,140	218,084	247,925	266,071	261,464	394,722	433,804
IOWA	104,860	113,502	124,900	148,920	187,460	171,012	227,479	243,550	257,890	292,461
KANSAS	218,149	256,640	286,251	264,564	294,642	307,472	323,305	337,172	344,213	359,796
KENTUCKY	84,558	79,644	80,072	110,258	161,021	172,883	222,658	244,621	260,507	253,763
LOUISIANA	267,480	320,451	433,048	408,239	500,260	507,167	559,541	614,597	676,222	622,483
MAINE	3,567	5,420	6,169	5,575	5,004	15,489	15,666	13,535	11,354	11,467
MARYLAND & D.C.	91,657	89,824	133,304	149,535	151,819	176,306	201,314	232,177	359,730	258,648
MASSACHUSETTS	85,062	98,346	116,160	140,518	122,674	127,591	168,820	194,273	258,765	342,912
MICHIGAN	123,621	145,023	147,084	138,916	172,168	223,900	287,318	318,710	395,909	432,774
MINNESOTA	61,798	84,972	92,424	87,488	75,976	156,468	166,598	237,707	313,975	322,142
MISSISSIPPI	111,411	92,667	100,847	102,872	171,603	192,238	260,106	258,400	259,571	301,011
MISSOURI	264,693	332,416	351,500	403,616	334,970	354,084	412,101	457,601	522,930	558,075
MONTANA	7,173	6,807	7,474	18,379	23,022	32,116	30,095	25,704	21,499	19,579
NEBRASKA	98,388	117,065	134,275	134,073	146,964	118,445	169,324	189,615	193,688	192,435
NEVADA	6,468	6,720	6,991	18,738	18,607	18,075	23,090	22,123	24,053	25,575
NEW HAMPSHIRE	6,645	6,987	7,322	7,723	7,990	10,857	23,137	21,626	19,557	20,449
NEW JERSEY	348,810	355,923	389,112	465,278	606,187	603,727	761,663	856,667	906,604	1,209,939
NEW MEXICO	17,590	23,073	65,502	83,502	93,460	92,742	89,938	78,868	40,260	48,818
NEW YORK	682,242	770,224	877,278	675,050	954,632	898,397	1,013,962	862,392	1,277,460	1,725,413
NORTH CAROLINA	118,253	160,361	184,955	205,452	249,558	247,474	284,728	286,944	349,291	477,621
NORTH DAKOTA	3,830	7,895	7,319	7,125	7,773	20,246	22,127	21,376	27,592	22,006
OHIO	216,442	237,341	266,311	337,224	398,077	419,737	490,526	453,207	608,133	751,242
OKLAHOMA	267,088	280,634	287,385	367,195	341,089	336,831	328,453	441,685	318,769	468,129
OREGON	21,653	41,796	52,855	68,699	85,110	89,063	88,149	80,926	55,864	53,462
PENNSYLVANIA	393,729	456,858	531,040	557,791	487,655	466,558	628,791	757,827	1,022,036	1,166,089
RHODE ISLAND	13,277	24,864	18,254	19,035	20,471	24,785	27,803	27,462	34,104	47,450
SOUTH CAROLINA	83,946	96,352	119,427	132,851	140,473	157,854	180,802	207,068	274,556	287,498
SOUTH DAKOTA	14,546	20,608	32,820	33,887	43,043	45,857	51,977	47,138	48,833	47,459
TENNESSEE	255,993	317,185	344,606	435,137	472,552	561,639	513,572	462,662	554,579	678,576
TEXAS	1,055,161	1,214,642	1,337,548	1,304,701	1,146,834	1,380,330	1,413,411	1,458,847	1,585,229	1,817,558
UTAH	17,438	16,393	27,757	25,797	29,531	47,266	44,841	38,174	39,542	55,393
VERMONT	2,435	3,660	4,115	3,682	3,279	2,908	2,525	7,052	6,746	8,496
VIRGINIA	149,309	166,857	182,568	227,689	230,221	232,266	233,369	264,141	339,583	535,340
WASHINGTON	30,014	27,001	32,647	50,655	33,293	33,079	40,515	51,426	60,298	75,861
WEST VIRGINIA	34,726	93,341	32,549	45,216	149,225	151,050	89,310	102,203	89,968	97,177
WISCONSIN	62,016	74,403	69,018	77,823	94,070	116,036	146,123	164,684	180,880	271,309
WYOMING	4,455	5,541	5,434	6,708	5,395	5,548	5,687	3,424	4,390	4,488

TABLE A9 (continued)
STOCK OF ROOM AIR-CONDITIONERS
(THOUSANDS)

	70	71	72	73	74
ALABAMA	513,537	587,913	511,067	538,984	552,613
ALASKA	0,465	0,479	0,488	0,539	0,547
ARIZONA	96,859	108,942	128,009	117,654	103,333
ARKANSAS	280,297	299,096	249,394	277,567	282,486
CALIFORNIA	1,330,578	1,599,874	1,460,445	1,553,384	1,593,171
COLORADO	92,252	108,825	147,657	264,732	194,894
CONNECTICUT	310,701	331,660	367,751	612,193	620,173
DELAWARE	86,851	90,711	102,440	96,897	102,716
FLORIDA	1,286,557	1,385,489	1,478,740	1,533,968	1,719,438
GEORGIA	550,719	617,556	640,734	878,875	973,646
HAWAII	29,068	32,576	34,579	34,919	38,815
IDAHO	27,711	32,916	49,139	48,915	52,893
ILLINOIS	1,560,952	1,666,991	1,660,404	1,792,170	1,804,730
INDIANA	473,317	532,998	550,162	585,937	548,153
IOWA	297,808	343,112	352,844	329,893	329,767
KANSAS	383,262	395,092	397,582	386,002	336,691
KENTUCKY	343,706	360,114	371,283	403,585	417,285
LOUISIANA	673,201	705,089	732,655	790,057	681,983
MAINE	9,113	8,799	9,865	12,840	14,174
MARYLAND & D.C.	429,423	460,177	489,895	519,963	568,112
MASSACHUSETTS	402,000	444,942	491,663	559,663	601,048
MICHIGAN	514,783	522,898	498,070	533,394	617,568
MINNESOTA	331,790	356,237	423,203	431,485	447,036
MISSISSIPPI	339,019	460,818	505,963	578,737	619,093
MISSOURI	627,020	679,299	714,224	735,068	720,881
MONTANA	17,249	24,780	32,516	33,369	37,930
NEBRASKA	201,571	215,412	228,986	241,056	243,285
NEVADA	26,835	73,074	83,138	88,828	90,676
NEW HAMPSHIRE	25,074	52,200	54,052	69,992	73,161
NEW JERSEY	1,304,857	1,378,250	868,298	928,490	925,322
NEW MEXICO	66,759	59,009	62,372	73,354	74,727
NEW YORK	2,343,365	2,682,707	1,992,297	1,271,292	1,127,058
NORTH CAROLINA	488,863	562,441	608,948	600,045	596,818
NORTH DAKOTA	20,280	4,805	39,002	39,574	50,134
OHIO	791,622	847,805	952,500	972,681	939,476
OKLAHOMA	488,933	534,034	544,143	415,534	421,896
OREGON	61,404	65,943	70,265	128,473	148,824
PENNSYLVANIA	1,307,842	1,383,808	1,265,394	1,394,222	1,429,679
RHODE ISLAND	50,765	51,873	65,891	74,437	82,368
SOUTH CAROLINA	305,358	302,950	304,988	307,841	318,599
SOUTH DAKOTA	52,009	55,384	65,825	52,905	76,420
TENNESSEE	705,036	758,531	842,504	920,351	993,936
TEXAS	2,051,256	2,086,967	2,046,615	2,122,349	2,058,442
UTAH	52,067	50,122	59,130	69,072	75,822
VERMONT	6,677	8,268	7,374	8,607	8,915
VIRGINIA	535,451	597,601	520,269	538,888	553,307
WASHINGTON	79,048	89,726	84,102	108,378	108,364
WEST VIRGINIA	105,712	121,626	123,441	125,207	126,876
WISCONSIN	283,534	307,252	397,584	346,869	376,786
WYOMING	9,208	5,123	10,088	10,409	10,781

TABLE A10
STOCK OF ELECTRIC RANGES
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69
ALABAMA	440,958	513,311	551,355	590,031	545,163	586,819	601,529	599,938	629,828	626,771
ALASKA	30,549	33,601	35,941	42,995	41,254	42,261	42,478	43,748	47,116	45,281
ARIZONA	73,908	77,458	104,028	114,606	125,503	133,871	143,934	177,832	184,840	195,879
ARKANSAS	72,343	79,552	88,922	107,175	101,191	121,149	109,091	144,671	129,246	131,087
CALIFORNIA	937,768	1,130,520	1,133,453	1,252,167	1,476,518	1,494,866	1,684,812	1,821,202	1,873,973	1,962,974
COLORADO	179,640	194,494	223,350	243,665	265,298	294,392	318,268	321,578	342,455	355,115
CONNECTICUT	324,458	348,645	346,702	367,745	393,748	442,020	462,651	482,055	479,495	504,737
DELAWARE	46,144	45,567	45,591	47,036	47,421	48,625	52,939	53,190	58,140	61,191
FLORIDA	876,656	927,627	1,010,617	1,054,463	1,127,741	1,179,111	1,264,614	1,327,107	1,377,729	1,441,385
GEORGIA	514,481	548,181	559,624	556,140	579,806	635,288	684,130	613,510	767,939	862,587
HAWAII	96,338	104,379	106,434	109,234	120,022	123,408	128,223	132,327	141,052	144,689
IDAHO	169,317	173,477	177,012	178,112	182,795	189,213	189,341	188,804	189,907	189,628
ILLINOIS	580,031	634,960	694,941	499,870	508,419	559,685	590,652	705,428	745,357	802,549
INDIANA	480,411	531,104	397,016	541,906	557,465	593,009	549,611	582,702	611,156	632,775
IOWA	246,409	275,201	280,660	274,063	311,352	313,677	333,900	335,249	340,820	357,397
KANSAS	191,494	219,249	227,451	246,932	261,881	267,537	276,073	295,932	293,792	314,558
KENTUCKY	264,838	351,590	280,989	399,277	292,957	311,518	228,881	252,556	275,990	529,588
LOUISIANA	69,469	77,110	88,273	135,763	152,823	141,165	152,379	164,026	172,755	170,957
MAINE	106,881	113,403	113,969	116,281	111,431	147,213	161,490	161,004	162,947	165,232
MARYLAND & D.C.	224,194	247,347	261,150	290,749	298,367	312,853	334,985	363,047	341,400	651,188
MASSACHUSETTS	475,747	518,857	539,992	544,036	578,216	628,557	639,758	695,998	648,598	722,797
MICHIGAN	948,274	1,003,489	1,025,561	1,014,520	1,064,993	1,156,504	1,199,917	1,257,372	1,293,404	1,239,286
MINNESOTA	359,582	380,917	392,313	548,098	472,468	491,373	526,872	530,332	514,325	555,677
MISSISSIPPI	120,236	86,873	86,710	70,537	107,867	157,549	146,805	151,136	201,247	215,365
MISSOURI	308,380	353,951	364,298	349,922	362,862	376,170	377,025	400,242	438,623	435,665
MONTANA	112,727	84,510	118,292	88,351	72,045	132,072	137,195	141,356	145,102	145,558
NEBRASKA	159,351	174,795	192,438	191,279	195,402	203,621	214,377	218,457	221,184	233,313
NEVADA	54,989	54,989	10,515	94,652	100,188	82,589	102,421	101,890	102,249	101,455
NEW HAMPSHIRE	84,678	99,323	95,154	97,329	101,615	101,437	114,154	120,635	128,102	132,558
NEW JERSEY	295,456	1,006,050	1,119,103	348,100	278,797	399,646	369,037	432,297	443,142	470,026
NEW MEXICO	57,896	58,225	47,770	86,710	91,196	91,041	92,020	90,276	94,005	95,858
NEW YORK	843,803	985,099	1,105,351	1,428,562	1,374,368	1,502,339	1,636,054	1,828,906	1,903,071	1,139,855
NORTH CAROLINA	768,462	887,650	914,204	941,387	985,145	1,016,581	1,070,148	1,099,249	1,124,627	1,123,740
NORTH DAKOTA	95,840	115,220	128,202	158,988	148,124	138,782	147,700	143,393	155,658	137,223
OHIO	971,697	963,732	1,029,800	983,496	1,048,228	1,136,384	1,161,871	1,240,229	1,321,627	1,377,067
OKLAHOMA	94,963	104,997	112,236	149,692	199,991	212,240	187,152	166,380	285,639	215,074
OREGON	467,857	481,831	507,212	524,505	542,786	549,693	573,585	568,427	586,870	602,845
PENNSYLVANIA	1,038,149	1,087,901	1,142,151	1,170,670	1,149,600	1,236,335	1,233,810	1,342,912	1,339,231	1,423,886
RHODE ISLAND	81,397	80,240	101,960	102,787	105,083	115,682	118,647	124,851	125,528	130,214
SOUTH CAROLINA	361,216	380,268	491,347	524,434	507,013	526,568	528,721	587,390	704,359	532,917
SOUTH DAKOTA	83,783	90,343	93,861	97,698	107,407	108,798	111,294	113,205	118,203	117,931
TENNESSEE	680,329	752,839	748,138	751,449	741,079	686,406	738,396	993,111	993,345	982,248
TEXAS	424,292	504,813	543,307	671,857	588,646	677,249	726,764	810,896	860,492	923,157
UTAH	154,669	163,649	171,299	178,398	181,706	183,536	191,887	194,156	197,384	201,864
VERMONT	43,934	45,174	29,910	56,061	50,260	51,398	49,316	59,737	73,161	76,162
VIRGINIA	469,719	521,627	544,499	585,995	610,743	639,430	664,869	687,803	723,978	708,828
WASHINGTON	794,594	855,113	871,119	893,763	885,878	913,630	936,735	959,754	993,501	1,037,767
WEST VIRGINIA	156,209	223,376	167,325	179,466	191,086	200,019	181,607	211,086	201,963	212,809
WISCONSIN	475,649	543,262	552,727	568,369	580,676	594,312	630,366	657,263	640,834	626,177
WYOMING	37,688	44,350	41,526	42,057	66,902	68,478	61,683	77,648	65,755	67,536

TABLE A10 (continued)
STOCK OF ELECTRIC RANGES
(THOUSANDS)

	70	71	72	73	74
ALABAMA	614,383	625,900	628,943	659,045	671,544
ALASKA	48,924	54,003	55,033	67,098	68,402
ARIZONA	209,137	241,582	282,589	298,978	327,462
ARKANSAS	139,833	160,651	151,290	176,991	186,474
CALIFORNIA	2,077,662	2,788,882	2,221,981	2,490,798	2,591,228
COLORADO	372,424	413,792	462,521	553,149	565,241
CONNECTICUT	528,272	541,786	553,006	649,738	658,207
DELAWARE	73,585	75,406	81,086	85,098	86,023
FLORIDA	1,576,070	1,665,800	1,831,285	1,959,612	2,188,282
GEORGIA	779,438	892,155	899,253	872,899	1,041,412
HAWAII	152,130	157,217	165,261	170,625	180,903
IDAHO	194,424	202,076	201,205	207,138	211,917
ILLINOIS	790,186	902,336	917,251	933,671	956,191
INDIANA	654,746	673,091	682,302	703,372	745,198
IOWA	363,484	379,017	404,508	472,846	478,012
KANSAS	315,451	328,037	335,947	363,486	344,929
KENTUCKY	450,094	434,298	476,026	504,168	524,977
LOUISIANA	178,008	193,108	213,391	226,982	192,962
MAINE	170,294	176,138	181,771	196,939	192,229
MARYLAND & D.C.	380,595	390,534	425,943	446,938	494,183
MASSACHUSETTS	746,509	771,053	803,675	816,422	823,925
MICHIGAN	1,252,291	1,217,014	1,246,494	1,284,707	1,330,918
MINNESOTA	564,471	581,503	487,177	498,507	636,508
MISSISSIPPI	237,904	258,701	265,108	292,410	302,042
MISSOURI	484,000	488,603	516,587	520,352	508,686
MONTANA	149,013	158,313	161,570	165,806	176,411
NEBRASKA	247,456	257,295	294,105	299,760	269,302
NEVADA	101,342	85,597	91,636	97,908	0,000
NEW HAMPSHIRE	140,143	148,194	165,439	160,769	174,167
NEW JERSEY	486,352	507,279	541,975	539,426	1,641,218
NEW MEXICO	100,220	100,602	90,427	94,937	94,002
NEW YORK	1,265,261	1,282,846	980,664	2,223,028	2,049,880
NORTH CAROLINA	1,156,693	1,188,629	1,209,468	1,253,695	1,258,304
NORTH DAKOTA	129,374	131,547	149,910	156,276	158,380
OHIO	1,457,297	1,468,251	1,436,551	1,459,999	1,486,850
OKLAHOMA	231,082	244,174	248,304	365,831	371,432
OREGON	621,249	651,257	651,033	672,866	681,385
PENNSYLVANIA	1,456,472	1,470,620	1,451,760	1,421,145	1,372,934
RHODE ISLAND	131,691	135,294	139,834	136,414	153,688
SOUTH CAROLINA	532,845	555,712	560,336	592,959	611,060
SOUTH DAKOTA	116,580	120,488	106,011	128,674	146,746
TENNESSEE	964,432	936,192	1,024,190	1,055,821	1,098,503
TEXAS	960,311	1,005,650	1,027,091	1,068,125	1,056,001
UTAH	206,654	207,131	227,131	254,611	265,852
VERMONT	80,531	83,917	77,650	80,681	82,028
VIRGINIA	770,245	818,645	862,429	912,668	987,790
WASHINGTON	1,043,843	1,054,092	1,082,266	1,075,840	1,087,819
WEST VIRGINIA	215,936	213,121	224,721	228,938	357,894
WISCONSIN	663,535	634,323	723,473	741,633	804,419
WYOMING	52,518	59,174	92,067	79,028	63,412

TABLE A11
TOCK OF CONVENTIONAL WASHERS
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69	70
ALABAMA	309,010	350,810	321,748	297,121	234,948	238,741	233,323	173,939	144,460	148,310	123,268
ALASKA	14,685	9,581	9,923	9,547	7,471	7,406	6,173	6,149	5,336	4,361	7,099
ARIZONA	90,745	94,427	93,171	82,208	66,049	71,448	67,907	56,246	51,509	39,226	38,283
ARKANSAS	214,854	223,699	158,408	100,615	149,003	137,041	223,236	146,709	84,021	76,835	89,400
CALIFORNIA	881,613	574,679	542,690	1,044,279	1,415,169	1,448,526	528,390	926,989	936,607	970,861	242,279
COLORADO	164,928	172,475	153,776	131,040	132,617	103,148	135,242	105,776	94,999	62,902	54,950
CONNECTICUT	185,024	178,389	154,751	163,060	124,862	136,549	118,875	100,227	60,942	51,321	55,157
DELAWARE	39,719	25,305	23,696	22,742	21,420	17,600	18,485	16,666	14,816	12,770	10,755
FLORIDA	296,433	291,364	325,269	221,898	330,519	405,375	388,628	110,722	98,424	108,185	102,218
GEORGIA	299,533	316,560	345,102	209,001	203,131	215,228	236,257	166,280	228,690	277,332	96,506
HAWAII	42,769	41,348	44,954	39,343	11,874	14,167	17,840	20,601	11,060	15,649	10,250
IDAHO	72,654	65,948	29,600	39,463	37,848	36,576	32,903	29,629	26,733	25,462	22,921
ILLINOIS	1,262,553	1,397,213	1,054,523	870,722	1,672,087	1,916,732	2,023,259	1,636,734	1,719,742	723,534	543,636
INDIANA	615,080	679,110	634,777	550,996	554,781	536,063	469,478	424,973	337,727	287,581	254,477
IOWA	478,618	602,617	563,793	487,686	459,769	485,679	414,131	365,801	334,997	259,080	213,358
KANSAS	259,787	281,112	272,455	243,345	189,500	165,780	148,626	128,759	123,935	93,631	88,064
KENTUCKY	484,709	538,206	525,665	729,296	479,106	444,539	485,910	409,405	376,313	333,680	257,795
LOUISIANA	262,516	259,093	252,381	279,340	665,979	137,613	145,064	141,274	792,480	114,994	101,741
MAINE	144,937	142,443	121,387	121,692	122,803	89,508	75,798	61,560	38,702	28,764	45,496
MARYLAND	274,631	245,710	300,752	297,511	139,369	126,073	123,198	113,168	113,358	263,545	116,718
MASSACHUSETTS	356,077	333,263	277,049	224,033	201,142	178,058	166,540	169,365	140,017	111,374	90,868
MICHIGAN	978,471	986,813	955,477	836,247	903,771	647,142	616,250	582,745	506,979	472,034	414,470
MINNESOTA	562,283	528,642	462,437	357,041	365,167	301,780	241,045	369,798	341,995	224,211	304,287
MISSISSIPPI	188,870	202,594	190,660	57,171	156,775	86,458	58,046	72,731	174,088	149,595	86,823
MISSOURI	633,975	666,226	609,648	556,037	507,882	419,757	391,111	347,591	308,318	268,343	267,185
MONTANA	78,941	79,991	54,016	86,221	89,167	29,924	27,096	24,957	25,945	22,969	27,505
NEBRASKA	216,783	208,283	211,250	192,580	136,326	172,667	151,264	170,760	126,877	92,111	82,258
NEVADA	13,395	24,995	38,961	34,392	14,879	27,488	20,791	2,446	2,835	3,255	3,734
NEW HAMPSHIRE	69,399	69,530	69,463	69,871	57,459	45,731	45,000	34,768	23,347	17,480	17,541
NEW JERSEY	500,410	429,886	337,316	314,539	221,041	282,061	246,071	192,758	232,096	153,041	124,250
NEW MEXICO	71,141	46,353	28,291	19,828	28,203	35,205	29,541	31,217	24,909	22,264	33,530
NEW YORK	931,514	417,748	439,455	694,177	729,884	763,192	797,944	382,268	391,587	325,236	300,120
NORTH CAROLINA	479,511	560,392	575,626	591,198	588,183	602,746	254,596	204,986	172,912	175,955	180,351
NORTH DAKOTA	115,821	126,416	99,505	122,694	115,986	138,884	132,696	133,258	131,403	124,494	56,238
OHIO	1,278,962	1,180,249	1,154,370	1,216,421	1,176,973	951,419	853,929	809,814	718,108	690,454	582,465
OKLAHOMA	204,006	128,604	107,708	78,567	103,249	235,822	168,163	148,726	129,504	81,455	65,960
OREGON	161,513	138,270	100,438	121,450	11 140	105,268	86,691	82,357	62,258	60,502	49,115
PENNSYLVANIA	1,571,767	1,591,362	1,579,730	1,554,620	1,564,983	1,220,760	1,126,142	1,087,380	869,212	887,091	735,785
RHODE ISLAND	68,402	48,483	41,887	57,034	50,779	44,769	38,340	19,514	20,009	19,288	19,152
SOUTH CAROLINA	176,247	122,005	121,670	100,417	62,661	63,431	64,515	64,255	64,497	64,286	65,047
SOUTH DAKOTA	121,890	176,589	167,086	187,118	144,631	109,959	134,299	46,752	51,982	56,565	61,888
TENNESSEE	448,160	437,999	342,031	333,440	325,439	316,771	295,359	248,880	370,442	194,455	186,644
TEXAS	603,015	604,483	513,906	373,349	387,831	275,262	300,509	268,822	250,169	213,458	231,986
UTAH	79,925	70,365	59,911	54,080	47,792	45,020	37,056	31,628	28,202	26,988	26,094
VERMONT	54,449	56,625	42,658	43,114	36,647	37,891	31,440	32,688	30,387	17,239	17,895
WASHINGTON	233,205	166,067	142,668	176,196	157,724	128,467	118,738	98,608	83,317	73,369	65,361
WEST VIRGINIA	323,887	328,068	308,240	297,634	135,965	251,437	231,221	218,114	197,392	174,285	174,627
WISCONSIN	670,804	722,186	683,258	593,997	535,167	478,227	448,362	427,786	410,422	377,759	354,927
WYOMING	36,690	16,113	42,569	18,186	23,377	21,617	27,662	24,494	27,655	17,047	12,488

TABLE A11 (continued)
STOCK OF CONVENTIONAL WASHERS
(THOUSANDS)

	71	72	73	74
ALABAMA	113,639	79,851	70,504	47,096
ALASKA	6,500	66,709	6,428	6,110
ARIZONA	38,758	41,282	41,784	43,677
ARKANSAS	135,939	68,009	64,224	64,195
CALIFORNIA	178,759	192,515	290,579	249,912
COLORADO	59,912	78,011	51,820	133,128
CONNECTICUT	51,081	51,947	52,015	52,693
DELAWARE	11,021	11,180	9,545	9,742
FLORIDA	76,181	59,833	51,602	53,678
GEORGIA	98,381	99,584	102,674	104,996
HAWAII	13,629	5,472	8,336	4,388
IDAHO	22,121	21,206	22,069	20,924
ILLINOIS	459,213	391,135	397,089	397,707
INDIANA	242,045	182,696	138,982	155,580
IOWA	190,237	186,963	197,091	147,940
KANSAS	81,482	72,460	60,179	68,056
KENTUCKY	77,242	59,440	60,953	61,661
LOUISIANA	103,753	9,624	9,811	9,932
MAINE	23,638	26,092	21,178	18,008
MARYLAND	106,518	97,989	93,705	84,623
MASSACHUSETTS	86,445	62,180	52,832	53,191
MICHIGAN	412,959	388,450	366,493	361,431
MINNESOTA	189,929	143,162	97,448	98,649
MISSISSIPPI	88,940	67,381	48,170	49,075
MISSOURI	170,827	162,758	163,944	209,907
MONTANA	16,935	17,283	17,736	12,096
NEBRASKA	90,843	14,672	15,989	11,661
NEVADA	19,554	20,659	22,072	22,532
NEW HAMPSHIRE	14,607	15,125	12,991	13,270
NEW JERSEY	107,815	110,994	144,611	86,549
NEW MEXICO	31,200	34,604	33,683	34,322
NEW YORK	282,783	339,236	335,447	394,792
NORTH CAROLINA	183,410	185,486	211,479	280,652
NORTH DAKOTA	37,282	88,901	90,205	97,255
OHIO	631,464	604,524	645,581	650,891
OKLAHOMA	67,877	23,013	11,869	12,051
OREGON	47,129	5,836	12,067	12,355
PENNSYLVANIA	531,698	707,779	751,132	681,191
RHODE ISLAND	18,814	16,906	13,143	11,026
SOUTH CAROLINA	66,839	66,543	68,113	68,968
SOUTH DAKOTA	63,272	74,045	65,699	123,484
TENNESSEE	138,481	117,208	121,337	125,393
TEXAS	197,617	158,908	154,303	159,901
UTAH	16,056	18,567	23,416	23,999
VERMONT	14,504	14,714	13,175	11,367
WASHINGTON	65,190	37,852	44,454	42,408
WEST VIRGINIA	155,118	157,434	159,686	161,815
WISCONSIN	352,010	241,237	334,842	318,967
WYOMING	12,830	26,024	22,242	18,541

TABLE A12
STOCK OF AUTOMATIC WASHERS
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69	70
ALABAMA	319,407	329,473	291,307	286,354	257,287	231,857	193,028	151,125	109,269	55,859	662,922
ALASKA	20,352	16,330	18,984	19,814	17,520	12,456	10,030	8,552	4,712	4,653	48,567
ARIZONA	172,024	169,263	165,538	161,671	160,989	139,718	116,940	94,801	67,407	36,071	342,590
ARKANSAS	160,751	204,359	227,677	225,242	168,653	163,354	87,526	95,113	59,971	30,771	365,032
CALIFORNIA	2,602,103	2,383,270	2,262,945	1,873,775	1,959,319	1,693,215	1,524,209	1,018,895	787,741	456,060	4,209,675
COLORADO	246,179	233,938	218,636	208,971	180,175	159,030	131,514	100,153	70,702	35,820	483,459
CONNECTICUT	422,507	416,226	393,096	358,597	329,379	282,183	242,671	182,795	117,689	63,880	679,116
DELAWARE	67,985	61,456	52,211	44,897	39,744	33,338	27,707	22,684	15,555	8,478	124,179
FLORIDA	681,552	655,297	635,286	579,025	590,956	509,432	410,256	316,922	224,596	116,758	1,364,272
GEORGIA	410,461	391,290	349,883	411,248	364,246	335,303	287,197	221,158	164,557	84,551	903,826
HAWAII	81,503	78,630	71,983	68,020	55,723	49,098	39,820	31,777	21,412	11,815	146,216
IDAHO	96,049	92,413	88,931	83,409	72,757	60,953	49,478	38,073	26,591	13,884	155,133
ILLINOIS	969,666	1,076,603	851,589	841,922	373,836	361,671	410,119	328,714	239,771	191,871	1,891,898
INDIANA	487,640	469,250	425,253	430,148	386,186	346,493	264,408	193,965	151,950	72,669	941,820
IOWA	241,304	249,891	226,625	223,130	194,905	159,652	141,177	115,225	49,476	45,287	527,729
KANSAS	287,361	292,375	263,182	221,557	205,335	176,665	144,532	110,412	73,906	39,572	488,988
KENTUCKY	211,731	266,914	305,267	154,585	166,752	150,051	139,633	112,104	80,572	36,244	508,153
LOUISIANA	414,620	408,678	359,636	255,166	393,659	333,591	277,599	216,448	121,599	72,521	749,371
MAINE	95,357	88,444	86,016	80,144	64,359	73,117	59,279	48,857	33,197	18,775	196,932
MARYLAND & D.C.	439,715	547,773	478,342	455,688	658,303	598,660	501,995	405,998	258,931	115,352	841,420
MASSACHUSETTS	772,926	797,980	792,460	707,526	689,185	608,462	511,253	391,540	251,784	124,803	1,219,232
MICHIGAN	941,696	935,117	853,821	938,162	701,303	644,872	542,286	421,851	300,877	144,000	1,737,058
MINNESOTA	283,392	268,863	268,118	329,842	227,533	257,873	194,748	102,201	59,741	56,552	647,295
MISSISSIPPI	171,370	170,255	161,209	135,520	120,205	97,542	102,659	63,382	35,742	18,366	364,624
MISSOURI	421,903	421,832	374,036	342,055	301,270	269,093	225,551	182,425	124,837	65,825	885,752
MONTANA	83,829	100,714	139,024	107,237	104,496	138,071	114,226	85,374	50,227	25,913	148,625
NEBRASKA	148,774	147,396	149,977	133,861	121,495	106,713	92,807	61,965	51,758	27,922	313,449
NEVADA	47,593	41,072	34,580	76,249	93,628	81,223	64,622	50,938	35,772	18,874	101,941
NEW HAMPSHIRE	78,533	75,563	68,534	66,989	57,966	58,970	36,486	37,812	34,769	22,571	158,593
NEW JERSEY	918,287	861,448	812,634	745,011	693,704	597,077	509,044	382,799	269,425	146,877	1,469,376
NEW MEXICO	106,276	188,456	233,345	186,786	166,347	122,103	102,924	78,127	57,992	30,586	186,378
NEW YORK	2,148,047	2,970,591	2,715,629	2,219,156	2,360,804	1,794,604	1,656,281	1,195,876	824,006	294,730	3,149,344
NORTH CAROLINA	410,665	483,521	452,842	420,514	398,078	337,461	319,568	248,798	174,545	84,346	973,726
NORTH DAKOTA	35,251	32,235	86,993	123,196	58,423	37,347	30,075	24,020	18,531	10,956	94,286
OHIO	1,142,296	1,204,631	935,626	1,001,528	843,993	824,235	717,888	563,822	369,354	188,205	2,094,681
OKLAHOMA	275,156	286,156	400,218	274,414	235,444	199,686	160,743	122,433	83,526	58,408	525,647
OREGON	296,383	282,075	279,148	251,007	217,902	184,258	152,158	122,936	89,820	46,455	509,310
PENNSYLVANIA	1,308,390	1,271,005	1,201,617	1,066,009	1,002,762	945,709	784,367	621,151	465,880	242,956	2,322,168
RHODE ISLAND	102,050	100,390	95,518	63,585	60,115	54,167	49,625	42,689	29,473	15,525	182,178
SOUTH CAROLINA	209,083	201,873	205,337	224,597	210,307	193,004	158,723	119,925	91,945	41,324	457,376
SOUTH DAKOTA	43,479	42,200	49,833	46,425	48,572	41,021	34,861	28,414	18,286	9,594	100,500
TENNESSEE	319,221	269,714	243,938	283,863	214,295	185,432	161,790	99,957	73,557	38,561	736,388
TEXAS	1,239,585	1,102,469	1,139,777	973,518	912,181	861,535	662,004	499,241	331,796	181,207	2,125,335
UTAH	123,749	120,140	113,781	106,777	98,338	84,813	72,006	56,742	40,231	20,816	220,490
VERMONT	40,845	42,651	41,968	36,845	32,009	27,439	24,203	19,464	17,032	9,847	88,914
VIRGINIA	384,979	440,446	401,570	361,692	318,538	272,238	242,742	174,012	125,287	65,652	825,448
WASHINGTON	496,309	565,984	516,078	458,008	378,273	338,321	297,344	235,262	166,171	90,997	839,650
WEST VIRGINIA	143,246	168,623	138,456	115,210	151,724	139,169	113,994	67,069	62,857	32,034	296,230
WISCONSIN	332,153	346,292	319,991	315,683	309,532	265,033	225,924	172,862	116,030	68,304	775,087
WYOMING	42,695	47,981	52,870	81,668	71,304	60,554	48,783	34,400	19,888	12,221	75,453

TABLE A12 (continued)
STOCK OF AUTOMATIC WASHERS
(THOUSANDS)

	71	72	73	74
ALABAMA	721,574	725,805	747,652	770,849
ALASKA	41,137	33,172	45,874	46,887
ARIZONA	376,990	387,215	406,211	433,910
ARKANSAS	376,311	407,910	431,767	431,573
CALIFORNIA	4,247,276	4,366,879	4,795,779	4,852,481
COLORADO	516,727	548,209	609,418	567,058
CONNECTICUT	702,892	721,023	686,124	695,067
DELAWARE	128,749	129,092	131,222	132,787
FLORIDA	1,390,940	1,511,897	1,678,977	1,809,130
GEORGIA	909,862	909,794	841,392	958,754
HAWAII	153,113	153,362	173,898	175,715
IDAHO	161,239	169,419	176,311	184,481
ILLINOIS	2,146,447	1,696,525	1,860,986	1,655,115
INDIANA	982,502	1,019,688	926,777	829,981
IOWA	532,422	544,347	509,545	171,129
KANSAS	501,701	516,105	540,737	543,816
KENTUCKY	496,469	451,886	530,786	562,527
LOUISIANA	768,199	743,477	781,516	887,480
MAINE	216,239	224,106	235,619	230,469
MARYLAND & D.C.	896,881	946,767	979,180	1,043,636
MASSACHUSETTS	1,249,900	1,294,546	1,295,642	1,320,101
MICHIGAN	1,808,418	1,897,850	1,966,159	2,017,190
MINNESOTA	656,542	659,837	741,087	818,416
MISSISSIPPI	448,215	528,215	574,519	610,047
MISSOURI	1,037,883	1,075,915	1,099,930	1,102,152
MONTANA	289,770	295,732	303,486	330,903
NEBRASKA	335,201	364,648	383,035	408,276
NEVADA	76,424	81,926	87,533	90,649
NEW HAMPSHIRE	169,800	170,939	163,591	167,104
NEW JERSEY	1,532,409	1,562,029	1,671,985	1,701,098
NEW MEXICO	195,976	210,901	228,426	233,067
NEW YORK	2,543,366	2,936,609	2,933,492	2,863,371
NORTH CAROLINA	1,005,527	1,019,934	1,046,577	1,186,839
NORTH DAKOTA	107,052	81,470	91,849	93,086
OHIO	2,187,886	2,262,872	2,319,525	2,350,650
OKLAHOMA	541,659	551,830	463,167	470,259
OREGON	538,082	560,468	597,897	612,333
PENNSYLVANIA	2,367,934	2,411,964	2,149,776	2,197,409
RHODE ISLAND	184,933	188,115	193,938	199,461
SOUTH CAROLINA	495,168	436,701	510,860	517,277
SOUTH DAKOTA	105,267	122,606	119,937	124,503
TENNESSEE	946,175	1,124,315	1,176,441	1,079,706
TEXAS	2,351,080	2,509,375	2,332,154	3,006,607
UTAH	243,250	262,108	275,557	249,278
VERMONT	92,331	85,320	88,547	89,083
VIRGINIA	850,391	874,956	906,268	930,518
WASHINGTON	866,570	832,871	860,365	864,135
WEST VIRGINIA	300,727	335,737	340,540	376,451
WISCONSIN	777,766	848,023	792,294	860,551
WYOMING	77,456	72,397	59,299	75,419

TABLE A13
STOCK OF ELECTRIC DRYERS
(THOUSANDS)

	60	61	62	63	64	65	66	67	68	69	70
ALABAMA	52,174	69,634	79,004	98,571	123,621	138,965	199,608	200,035	244,173	290,149	310,068
ALASKA	13,303	16,632	21,861	33,089	32,264	28,469	23,959	24,789	21,454	32,793	40,109
ARIZONA	15,729	20,844	23,962	26,975	32,443	34,422	46,243	62,977	76,910	94,465	107,225
ARKANSAS	20,509	21,175	35,079	38,887	52,874	46,184	51,987	68,272	79,285	87,113	152,562
CALIFORNIA	511,083	611,396	687,991	676,441	823,452	933,313	1,059,333	1,230,559	1,341,039	1,494,997	1,719,255
COLORADO	62,681	85,082	96,503	108,460	122,014	136,573	156,855	167,444	200,580	230,964	262,352
CONNECTICUT	106,718	127,692	128,548	149,167	170,027	192,269	223,862	257,559	273,480	315,040	361,396
DELAWARE	22,364	24,333	26,001	30,002	41,859	43,559	45,518	51,316	55,857	61,633	66,447
FLORIDA	109,328	123,363	157,959	171,780	225,741	250,134	287,457	526,379	413,901	496,067	586,434
GEORGIA	61,297	75,004	75,485	94,495	122,243	144,665	225,069	140,766	294,248	356,625	420,761
HAWAII	11,190	12,958	14,253	16,484	20,538	23,259	25,417	32,700	40,366	48,202	56,480
IDAHO	58,724	64,816	69,322	73,831	79,614	87,824	93,979	101,062	107,875	114,176	122,668
ILLINOIS	301,422	385,420	401,446	270,273	328,260	386,913	434,229	537,603	573,663	664,580	728,372
INDIANA	280,534	319,238	200,349	273,280	297,101	331,576	382,381	446,042	506,031	539,429	576,941
IOWA	137,435	336,339	241,937	300,890	304,727	285,055	314,851	310,109	325,096	308,465	322,369
KANSAS	91,016	104,342	121,953	140,390	174,682	193,167	209,798	226,841	236,619	264,799	260,653
KENTUCKY	75,004	95,389	99,720	120,479	138,336	151,020	160,815	173,912	206,216	252,492	274,606
LOUISIANA	53,955	60,858	79,581	107,673	131,064	138,740	155,031	174,057	211,144	220,156	246,725
MAINE	31,936	41,697	40,811	40,844	47,704	72,463	78,028	85,648	98,630	104,600	107,820
MARYLAND & D.C.	101,229	119,667	141,257	187,751	212,307	241,118	274,338	319,417	294,913	480,824	380,119
MASSACHUSETTS	140,249	174,695	199,319	237,011	281,532	317,604	362,368	424,563	405,655	440,132	485,167
MICHIGAN	428,451	572,961	611,100	574,880	619,635	749,167	778,902	855,151	880,970	831,074	850,134
MINNESOTA	158,261	185,652	213,596	223,136	229,855	238,936	263,421	364,178	397,164	390,844	413,391
MISSISSIPPI	21,444	19,914	20,714	24,947	36,369	58,605	85,381	78,085	68,243	95,422	155,682
MISSOURI	125,327	132,417	140,714	158,451	168,440	189,193	211,310	233,139	270,017	306,834	386,944
MONTANA	55,667	55,329	78,122	77,720	88,697	105,823	108,809	112,070	119,459	117,754	117,654
NEBRASKA	77,713	87,001	104,428	112,925	123,493	133,431	155,813	175,525	182,910	203,485	217,491
NEVADA	9,510	10,894	11,277	28,950	41,337	17,038	56,344	54,215	54,361	50,360	50,251
NEW HAMPSHIRE	21,532	31,214	31,240	33,904	33,523	38,478	48,283	60,752	73,601	73,650	86,439
NEW JERSEY	159,610	182,344	212,411	243,357	323,992	292,091	361,636	336,442	422,692	532,445	488,810
NEW MEXICO	22,637	22,593	19,245	31,219	34,675	38,526	44,261	49,040	64,855	70,230	82,683
NEW YORK	451,639	501,385	553,175	597,091	676,606	685,670	747,530	1,121,222	1,154,375	1,180,490	1,197,523
NORTH CAROLINA	50,209	64,619	78,679	81,321	118,431	130,295	188,204	200,173	257,040	299,229	367,454
NORTH DAKOTA	52,072	66,136	73,352	66,102	83,334	74,858	108,236	104,818	113,887	88,494	100,046
OHIO	665,050	739,655	803,932	796,493	855,408	945,715	1,041,225	1,177,308	1,244,383	1,347,655	1,392,779
OKLAHOMA	43,451	52,235	68,802	94,316	128,538	146,034	160,566	184,314	185,979	192,339	245,588
OREGON	215,669	248,526	276,222	286,012	299,808	329,115	327,799	387,752	394,771	411,168	440,056
PENNSYLVANIA	496,606	565,285	625,673	683,313	731,315	823,717	895,706	1,013,657	985,052	1,150,560	1,223,984
RHODE ISLAND	21,322	24,308	32,560	24,267	31,461	38,728	45,947	47,901	62,150	78,732	84,705
SOUTH CAROLINA	24,252	26,278	27,319	29,353	31,793	40,125	55,251	75,813	144,038	149,016	170,469
SOUTH DAKOTA	43,049	52,236	53,614	58,448	78,859	78,908	87,156	85,955	86,897	93,806	94,093
TENNESSEE	110,910	125,697	140,852	131,331	144,235	159,964	204,704	304,012	360,509	385,976	468,934
TEXAS	173,392	252,025	284,098	308,706	353,737	427,319	475,241	536,206	645,632	782,547	893,154
UTAH	45,678	52,397	56,064	69,790	78,958	75,157	93,546	99,645	114,763	112,021	121,861
VERMONT	13,900	16,522	18,771	20,924	25,856	27,570	29,446	36,729	42,303	46,647	53,337
VIRGINIA	95,805	137,238	156,596	182,013	189,524	222,730	264,330	278,174	315,540	391,581	418,382
WASHINGTON	343,282	419,978	433,828	465,001	472,506	500,890	538,305	586,492	620,553	664,889	724,912
WEST VIRGINIA	94,265	152,548	125,160	145,686	161,325	162,407	170,535	207,367	198,010	224,592	228,631
WISCONSIN	233,609	282,335	317,321	333,354	358,556	359,759	409,434	433,990	478,650	488,823	537,065
WYOMING	19,898	35,788	34,619	48,225	34,483	35,469	43,906	29,132	39,121	45,986	49,795

TABLE A13 (continued)
STOCK OF ELECTRIC DRYERS
(THOUSANDS)

	71	72	73	74
ALABAMA	355,394	383,388	415,714	447,779
ALASKA	35,962	19,556	43,027	45,459
ARIZONA	124,430	152,201	181,783	224,251
ARKANSAS	158,724	109,951	123,608	135,907
CALIFORNIA	1,829,801	1,796,784	1,921,262	2,012,781
COLORADO	299,426	333,015	418,943	461,732
CONNECTICUT	384,038	408,037	512,696	519,379
DELAWARE	71,583	76,160	74,024	79,035
FLORIDA	645,325	778,593	977,597	1,089,024
GEORGIA	482,549	499,628	727,435	743,886
HAWAII	61,393	62,639	70,662	67,448
IDAHO	123,955	115,856	120,568	124,706
ILLINOIS	872,722	692,138	724,834	762,740
INDIANA	610,303	654,733	544,053	548,462
IOWA	319,075	338,514	404,971	409,633
KANSAS	281,439	297,750	320,240	303,156
KENTUCKY	261,373	269,212	346,857	365,584
LOUISIANA	270,944	296,911	316,554	271,278
MAINE	107,996	115,539	127,004	108,835
MARYLAND & D.C.	406,589	467,583	500,575	556,149
MASSACHUSETTS	511,095	560,009	559,228	584,148
MICHIGAN	874,445	936,879	982,870	1,019,971
MINNESOTA	429,532	348,825	356,978	485,771
MISSISSIPPI	212,636	268,488	333,977	351,986
MISSOURI	377,155	392,851	409,358	410,185
MONTANA	140,117	145,343	149,154	169,818
NEBRASKA	229,529	278,293	292,378	373,842
NEVADA	33,198	35,928	38,387	40,118
NEW HAMPSHIRE	95,118	114,464	132,537	123,305
NEW JERSEY	511,223	531,279	589,489	641,961
NEW MEXICO	85,157	96,871	104,026	106,114
NEW YORK	1,081,481	1,005,954	953,286	852,418
NORTH CAROLINA	415,549	553,643	583,598	643,267
NORTH DAKOTA	88,470	120,293	122,057	110,776
OHIO	1,455,546	1,481,363	1,458,865	1,496,862
OKLAHOMA	267,863	251,173	216,574	219,890
OREGON	480,757	505,329	537,979	590,989
PENNSYLVANIA	1,303,124	1,308,784	1,238,015	1,247,470
RHODE ISLAND	92,582	101,083	110,804	117,231
SOUTH CAROLINA	185,491	181,630	200,116	205,150
SOUTH DAKOTA	102,734	104,767	123,843	150,016
TENNESSEE	501,896	536,149	551,451	583,249
TEXAS	990,540	1,022,858	1,115,917	973,446
UTAH	134,955	158,767	170,335	142,724
VERMONT	57,806	54,833	57,441	57,806
VIRGINIA	487,413	524,207	636,225	692,831
WASHINGTON	710,634	753,235	773,371	780,813
WEST VIRGINIA	240,434	248,959	301,448	320,807
WISCONSIN	544,514	633,576	651,914	684,592
WYOMING	51,706	52,657	47,940	49,653