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User-Needs Study for the 1993 Residential Energy Consumption Survey

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List of Acronyms

ACEEE	American Council for an Energy-Efficient Economy
ACF	Administration for Children and Families
AHAM	American Home Appliance Manufacturers
BLS	Bureau of Labor Statistics
CAPI	Computer-Assisted Personal Interviewing
CPI	Consumer Price Index
DOC	Department of Commerce
DOE	Department of Energy
DOL	Department of Labor
DSM	Demand-Side Management
EIA	Energy Information Administration
EEUISD	Energy End Use and Integrated Statistics Division
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
EUI	Energy End Use Intensity
HID	High-Intensity Discharge Lamps
LBL	Lawrence Berkeley Laboratory
LIHEAP	Low-Income Home Energy Assistance Program
LPG	Liquefied Petroleum Gas (Propane)
NREL	National Renewable Energy Laboratory
NEMS	National Energy Modeling System
NLIEC	National Low-Income Energy Conference
ORNL	Oak Ridge National Laboratory
OMB	Office of Management and Budget
PNL	Pacific Northwest Laboratory
RECS	Residential Energy Consumption Survey

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Executive Summary

During 1992, the Energy Information Administration (EIA) conducted a user-needs study for the 1993 Residential Energy Consumption Survey (RECS). Every 3 years, the RECS collects information on energy consumption and expenditures for various classes of households and residential buildings. The RECS is the only source of such information within EIA, and one of only a few sources of such information anywhere.

EIA sent letters to more than 750 persons, received responses from 56, and held 15 meetings with users. Written responses were also solicited by notices published in the April 14, 1992 *Federal Register* and in several energy-related publications. To ensure that the 1993 RECS meets current information needs, EIA made a specific effort to get input from policy makers and persons needing data for forecasting efforts. These particular needs relate mainly to development of the National Energy Modeling System and new energy legislation being considered at the time of the user needs survey[1].

Suggestions relating to the **overall survey design and sample size** generally were difficult to accommodate due to budget constraints, but EIA considered them to the extent possible.

- **Provide State-level data.** Although this was the most common change suggested by users, estimates for all 50 States would require a significant expansion of the sample size and additional costs that cannot be funded due to budget constraints.

- **Increase the survey's frequency and sample size.** Although EIA is unable to increase the frequency of the survey, EIA did enlarge the sample of new homes to accommodate information needs of forecasters interested in this segment of the housing stock.

Suggestions about specific questions to be included were somewhat easier to accommodate; however, limits on respondent burden required that some questions be deleted before new ones could be added to the **RECS household questionnaire.**

- **Consumer decision-making behavior.** Users need information on the role of energy efficiency in consumer decisions to purchase appliances and homes. In response, EIA added questions to identify households that had purchased a new furnace, water heater, central air conditioner, or refrigerator and to ask these households about the relative influence of energy efficiency among factors considered in their purchase decision.

- **Building envelope and thermal characteristics.** Users need more detail and technical information on the thermal characteristics of the building envelope. In response, EIA added questions on building envelope features such as exterior wall material (needed for calculating shell efficiency) and windows (needed for calculating heat loss), but removed some of the questions relating to doors and insulation.

- **Lighting.** Users need information on the number of lights; their location, wattage, and bulb type; and lighting control mechanisms. In response, EIA added a lighting supplement, which will be administered to a subsample of RECS respondents.

- **Appliance usage and equipment.** Users need information on usage levels such as the number of loads of laundry or dishes washed in dishwasher. They also need information on the size and

[1]This ultimately resulted in the enactment of the Energy Policy Act of 1992.

efficiency of heating and cooling equipment. In response, EIA added questions on levels of usage for appliances, especially those using hot water, and identified additional appliances not previously included on the questionnaire; however, the additional data on heating and cooling equipment (other than window air conditioners) are considered too difficult to collect.

- Demands-Side Management (DSM). Users need more detail on the type of DSM programs used by households and the types of energy-conserving measures involved. In response, EIA will collect more detail on DSM from households as well as from utility companies that run residential DSM programs.

- Emerging technologies and residential trends. Users need information on the extent to which households are aware of and use new technologies such as low-E windows. They also need information on the use of a home for business and office-type work. In response, EIA added questions on the awareness and use of new technologies, solar energy, and home business equipment.

Although the Energy Policy Act of 1992 was enacted after the formal completion of the user-needs study, EIA is taking the new law's information requirements into account in the 1993 RECS. To the extent possible, EIA is including data collection on low-flow shower heads and other concerns about how households use energy. For example, data collected in the RECS lighting supplement will provide a statistical basis for estimating an energy end-use intensity (EUI) for lighting that can be used to respond to certain requirements of this new legislation.

Response to RECS questions regarding, "how do you use RECS data?" and "what alternative data sources do you have?" yielded valuable information, which highlighted the needs of its users and alternative data sources.

- Uses of the RECS. A broad spectrum of users cited a wide variety of uses and needs for RECS data ranging from policy making and resource allocation to analysis of DSM and environmental programs.

- Alternative Sources. Users specified a number of alternative sources including utility companies, State surveys, researh organizations, and manufacturers.

- Dependence on RECS. Reliance on RECS data varied from user to user--some for primary use and others for secondary use.

Introduction

What Is RECS?

The Residential Energy Consumption Survey (RECS) is a survey of the energy-related characteristics, energy consumption, and energy expenditures of households in the United States living in single-family units, multifamily units, or mobile homes.[2] Data are collected from a sample of between 5,000 to 6,000 households. Surveys were conducted annually from 1980 to 1982 and triennially beginning in 1984. RECS data are made available through publications and through release of public use data files. The public-use data files are screened to protect the identity of survey respondents; they do not contain names and addresses of respondents or any information to identify a geographic area smaller than a three- to eight-State Census division.

The RECS is conducted in two major stages: the Household Survey and the Energy Supplier Survey. The Household Survey collects information concerning the housing unit through personal interviews with a representative national sample of households. The Energy Supplier Survey collects actual energy consumption data from billing records provided by the energy supplier. RECS also includes a survey of rental agents for households whose energy costs are included in the rent. This survey of rental agents verifies the uses of energy in apartment buildings where the household may not know what fuels or equipment are used to heat the building or heat water.

The RECS was designed by the Energy Information Administration (EIA) to provide information concerning energy consumption within the residential sector.[3] Since its creation in 1980, the RECS has become a vital source of information on residential energy consumption.[4] Weather and energy price data for each household are added to the data file to enhance its usefulness for analysis. The data are major sources of input to the National Energy Modeling System (NEMS), EIA's forecasting system that is presently under development for the U.S. Department of Energy (DOE). The RECS has become an essential data source for the United States Congress, Federal and State agencies, utilities, research organizations, and the general public. In order to better meet the needs of its many users in designing the 1993 RECS, a RECS User-Needs Study was conducted.

[2]For a detailed discussion of the RECS design, see *Household Energy Consumption and Expenditures 1990*, DOE/EIA-0321(90), Energy Information Administration (Washington D.C.: Government Printing Office, February 1993), Appendix A, "How the Survey Was Conducted."

[3]The Energy Information Administration conducts surveys of commercial buildings, manufacturing establishments, and residential transportation. Reports of user needs studies for commercial buildings and manufacturing establishments have been published. See *User-Needs Study for the 1992 Commercial Buildings Energy Consumption Survey* (DOE/EIA-0555(92)/4), Energy Information Administration (Washington D.C.: Government Printing Office, September 1992) and *Development of the 1991 Manufacturing Energy Consumption Survey* (DOE/EIA-0555(92)/2), Energy Information Administration (Washington D.C.: Government Printing Office, May 1992).

[4]The EIA conducts numerous energy-related surveys. In general, the surveys can be divided into two broad groups. One group of surveys is directed to the suppliers and marketers of specific energy sources. These surveys--called supply surveys--measure the quantities of specific fuels produced and/or supplied to the market. The results of the supply surveys are combined and published in the *Monthly Energy Review* and other EIA publications. The second group--the consumption surveys--gathers information on the types of energy used by the end users along with the characteristics of those end users that can be associated with energy use. The RECS belongs to the consumption survey group because it collects information directly from the end user—the household. There are important differences between the supply and consumption surveys that need to be taken into account in any analysis that uses both data sources. For a summary of the differences in the residential sector, see Appendix C in *Household Energy Consumption and Expenditures 1990*, DOE/EIA-0321(90), Energy Information Administration (Washington D.C.: Government Printing Office, February 1993) and *Energy Consumption by End-Use Sector, A Comparison of Measures by Consumption and Supply Surveys*, DOE/EIA-0533, Energy Information Administration (Washington D.C., April 6, 1990).

What Is the User-Needs Study?

The user-needs study was an in-depth examination of what uses organizations have been making of RECS data and what future needs they have. In a sense, it was an evaluation of how well the RECS is meeting the needs for information on residential energy use. Some information, such as technical data on equipment and structure, can probably never be met by RECS. Other needs can be met if they are identified. This study was conducted during 1992 to identify those needs which can be incorporated into the planning for the 1993 RECS. Thus, the user-needs study provided vital input to the design of the 1993 RECS. At the time of the user-needs study in 1992, some results from the most recent RECS conducted in 1990 were available, but the more extensive report containing analysis of consumption patterns and energy end-use intensities (EUI's)[5] for space heating, water heating, air conditioning, refrigerators, and other appliances was not available.[6] Even though the 1990 RECS consumption data had not been published at the time of the user-needs study, the user-needs study made it possible for the 1993 RECS to identify the information requirements of many users, ensuring that the RECS will remain a valuable source of information for the energy community.

The user-needs study was conducted before enactment of the Energy Policy Act of 1992 (EPACT), Public Law 102-486. However, some of the data needs of that legislation were captured in this process and in subsequent discussions.

Organization of the Report

This report summarizes and gives examples of the comments provided by users and potential users of the RECS[7] in response to written solicitation (copies of solicitations are provided in Appendices A and B) and in user-needs meetings. There is a general discussion of the availability of data on residential energy consumption and the uses made of such information followed by a section on comments that are specific to such issues as State-level data, appliances, heating and cooling equipment, and consumer decisionmaking. Each section of specific comments concludes with a discussion of the impact of those comments on the design of the 1993 RECS, in particular the questionnaires used in the 1993 RECS. The individuals or groups that commented are identified by a code in brackets following the comment. Individuals are identified by numeric codes (1 to 56) listed in Appendix C, "List of Written Correspondence" and groups are identified by letter codes (A1 to B6) listed in Table D2 of Appendix D, "User-Needs Meetings and Attendees." The company affiliations and organizations are those as of the date of the correspondence or meeting, for example, the recent DOE reorganization is not reflected.

Unless otherwise noted, the survey questions that are referenced refer to the Household Questionnaire (Form EIA-457A), which can be found, along with the other RECS questionnaires, in Appendix E, "1993 RECS Survey Forms." In accordance with normal survey practices, these questionnaires are being revised and

[5]End-use intensity is the annual consumption of energy for a particular use such as space heating, air conditioning, water heating, or refrigerators. The EUI can be equated with an appliance or piece of equipment such as a water heater, a furnace, air conditioner, or refrigerator. For example, the EUI for refrigerators reported by the 1990 RECS was 1,302 kilowatthours, an average over all refrigerators in U.S. households.

[6]The report *Housing Characteristics 1990* (DOE/EIA-0314(90)) was published in May 1992, and the report containing the analysis of consumption patterns was published in February 1993 (see footnote 1).

[7]Most of the meetings with users were taped and transcribed as minutes, which are available upon request. Copies of the correspondence are also available upon request.

reformatted as a result of pretesting. Therefore, there may be some differences between these versions and the ones actually fielded. The forms planned to be used for the 1993 RECS are:

- Form EIA-457A, Household Questionnaire
- Form EIA-457B, Household Mail Questionnaire (nonresponse follow up)
- Form EIA-457C, Rental Agents, Landlords, and Apartment Managers
- Form EIA-457D, Household Bottled Gas (LPG or Propane) Usage
- Form EIA-457E, Household Electricity Usage
- Form EIA-457F, Household Natural Gas Usage
- Form EIA-457G, Household Fuel Oil or Kerosene Usage
- Form EIA-457H, Household Lighting Usage Supplement

RECS User-Needs Study Methodology

The first step in conducting a RECS user-needs study is to identify the users of information on residential energy consumption and expenditures. One source of this type of information is EIA distribution lists for RECS publications. Another is EIA contacts with telephone inquiries about residential energy consumption data. A third source of potential data users can be identified by the nature of their job (target groups). Other users are identified when they respond to our general message requesting input to planning for the 1993 RECS. To establish contact with these persons or groups, EIA employed a three-faceted approach that included soliciting written response, holding target group meetings, and holding working group meetings. This three-faceted approach enabled EIA to tailor the 1993 RECS as closely as possible to the individual needs of its users. Meetings with users were held from April through August 1992.

Written Response

One of the means by which EIA evaluated the energy data needs of its users was by soliciting written response. A notice appeared in the April 14, 1992, *Federal Register* (see Appendix A) urging respondents to explain why they needed data on residential energy consumption and expenditures, and what were the strengths and weaknesses of data sources they were using or knew about.

Written responses were also solicited through mass mailings sent to 60 persons within DOE and 700 persons outside DOE, some of whom had expressed interest in RECS in the past and others of whom it was known that the information was relevant to their work. EIA also invited user response by requesting that 16 energy-related magazines or newsletters carry a notice about the user-needs study and by posting a notice in the July 1992 publication *EIA New Releases*. Copies of the letters and other materials used in the mass mailings are in Appendix B. Also included in that appendix are a list of the 16 magazines and a copy of the notice in *EIA New Releases*.

These attempts to solicit written responses targeted a wide audience, reaching out to as many RECS users or potential RECS users as possible. These efforts were highly successful, resulting in responses from a wide variety of users ranging from State agencies to utility companies to research organizations. EIA received a total of 56 letters in response to these efforts. A list of respondents is provided in Appendix C, "List of Written Correspondence."

Target Group Meetings

During the summer of 1992, EIA held a series of "target group meetings." These meetings were attended by representatives from industry, manufacturers, State agencies, the Department of Energy, and other federal agencies. A list of meetings is found in Table D1 and a list of attendees is found in Table D2 in Appendix D. Those attending the meetings were given the opportunity to express their data needs and suggest changes to the survey. EIA also sought the reaction of users to proposed additions to, and deletions from, the survey, allowing major RECS users to provide input on the content of the 1993 RECS.

Working Group Meetings

A "working group" was established with members representing DOE users who were responsible for directing research funds, administering national programs, proposing government policy on energy-related issues, forecasting energy consumption, and setting standards for appliances and buildings.[8] The working group met three times during 1992. Like the target group meetings, the working group meetings provided attendees with a forum in which they could explain their needs as RECS users. Members of the working group were given the opportunity to clarify their needs, suggest changes to existing questions, propose additions, and react to questions proposed for deletion.

Incorporation of User Needs

The user-needs study was conducted so that RECS could anticipate and meet the data needs of its users. Throughout the course of the study, EIA tried to incorporate use. suggestions into the 1993 RECS, whenever possible. After the study, a list of new questions was drawn up for the 1993 survey. These questions reflected the stated needs of RECS users. While EIA did attempt to accommodate the needs of its users wherever possible, there were a number of difficulties faced in satisfying all RECS user needs.

Difficulties Faced in Meeting User Needs

Time Constraints/Deletions. Time constraints placed on the interview and the need to delete questions in order to add new ones, constituted the greatest obstacles EIA had to overcome to meet the needs of its users. The length of the respondent interview was limited to 1 hour to avoid respondent fatigue. Since the survey was already an hour long, any questions added to the survey needed to be balanced by deleted questions. Nonetheless, if the RECS was to continue to meet the needs of its users, it had to incorporate new questions that reflected the changing needs of its users.

In order to make room for new questions, EIA drew up a list of "expendable" questions. The major reason for considering a question expendable was that it did not contribute significantly to allocating energy consumption to an end use such as space heating, water heating, air conditioning, or refrigerators. Some questions were also dropped because they had been funded on a one-time basis; others had been added for a methodological reason, had served their purpose, and were no longer needed; and changed priorities and emphasis led to dropping others. EIA presented this list to the RECS users, giving them the opportunity to object to the deletions. The list of deletions provoked much debate and controversy, but deletions were essential if new questions were to be added. Fifty questions asked in the 1990 RECS have been dropped from the 1993 RECS.[9] The dropped questions dealt with the following subjects: conservation improvements made in the past 3 years; changes in heating fuel; central air conditioner nameplate data; budget plan; heated garage; comfort of temperatures in home; capability of secondary heating fuel to adequately heat the home; number of doors; furnace fan; farm house; who pays for fuel oil; kerosene; and liquefied petroleum gas for particular uses of fuel; hot running water; location of water heater; and hours wood was burned.

The user-needs study prompted a massive response. In both the letters and the meetings, RECS users suggested literally hundreds of changes to the survey. The sheer bulk of response made it difficult for RECS to satisfy all requests. The RECS was unable to incorporate all of the suggestions of its users. However, the

[8]The working group was comprised of persons from Group A listed in Appendix D.

[9]The following question numbers refer to questions in the 1990 RECS that will not be included in the 1993 RECS: B-3, B-4, B-5, B-8, B-10, B-11, B-12, B-15, B-16, B-18, B-19, B-20, B-24, B-27, B-28; C-1, C-2, C-7; F-5, F-7, F-8 (most-used), F-14; G-6, G-7; H-4h, H-4j, H-4l through H-4w; I-1; M-2, M-4, M-5, M-7, M-12; N-1; P-1, P-2, P-3, P-5, P-6, P-7, P-9, P-10.

1993 RECS represents a compromise between the merits of new questions and the need for keeping existing questions in order to maintain comparability across survey years.

Cost. Perhaps the greatest factor impeding RECS' ability to meet user needs was cost. Many suggested changes were rejected simply because they were too expensive to implement. EIA would like to increase sample size and survey frequency as suggested by many users. However, current financial constraints make these changes impossible. Similarly, other changes and additional questions were rejected due to lack of funding. Some user groups such as the Administration for Children and Families and DOE's Office of Minority Economic Impact and the Office of Conservation and Renewable Energy have funded additional specific questions on the RECS.

RECS Data Uses and Alternatives

In planning for the 1993 RECS, a series of user-needs meetings were held to determine how well the RECS data are meeting the needs for information about residential energy use. These meetings, including both target and working group meetings, presented RECS users with the opportunity to provide their input for the 1993 survey. In conjunction with this, a notice published in the *Federal Register* May 4, 1992, invited RECS users to comment on how they used the RECS data. The *Federal Register* also asked users whether they had alternate information sources. In addition, users were requested to highlight weaknesses of the survey and suggest improvements. RECS users responded; nearly 40 letters were received in response to the *Federal Register*. Many of these letters provided a detailed explanation of how the RECS was used (Table 1).

The target and working group meetings also provided valuable insight into the uses of RECS data. These uses included policy evaluation, modeling and forecasting, and general information, which are discussed in the next section. The specific uses ranged from analyzing environmental policy to gathering television ownership data.

Table 1. Uses of RECS Cited in Correspondence, 1992

Uses Cited	Letters Citing Uses[a]
Energy-Related Uses	
• Design and assess energy conservation programs	6, 8, 20, 25, 35, 42, 50, 55
• Policy analysis	1, 2, 20, 22, 35
• Modeling and forecasting	1, 2, 20, 33, 43, 55
• Estimate energy use and demands	11, 20, 49
• Supplement other surveys	30, 43
• Assess Demand-Side Management programs	2
• Set residential rates/cost determination	6, 8
• Educate public	51
Analysis Using Public Use Data File	
• Low-income energy use	34, 49
• Modeling residential energy use	50
Non-Energy Related Uses	
• Determine television ownership information	36
• Estimate timber use	48
• Estimate gross domestic product	47
• Consumer Price Index (CPI)	46
RECS Would Be Used and/or More Useful If It Produced State-level Data	1, 2, 3, 5, 7, 8, 9, 10, 12, 13, 14, 16, 28, 45, 49, 53

[a]The list of respondents with corresponding numbers is in Appendix C.
Source: Energy Information Administration, Office of Energy Markets and End Use.

Uses of the RECS

Policy Evaluation

Policy evaluation is a major use of RECS data (Table 1). The survey was instrumental in general policy evaluation, low-income policy making, conservation program analysis, environmental policy analysis, and in analysis of demand-side management programs (DSM). RECS data were presented directly to the United States Congress and factored in energy fund allocation. Clearly, the RECS proved to be an integral tool in the making of policy decisions.

The Minnesota Department of Public Service used RECS data in "evaluating policies, from the costs and impacts of residential conservation (and load management) programs, to the effects of an energy policy on the average energy user."[1][10] Minnesota was not alone in using RECS to evaluate policy. The New York State Energy Office wrote that, "the data are generally used in support of State energy policy analysis."[2]

Perhaps the most dramatic statement on the use of RECS as a policy evaluation tool made in a user-needs meeting was that the RECS, "directly influenced the allocation of large sums of money and was a direct influence on policy decisions."[Group C4] The Economic Opportunity Research Institute agreed with this assessment saying that the RECS was instrumental in allocating one billion dollars a year spent on low-income energy assistance, and the hundreds of millions of dollars spent on weatherization.[Group C4]

In June 16 user-needs meeting it was reported that information derived from RECS questions on lack of heat from inability to pay was presented to the Congress in connection with the Low-Income Home Energy Assistance Program (LIHEAP).[Group C4] The same information was presented to the low-income community through the National Low-Income Energy Conference (NLIEC).

A director at the Administration for Children and Families (ACF) wrote that her office used the information to fulfill a mandate to "provide for the collection of data that includes the following: (1) information concerning home energy consumption; (2) the amount, cost and type of fuels used for households eligible for assistance under LIHEAP; and (3) the type of fuel used by various income groups." In addition, the ACF used RECS data to, "update the LIHEAP allocation formula database ... the database recently was used in calculating FY 1991 LIHEAP allotments of the $195 million Energy Emergency Contingency Fund. ... [and] to respond to questions from Congress, the Office of Management and Budget, and interested parties about low-income energy-related issues."[49]

From the meetings and the letters, it was made clear that the RECS was invaluable in evaluating low-income energy policy, specifically LIHEAP. The RECS was also valuable in evaluating "conservation programs." The American Gas Association Laboratories commended RECS as a valuable tool "for assessing the impact of energy conservation measures on aggregate household energy consumption."[35] Similarly, RECS was used for conservation analysis within the DOE. One project mentioned was using RECS to estimate energy savings from conservation programs.[20]

The RECS was also said to be useful in evaluating other programs. It was used by the New York State Energy Office to evaluate environmental policy. They also found RECS to be valuable in evaluating DSM programs.[2] The Wisconsin Center for Demand-Side Research wrote that it maintains a database of information on DSM technologies. The database is used for load forecasting and DSM program planning. RECS data provides baseline information on residential sector consumption, which is used in evaluating DSM programs.[45]

Modeling and Forecasting

U.S. Department of Energy. RECS's primary customer in EIA is the National Energy Modeling System (NEMS). The NEMS is a policy analysis tool which projects energy supply, demand, and prices given assumptions about the state of the economy, international markets, and energy policies. It represents an effort to forecast and evaluate developments in world and domestic energy markets. With these efforts, NEMS projections will assume a major role in energy policy analysis for the U.S. Department of Energy. Data from the RECS constitutes a critical component of this modeling system. In an April 10 user-needs meeting, NEMS representatives explained that RECS data are used in calculating appliance growth and penetration trends. The EUI's calculated from RECS data are inputs to NEMS.

[10]The number or letter in brackets throughout the text identifies the source, either the writer who is listed in Appendix C, "List of Written Correspondence," or the Group who is listed in Appendix D, "User-Needs Meetings and Attendees."

Other Organizations. The use of RECS data in energy forecasting was not limited to the NEMS (Table 1). Washington Gas explained how that organization made use of RECS data: "residential energy consumption and expenditure data is [sic] currently used ... to design and develop an end-use residential model." This model was then used "for describing the consumption of residential customers and estimating how relative consumption will change as a result of changes in economic conditions, energy prices or the implementation of conservation programs."[32] This use, employed by Washington Gas, is representative of the use of RECS for forecasting.

Similarly, RECS data are used to ensure the accuracy of the Consumer Price Index (CPI).[46] "The CPI uses data from the RECS to help isolate pure price changes for the CPI components, 'Residential Rent' and 'Owners' Equivalent Rent.' These two items accounted for approximately 25 percent of the weight of the CPI." During a user-needs meeting, a representative explained that the Bureau of Labor Statistics (BLS) develops models from each RECS that are used to estimate the consumption of energy under different rental agreements affecting who pays for the utilities.[Group B3]

In a related use, RECS was also used to predict energy use and demand. The statement made by the Exxon company is representative of this use: "we use the data from the RECS in the development of our proprietary projection of energy use in the U.S. residential sector."[33] Others similarly used RECS to estimate load and energy demand. NEMS staff indicated (in the April 15 user-needs meeting) that they used space heating, water heating, air conditioning, and appliance EUI's in their modeling.[Group A1] The prevalent use of RECS as a tool in modeling, forecasting, and estimating, indicates the importance of RECS as a tool for predicting trends. Users found the RECS invaluable to establishing future projections.

Other Uses

Most of the other cited uses of the RECS data were specific to the user. For example, Nielsen Media Research used RECS as an independent source of information about television ownership, the Department of Agriculture used it in preparing their estimates of timber use for woodfuel, and a Washington State agency would use it as "an educational tool" for alternative fuels.[36, 48, 4] These examples are indicative of the variety of uses for RECS data.

Alternate Sources of Residential Energy Data

The *Federal Register* notice requested information about data sources other than RECS that were being used or were known to be available. The most often identified alternative source was individual utility-company-supplied data. Other sources were cited less often. In general, RECS users took advantage of a wide variety of sources of energy information.

Utility Company Data

The most common alternative source of energy consumption information is utility companies which provide data for customers in their service territory.[11] The Minnesota Department of Public Service is typical of this. A representative of the Department explained that "data are generally supplied by the utility. . . and supplemented by outside sources such as Electric Power Research Institute, EIA, Oak Ridge National Laboratory, Lawrence Berkeley Laboratory (LBL), and Census data."[5] Similarly the American Gas

[11]Utility consumption data are technically not an alternative to RECS, since the RECS consumption data are all supplied by utility companies from their billing records for only the households in the RECS sample. RECS does not provide consumption data for small geographic regions, which can better be supplied by the utility. However, the consumption data may not be accompanied with the extent of detailed information about the housing unit and household contained in the RECS.

Association Laboratories derived EUI data on gas ranges from meter studies by Northern Illinois Gas Company.[35]

Utility companies are really the only source of consumption data, so the question of alternative sources really means what other data are available about the services energy provides in the home and the characteristics and behaviors of the equipment and households using energy. The California Energy Commission (CEC) provided a detailed explanation of their data-gathering methods. A CEC representative said "we rely heavily on utility-sponsored information collected according to California data collection regulations." California legislation requires utility companies to provide the State government with energy information. Regulations require "large-" and "medium-size" utilities to: (a) annually submit a Data Collection and Analyses Plan, (b) collect end-use data for energy forecasting purposes by means of both surveys and metering, and (c) prepare analyses and reports that would be useful to commission forecasting. The utilities conduct residential surveys with varying frequency. This information, which the utility companies are mandated to provide, forms the bulk of California's energy data.[7]

While most respondents cited utility companies as their primary source of information on energy information, many found problems with this source. The CEC representative reported that utility energy data suffer primarily from bias brought on by self-reported data and low-response rates. Any data collection effort, including RECS, which gathers data from households will suffer from self-reporting problems created by the household's fatigue with the questionnaire, ignorance of the technical aspects of energy-using equipment, and ignorance of how others in the household use energy. Low response, on the other hand, is primarily a problem of how much effort to put into making sure every household selected for the sample is contacted. The Minnesota Department of Public Service wrote, "we would like to have a source of data which is independent of the utilities so that we can evaluate the reasonableness of their numbers."[1]

Another member of the Minnesota Department of Public Service, echoing his colleague, wrote "it may be inappropriate to use utility provided data in regulating the environment."[8] Maine also found utility data "inappropriate" for the same reason. The State of Maine was unable to use utility data because "we have found that any introduction of utility data seems to raise an immediate flag of warning to some of our conservationists."[16]

Other Data Sources

While utility companies were the primary source of energy data, they were not the only source. Respondents also reported gathering data from other federal agencies, State agencies, independent researchers, and manufacturers. The New York State Energy Office used EIA, utility, and trade-related sources for energy information.[2] The Wisconsin Center for Demand-Side Research used, in addition to utility-provided data, manufacturers and research organizations to obtain information.[45] The Georgia Office of Energy Resources relied on EIA's *State Energy Data Report*.[3] Finally, the Texas Railroad Commission used information from the National Propane Gas Association and the Texas LP Gas Association.[51]

General Weaknesses of All Data Sources

Despite the extensive array of sources, the energy information available did not always meet the needs of users. Many users complained that the available information was outdated or not specific to their needs. A large number of respondents complained that they needed regional or State-level data. These respondents asked that RECS add State-level data to meet the deficiency in currently available data. Some went so far as to say that RECS was useless to them unless data were provided at a State level.

Some organizations simply could not find sources for the data they needed. While some organizations were able to meet their informational needs using utility energy surveys, State surveys, or federal information, a

minority of organizations were unable to meet their informational needs at all. For example, Lawrence Berkeley Laboratory was unable to obtain "adequate" information on residential lighting use. "Most utility surveys have only recently begun to ask lighting questions. Utilities have concentrated on outdoor lighting as it is a growing part of their market."[17]

Dependence on the RECS

This study of additional sources of energy information helps in evaluating the importance of RECS. This issue was also addressed directly by a number of users. The degree of reliance on RECS data varied from user to user. For some users, RECS supplanted the need to do their own data collection. For other users, RECS provided information the organization would not be able to provide by itself. For those groups that provided their own data, RECS was a secondary or confirmatory source of data.

In a user-needs meeting, the Ohio Department of Development praised the RECS for providing "a depth of information, which the State, because of monetary considerations, was unable to provide."[Group B4] At an earlier user-needs meeting, BLS explained that they purposefully did not collect energy consumption data, because it was provided by EIA.[Group B3] Washington Gas, on the other hand, currently uses DOE's data as a secondary data source.[32] This contrasts with a statement on RECS use by a representative of DOE: "the RECS data is widely used in the Office of Building Technologies (DOE) and is, in most cases, the linchpin of our analytical and market characterization efforts in the residential sector."[20]

The Administration for Children and Families underlined the importance of RECS, claiming that "RECS provides the most recent, reliable data on residential energy usage, consumption, and cost. There is no other national data source that currently improves upon RECS' accuracy concerning residential energy consumption and expenditure."[49] While this claim cannot be held true for all RECS users, it does provide an indication of RECS's importance as a source of energy information.

Comments on RECS Questionnaires

While many RECS users were not exclusively dependent on RECS data, most of them cited it as a primary source of information on residential energy consumption. In addition, a number of users claimed that the RECS was their only source of residential energy information. But RECS data did not serve all their needs for information. Therefore, many RECS users felt compelled to suggest changes and additions to the RECS (Tables 2 and 3). These alterations, when considered and incorporated into the survey (where practical), will enable RECS to better meet the needs of its users.

Many of the suggestions received by the EIA were tailored to the individual needs of the respondent. The Nielsen company, for example, wanted more information on television (TV)-related subjects such as presence of video cassette recorder's, satellite dishes, and whether the TV ran on batteries. While this information may be of benefit to the Nielsen company, it has little bearing on how much electricity is used for TV viewing. Although many respondents (like Nielsen) suggested changes only needed by a specific single user, a number of broader base, practical and helpful suggestions emerged.

The data needs have been grouped into nine areas, which will be discussed in this section of the report: State-level data, consumer decision-making behavior, building envelope and thermal characteristics, lighting, appliance usage and equipment, Demand-Side Management, emerging technologies, Energy Policy Act of 1992, and survey improvements.

State-Level Data

One of the most prevalent suggested change to the RECS was the addition of State-level data (Tables 2 and 3). There were multiple requests for the breakdown of RECS national data into State and regional data. Most of the State organizations responding to the notice in the *Federal Register* requested State-level data. Many wrote and explained that in current form, RECS was of no use to them. However, they added, that if the RECS were to incorporate State-level data, they would be able to make good use of the information provided. The California Energy Commission is an example of this: "while the RECS data appear to be at the detailed level we need, they support neither statewide nor planning area results. To be marginally useful to us, we would need information at the statewide level."[7] The Minnesota Department of Public Service explained that "the extent to which the department can use this information is dependent on how specific the data are to Minnesota. ...in order for these national figures to be useful, some meaningful correlation would have to be inferred to Minnesota-specific factors."[8] These two examples are representative of a number of State organizations who felt that in order for RECS data to be useful, it must provide State-level data.

Bonneville Power Administration (BPA) (DOE) summed up these requests saying, "although our recommendation for sample design at the State level is based on our own experience, we suspect that there would be interest by other agencies and State energy commissions for the State-level sample."[28] This was true as a number of State agencies expressed interest in State-level data. However, interest in State-level data was not limited to State agencies. Requests for State-level data were made by such diverse groups as utility companies, energy producers, and research organizations.

Users at the user-needs meetings echoed this sentiment. Throughout the summer of 1992, RECS users at the user-needs meetings expressed a desire to see the RECS expanded to include State-level data. Data below the Census division level were reported to be useful to DOE.[Group A2] Another emphatic supporter said that he would love to see State-level data and an expansion of RECS sample size.[Group B4]

Many of those respondents requesting State data indicated that such data would be an improvement. They were able to use the data in its current form, but they could make better use of it if State data were

Table 2. Needs Cited in RECS User-Needs Meetings, 1992

Needs Cited	Respondent Group Citing Needs[a]
Account Classification	
• Rate class for large apartment buildings	B2
Appliances	
• Determine age of appliances	A1
• Determine size/output of appliances	A1
• Degree of use (hours/day or number of times used)	A1, A2, A6, B1
• Television usage data	A1
• Microwave versus conventional ovens	A1, B1
• Frequency of cooking at home	B1
Attitudes	
• What do you expect of future energy costs?	A2, B5
• What do you think your energy bill is?	A2
• Motivations for adopting energy efficiency measures	A2, B6
• What new technologies have you heard of; considered; and/or purchased?	A1, A2
Conservation	
• Areas for conservation potential	B5
Consumer Decision-Making Behavior	
• Factors in purchase decision	A1, A2, A5, A6, B6
• Reasons for equipment replacement	A1, A2, A5, A6
• Characteristics of replacement equipment	A1, A5
• Energy-efficient mortgages	A2, A6
• Where equipment is purchased	B3
• How much more will consumers pay for energy efficiency?	A3
Demand-Side Management	
• Pair DSM participating with nonparticipating homes in the same area	A1
• Reasons for participation/nonparticipation	A1, A2, A6
• How much saved?	A2, A6
• Effect on purchase decisions	A3, A6, B1
Heating/Cooling	
• Add fuel oil guaranteed price	A1
• Are heaters near electric outlet? How large is the space they are contained in?	A6
• Temperature setting	A2, A6
• Passive solar	A1, A2, A6
• Solar applications	A5
• Ducts in unconditioned space	A2
Housing Shell	
• Retrofits	A2, B5
• Modular construction (factory-built rooms)	A2, A6
• Type of foundation	A6
• Window type and orientation	A1, A2, A6
• Presence of low-E glass	A1, A2, A6
Home Offices	
• How often do you work at home? Do you still work in your office?	A6
• What rooms do you use?	A6
• What equipment do you use? How often do you use it?	A6

See footnotes at end of table.

Table 2. Needs Cited in RECS User-Needs Meetings, 1992 (Continued)

Needs Cited	Respondent Group Citing Needs[a]
Insulation/Thermal Integrity	
• How was weatherization money spent?	B4
• Air infiltration rates/assessment of "quality of house"	B4
• Differences between insulation and weatherization in low- and middle-income homes	B4
• Weatherization as relates to energy costs	B4
• Weatherization behavior	B4
• Provide quantitative insulation data (R values)	A1
• Attic ventilation	A1
Lighting	
• Expand lighting section	A1, A2, A5, A6
Low Income	
• Local and State supplements to LIHEAP	A4
• Arrearages	A4, B4
• Lack of heat from inability to pay	B4
• Percent of budget spent on energy bill	B4
• Effectiveness of LIHEAP	B4
• Who receives subsidies?	B4
New Homes	
• Efficiency information and construction standards	A5, B5
• Factors in purchase of new home	A5
• Modular construction practices	A2
Survey Improvements	
• Increase frequency of survey	B4
• Increase sample size	A2, A4, B4
• Fieldwork in 1992 rather than 1993	B2
• Add State-level data	A2, A4, B4
Transportation	
• Breakdown of car use into personal and business use	A3, B2

[a]The list of respondent groups with corresponding letter and number is found in Appendix D.
Source: Energy Information Administration, Office of Energy Markets and End Use.

Table 3. Needs Cited in Correspondence, 1992

Needs Cited	Letters Citing Needs[a]
Appliances	
Appliance Age	
• Determine age of appliances	20
• Make age categories match average replacement ages	20
Energy Use Data	
• Degree of use (hours/day)	43, 50
• Average energy use/room or square foot	4, 13
• Size and efficiency of the appliance	1, 20, 31, 43
• End-use saturation rates	1
• Energy use intensities for individual appliances	2, 7, 8, 9, 20, 35, 39
• Time of use over 24-hour period	43, 45
Requested Expanded Coverage	
• Increase television data	1, 2
• Usage of microwave versus conventional ovens	36
• Swimming pools (cover, timer)	37, 43
Attitudes	
• What is minimal savings required for $100 investment?	41
• Motivations for adopting energy efficiency measures	27
• What new technologies have you heard of; considered; and/or purchased?	27
Climate	39
• Add weather trend data	37
• Weather normalized consumption data	
Demand-Side Management Programs	45, 54, 55
Economic Issues	
• Discount rates for energy investors	41, 55
• Price expectations for types of energy	41
• Energy expenditures	34, 47
Heating/Cooling	
Wood Heating	
• Expand wood and solar questions	9, 30, 38
• Do wood users have masonry fireplaces?	38
Expand Heating Cost Coverage	
• Cost of fuelwood heating/price of woodfuel	48
• Improve fuel-rate structures	20
Heating Equipment	
• Maintenance	22
• Add geothermal heat pumps	30, 43
• Add "combo units" (gas-fired water heaters plumbed into a water-air coil and fan for space heating)	20
• Ducts and distribution systems	22
Efficiency and Usage	
• Thermostat use	20, 22
• Air-conditioning nameplate data to determine efficiency	43
• Distinguish between room and central evaporative coolers	37
Fuel Switching	
• Expand fuel-switching section	1, 39, 51

See footnotes at end of table.

Table 3. Needs Cited in Correspondence, 1992 (Continued)

Needs Cited	Letters Citing Needs[a]
Home Offices/Activities	
• What rooms do you use?	22, 24
• What equipment do you use? How often do you use it?	22, 24
Hot Water Use	
• Add information on faucet aerators and showerheads	37, 43
• Hot water temperature	43
Household Information	
• Keep household composition (age, sex, employment, relationship)	29, 43
• More detail on income, family budget	2, 34, 49
• Mobility/plans to move	25, 34
• Occupation	36
• Energy payment plans/arrearages	11, 34, 49
Indoor Air Quality	
• Ventilation	22
• Radon tested	41
Insulation/Thermal Integrity	
General Insulation	
• Improve and expand insulation section	20, 27, 29, 43
• External wall material (ie., brick, wood)	38
• Provide quantitative insulation data	23
• Retrofit market	20, 22
• Radiant barrier	41
Window Insulating Properties	
• Frames, storm windows, number of panges, replacement windows	20, 23, 31, 43
• Low-E glass	20, 31, 41
• Skylights	31
• Condensation problems	41
Building Characteristics	23, 42
Lighting	
• Expand lighting section	17, 18, 19, 20, 37, 43, 54
Low-Income Energy Assistance	6, 49
Refrigeration	
• Location of second refrigerator and freezer	43
• Refrigerator with a door mounted water/ice dispenser	37, 43
• Volume of freezer compartment in refrigerator	37
Sources of Information for Energy-Related Decisions	21
Survey Improvements	
Timing	
• Increase frequency of survey	33, 49
• Make monthly billing data available	43
Data	
• Add State/county level data	3, 7, 8, 28, 32, 45, 49, 53
• Compare data with Census Bureau data	33
• Have energy auditors conduct interviews and collect the data	23

[a]The list of respondents with corresponding numbers is in Appendix C. Respondents not listed in this table were promoting a product or service (40, 44, 52), were not interested in residential energy consumption (15), did not use RECS data because it was not State-level data (5, 10, 12, 14, 16), or requested no change in RECS data that the organization used (46).

Source: Energy Information Administration, Office of Energy Markets and End Use.

provided. However, some respondents indicated that they could not currently use RECS data and said that they would be able to use it only if State-level data were made available. Other respondents listed uses to which they could put the regional data. For example, The Wisconsin Center for Demand-Side Research wrote, "one source of additional information on the residential sector *could* be the RECS data."[45] Likewise, DOE's BPA indicated that "the RECS *could* provide us with good indicators of changes in energy-use patterns."[28] A final example of this conditional use is provided by the Minnesota Department of Public Service: "we use, or would hope to use, residential end-use data in two ways. First, for our modeling effort... Secondly, we would use residential end-use data in evaluating policies, from the costs and impacts of residential conservation (and load management) programs, to the effects of an energy policy on the average energy user in Minnesota."[1] These examples are representative of respondents whose use of RECS data is dependent on RECS's ability to provide regional or State-level data.

Impact of Requests for Smaller Geographic Regions

Providing State-level data from the RECS was the most commonly suggested change. To produce estimates for all 50 States would require a five-fold increase in the RECS sample size. Potentially, it is feasible to produce some State-level tabulations from RECS of a limited set of data for one-thirtieth the cost of a five-fold increase in th sample. These tabulations, or synthetic estimates, could be produced by linking auxiliary information about each State to the RECS data. What would not be available would be the full range of RECS data at the State level. Budget constraints preclude actual State-level data collection, but EIA is attempting to produce synthetic State-level estimates from the 1990 RECS. If the attempt is successful, we would produce similar estimates for 1993 and subsequent years. RECS will continue to provide data for the nine Census divisions (see Appendix F for a map and listing of States within each Census division).

Given the fact that the RECS sample is roughly allocated to States in proportion to the population, the largest States may have an adequate sample size that would support separate RECS estimates for the State. The sample for the 1993 RECS was designed to make it easier to produce data for these largest States. This will satisfy only a small number of users, since those requesting State-level data often represented smaller States that did not have the resources for conducting their own State-level survey.

Consumer Decision-Making Behavior

Purchase Decisions

The possibility of initiating a RECS study of consumer decision making and purchase decisions was continually raised in the user-needs meetings (Table 2). At the June 9 user-needs meeting, "consumer decision making" topped the list of priorities among a variety of users representing a cross section of DOE's activities. The prospect of opening up this topic was first raised in the April 5 meeting by NEMS staff.[Group A1] They asked that RECS collect the following information on how people choose new equipment: Are they influenced by labels, efficiency, overall cost, capital cost, fuel cost, maintenance, discount rate, life cycle cost? Does the household ever make economic replacements of equipment/appliances (buy a new appliance before the old one is broken)? Where on the buying curve does the new equipment fall, from low cost to the most expensive model?

In the May 5 meeting, a representative from DOE's Office of Policy proposed focusing on the purchase decisions people made and suggested asking the following questions: When was the equipment purchased? Who purchased the equipment? What type of equipment was purchased? Why was the equipment purchased? What factors affected its purchase? In the same meeting, a colleague asked that RECS determine the efficiency of the appliance purchased, the price paid, and the model number.[Group A5] In the May 13 meeting, American Home Appliance Manufacturers proposed that RECS study the effect of utility rebates on consumer purchases. Another DOE representative summed up his interest in consumer decision making

saying that he wanted to know how to accelerate the adoption of energy-saving equipment; what factors make a consumer buy energy-efficient products, and what lever can we use to affect this decision process?[Group A2]

One of the primary concerns raised in the June 9th user-needs meeting was that RECS did not provide "hard" information, which would reflect what actually happens when decisions are made. If REC3 were to pose a hypothetical question asking respondents what factors would affect their purchase of an appliance, the answer might not match the respondents' future actions. In response to this concern, it was proposed that RECS ask about the consumer's recent purchase decisions. This would reflect what decisions the consumer actually made and would thus provide more reliable information on the consumer's decision-making process.

On May 18, the need for consumer decision-making data was highlighted in the following way: "RECS could be enhanced by more information on consumer attitudes, decision-making processes, and decision criteria. The gas industry and others spend a lot on gathering this, but will not share this information with us. Fuel price expectations drive a number of things, and many companies try to monitor this aspect of consumer behavior. But there is still very poor information of this type available. It then causes a weakness in the models when trying to specify whether the consumer will, in fact, buy a particular product. The answer is necessarily very conjectural."[Group A2] This statement provided an explanation for adding consumer decision-making data to the RECS. The rationale was that this was vital information that was, unfortunately, unavailable elsewhere.

Attitudes

A number of respondents thought that it would be beneficial for RECS to explore the attitudes of those surveyed. They asked that RECS determine peoples' attitudes toward energy, energy conservation, and energy costs. Many of the respondents posed questions, which they felt should be added to the survey. One of the questions most frequently proposed for addition was a question to gauge the respondents' energy price expectations. It was proposed that RECS ask people whether they expected energy costs to increase or decrease in the future. This question was put forth in user-needs meetings as well as in a letter from the National Association of Home Builders (NAHB) Research Center.[Group B5, 41] The NAHB also requested that RECS "consider asking a hypothetical question about the minimum annual savings required to trigger an investment of, say, $100 in energy conservation."[41]

A letter from DOE also proposed an attitudinal question: "the data already being collected on what are the Nation's energy consumption characteristics are impressively extensive, but we could ask more on why. Has the feasibility of asking respondents why they have adopted energy efficiency measures (if they have) been considered?" The interest was what factors would be significant in causing respondents to adopt energy conservation measures in the future.[27]

Another suggestion was that RECS add a question to gauge respondent's energy awareness. It was proposed that RECS ask respondents to estimate their average monthly energy bill. This would be compared with information on the actual cost (provided by the utility) enabling RECS to determine the respondent's "energy awareness."[Group A1]

Impact of Consumer Decision-Making Comments

The user-needs study revealed widespread interest in consumer decision making. The basic question was: "Are consumers interested in the energy efficiency of the appliances they purchase?" In response, a number of new questions were added to the 1993 RECS to identify households that had purchased new equipment for home heating, water heating, and central air conditioning, or who had purchased a new refrigerator. Households making these purchases were asked if the equipment was a replacement or additional equipment, and, if

replacement, how well was the old equipment working, and how important a number of factors, including the energy efficiency of the equipment, were in the decision to purchase the new equipment.

Whether or not the RECS is the most appropriate vehicle for these consumer decision-making questions was an issue raised at the November 1992 meeting of the Energy Committee of the American Statistical Association. One point of view expressed at the meeting was that it would be more useful to have in-depth information about decision making from a few respondents rather than surface information from a large number such as RECS would provide. Other ways of collecting in-depth information mentioned by the Energy Committee were focus groups or studies that focus on the single issue of energy-related factors in consumer decision making.

Building Envelope and Thermal Characteristics

Insulation

There was also widespread demand for increased RECS coverage of housing insulation and thermal integrity (Tables 2 and 3). DOE asked that RECS improve its insulation information saying that "to model housing, the insulation level for the building shell is necessary, otherwise we are left guessing."[20] LBL wrote, "the main problem with the RECS data in this area is the incomplete data on thermal integrity of buildings. This includes roof, wall, floor, window, door, and infiltration heat loss estimates."[23] LBL also felt that the RECS should attempt to make an assessment of the potential for improving thermal efficiency by determining the feasibility of insulation addition. Not surprisingly, the North American Insulation Manufacturers Association also felt that RECS should expand its coverage of insulation. They suggested that RECS provide insulation depth; type; and R-value for wall, basement, and attic insulation.[31]

One of the most ardent supporters of expanded insulation information was the National Consumer Law Center (NCLC). A representative explained at the June 16 user-needs meeting that the NCLC was trying to tailor DSM programs to low-income houses. In order to do this, the NCLC needed data on weatherization and specifically on the difference between weatherization and insulation in low-income and middle-income homes.[Group B4] In the same meeting, it was suggested that RECS add a question, which would provide a subjective assessment of the quality of the housing and of air infiltration (i.e., Are there holes in the walls? Are the windows broken? Are there air spaces under the doors?).[Group B4] Currently, low-income houses use much more energy per square foot than upper income houses. These questions would help in addressing this problem.

NEMS also proposed an expansion of insulation. NEMS staff inquired about the feasibility of determining local insulation codes.[Group A1] Unfortunately, this was not practical or possible. RECS collects data in more than 1,500 areas, and EIA would have to collect and analyze local codes for each of those areas.

Modelers requested thermal integrity data so that they could establish a more complete picture of residential thermal integrity and thus develop more accurate projections. Others, like insulation manufacturers, simply wanted to gauge the effects of insulation on energy consumption. Still others wanted to expand insulation data to clarify their image of low-income energy consumption. Thermal integrity data are some of the most difficult types of data to collect in RECS because household respondents are not knowledgeable about the insulation in their homes.

Exterior Wall Material

The Brick Institute of America, like the insulation manufacturers, wanted data to analyze the effect their product had on energy consumption.[38] A representative of the institute explained, "our primary interest is in knowing the individual components of the exterior building envelope. We would like to use energy

consumption data to support the fact that brick and other high mass materials reduce energy consumption for heating and cooling as compared to lighter weight envelopes." These data were also requested by the NEMS.[Group A1]

Windows

Windows, specifically low-E window glass, generated much interest in the user-needs meetings (Table 2). In the May 18 user-needs meeting, DOE put forth a strong argument for an attempt to gather data on low-E windows. They explained that, according to manufacturers, 20 to 25 percent of new window purchases were low-E glass. Low-E glass has an R-value of 7 or better, while a standard window has an R-value of only 1.[12] Low-E windows are clearly an important part of the window market. It was also clear that they were an important factor in a home's thermal integrity. As such DOE argued for the inclusion of questions on low-E windows in the 1993 RECS.[Group A2]

In the July 8 user-needs meeting with NEMS, it was suggested that RECS try to determine the market penetration of low-E glass.[Group A1] This one suggestion is representative of many similar suggestions. Throughout the series of user-needs meetings, users asked that RECS gauge the penetration of low-E glass. One suggestion that emerged from the meetings was that this information be collected from window manufacturers.

LBL also suggested expanding window coverage. They felt that the new technologies entering the market made windows an especially important factor in thermal integrity. LBL asked that RECS interviewers count the number of window panes and check for "special glazing" on windows (low-E glass).[23] A representative of NAHB wanted RECS to ask specifically about low-E glass. He requested that RECS "ask about the presence of low-E glazing and/or examine the windows to determine if low-E is used."[41]

Interest in windows was not limited to low-E glass. Many expressed an interest in standard windows and their contributions to the thermal characteristics of the house. DOE wrote "the series of questions on windows does not provide much information on the trends in this market. How many houses have double pane or coated windows? Have people added storms or totally new window units to their homes? Windows and infiltration are the two largest drivers of cooling loads. More information on windows and retrofit activities is needed."[20] Similarly, Regional Economic Research Inc. felt that RECS should expand window coverage. They said that "if possible, it would be a good idea to ask two questions, one about the presence of insulating glass and one about the presence of storm windows."[43] At a user-needs meeting, another representative of DOE asked that RECS look at windows for their "solar contribution."[Group A2] NREL had similar thoughts when they suggested that RECS count the number of windows facing south. This would provide information on the passive solar characteristics of the windows.[Group A2]

Much of the interest in window questions was instigated by advances in window technology. The rising popularity of low-E glass helped spur on requests for more questions on windows. Expansion of the section on window characteristics would help users achieve two objectives: it would enable users to determine the market penetration of new window technology, and it would enable them to gain a more complete picture of the thermal characteristics of residential homes.

Impact of Building Envelope and Thermal Characteristics Comments

The questions on presence of insulation were not expanded and were in fact reduced either because of respondents' lack of knowledge or the irrelevancy of the question to RECS analytic purposes. Questions dropped from the 1993 RECS included questions on insulation added in past 3 years and questions on the

[12]The R-value is a measure of resistance to heat flow. The higher the R-value of a material, the greater its insulating capability.

extent of roof or floor insulation. These actions were taken because of the general lack of knowledge by households about the insulation in their home. Households can answer questions about what has been added, but, for analysis of thermal qualities of a home, it is not important to know what has been recently added but it is vitally important to know what is there. RECS will continue to carry questions about whether wall, roof, or floor insulation is present.

A question on exterior wall material has been added to the building shell characteristics to be collected in 1993.[13] This information will be used in calculations of shell efficiencies.

In 1993, RECS will not count the number of doors and the number of storm/insulated windows and doors as in the past in order to make room for more information on windows. Households will be classified as to whether their windows are single, double, or triple pane, whether the glass is low-E, whether storm windows are present, and whether the window sash is metal or nonmetal. In addition, since sliding glass doors comprise a large part of the glass area in homes that have them, questions on the number of sliding glass doors, number of panes, and whether they are low-E glass will be collected in 1993. This information will allow one to calculate heat loss through windows using the RECS data.

Lighting

Requests for expanded RECS coverage of lighting were widespread. At the June 9 user-needs meeting, a list was presented of proposed additions to and expansions of the RECS. Users were asked to rank their priorities and determine which topics they felt were most important. Lighting was placed second in the ranking, behind consumer decision making.

Recent advances in lighting technology have sparked the interest in lighting (Tables 2 and 3). DOE suggested that RECS compile a lighting inventory including incandescent, fluorescent, compact fluorescent, and high-intensity discharge (HID) lighting. In addition, they asked: (1) "Have people retrofitted their fixtures? (2) Are we converting to compact fluorescent bulbs? (3) Do people substitute windows for lighting in additions or alterations?" These questions, they felt, should be added to the RECS.[20]

Similarly, lighting emerged as a priority in the user-needs meeting with those working on NEMS.[Group A1] In that meeting, NEMS modelers asked that the RECS provide a separate end-use intensity for lighting. They also asked that RECS determine the number of compact fluorescent and incandescent bulbs in the home. This would help to determine the opportunity for DSM programs that encourage the purchase of compact fluorescent lights.

Regional Economic Research Inc. (RER) also called for the expansion of the lighting section saying that lighting was a "relatively unexplored area." They complained that other areas with usage levels similar to lighting were studied in-depth. Since lighting is a major energy end use, it should be studied in a manner similar to other major end uses. RER then wrote, "some utility studies...attempt to get lamp inventory data, with indication of usage levels attached. We encourage you to follow this course."[43]

LBL pleaded for an expanded lighting section in both user-needs meetings and in response letters. LBL provided a detailed list of lighting questions to ask in the 1993 survey.[17, 18, 19] They proposed using a matrix to inventory lights and categorize them into degrees of use. They recommended that RECS gather the following information on lights: number, location (interior/exterior), wattage, type, control (timers, photocells, or dimmers), and potential for compact fluorescent substitution. It would be "more useful to have some information about all lights than lots of information about one light." Expansion of the lighting section was also advocated in the user-needs meetings (Table 2).

[13]Questions on exterior wall material appeared in the 1980 and 1981 RECS.

Impact of Lighting Comments

A Lighting Supplement has been added to the survey for a subsample of 200 to 500 households. The Supplement would identify all lights in the most used rooms. Data on the characteristics of the lights used more than 15 minutes a day will include daily usage, wattage, and bulb type (incandescent, fluorescent, compact fluorescent). Comparative information will be collected on less-used rooms so that a room-by-room calculation of lighting energy use can be derived from the data.

The purpose of the supplement is to provide a statistical basis for estimating an EUI for lighting.[14] A good estimate of this end use for electricity is needed since estimates of the annual household lighting bill have varied widely.[15] This effort is part of EIA's response to requirements of the Energy Policy Act of 1992.

Appliance Usage and Equipment

Appliance Usage

Many RECS users advocated an expansion of appliance information (Tables 2 and 3). Requested changes to the appliance section were varied. Requests ranged from gathering age information to counting hours of TV use. The Minnesota Department of Public Service "would...like to know the age of various appliances, so that we can calculate the probable time to replacement (and factors affecting the replacement decision would be useful as well).... Our conservation strategies are driven by time-of-use concerns. While there are limits to the willingness of the consumer to provide too much data, data on daily usage patterns (who is in when, and when are various energy-consuming chores done) would be useful to us as well."[1]

Regional Economic Research Inc. also requested expanded coverage of appliance usage. They recommended adding questions on the number of loads of clothes washed, washer temperature settings, number of dishwasher loads run, hours of computer usage, and hours of television usage.[43] Expansion of appliance sections was also encouraged in the user-needs meetings. In a May 13 user-needs meeting, the American Home Appliance Manufacturers suggested that information on microwave and conventional oven use be gathered with information on the frequency with which both types of ovens are used.[Group B1] They also suggested that RECS determine the frequency of dish washing and clothes washing. In the June 9 meeting, a representative of NEMS said that information on appliance output and size was needed and that data on appliance usage should also be collected.[Group A1]

Hot Water Use

Producing an EUI for water heating has been a continuing function of the RECS. This information is used by NEMS. Some questions have been raised about the accuracy of the RECS water heating EUI, so additional questions on the use of hot water have been added to see what effect, if any, they will have on the RECS estimate.[16] A few RECS users requested adding questions relating to hot water usage. Regional Economic Research Inc. proposed adding questions to determine whether respondents had low-volume showerheads or

[14]Some methodological work has already been done for lighting. A technical paper is available on how the EUI will be estimated using data from the subsample combined with data from the full sample of RECS. In addition, a small pretest has been done to check on problems with collecting lighting usage data.

[15]For instance, a recent report gave figures from 750 to 2,500 kilowatthours. See, Joann Henson, "Conversions + Conversations = Conservation," *Home Energy*, November/December 1992, pp. 13-16.

[16]Several studies have compared the RECS EUI for water heating with those developed from studies in which a meter has been attached to the water heater. In these metering studies the RECS EUI is lower than the metered EUI.

faucet aerators.[43] This information was also requested by LBL and by a number of users in user-needs meetings.[37]

Refrigerators

There was some interest expressed in increasing the depth of questions on refrigerators, which had been increased for the 1990 RECS. The possibility of getting refrigerator efficiency data was raised.[Group A6] It was also suggested that RECS determine the location of the refrigerator.[43] However, the most common suggestion was that RECS ask if the respondent's refrigerator had a door-mounted ice or water dispenser.[37, 43] Door-mounted dispensers greatly affect refrigerator efficiency because they breach the refrigerator insulation. Furthermore, ice dispensers have built-in-heaters to deposit the ice in a container. These factors make refrigerators with dispensers far greater energy-consumers than refrigerators without dispensers.

Heating and Cooling

RECS users offered a number of varied suggestions for improving the heating and cooling section of the RECS (Tables 2 and 3). Requests ranged from cost comparisons to adding questions concerning new heating technologies.

EIA was asked to expand coverage of heating efficiency. It was suggested that RECS provide detailed information on the size and efficiency of heating and cooling units. This possibility was raised in a number of user-needs meetings and in response letters. Many suggested that this information be gathered through the collection of nameplate data.

It was also proposed that RECS add to its coverage of residential heating. DOE users suggested that RECS should identify a "combo heater," which is a gas fired water heater with a heat exchanger for a furnace. There are an estimated million such units.[20] An EIA representative proposed adding questions on geothermal heat pumps,[30] and Barakat and Chamberlin, Inc. wanted to distinguish between central and room evaporative coolers.[37]

Three letters were written proposing changes or additions to heating costs (Table 3). The Texas Railroad Commission asked that RECS provide a fuel cost comparison.[51] They wanted to be able to compare the cost of heating with propane to the costs of heating with electricity, natural gas, or oil. The Department of Agriculture inquired about the availability of information on the cost of firewood heating.[48] NEMS representatives also requested information on the cost of firewood.[Group A1]

Impact of Appliance Usage and Equipment Comments

Appliances. The user-needs study also demonstrated that many RECS users had an interest in how appliances are used. The 1993 RECS asked how many loads of laundry were washed, how often the dishwasher was used, and whether the waterbed heaters were used all year long.

In a related area, the RECS expanded coverage of kitchen appliances and their uses. RECS will now ask about the number of hot meals prepared at home, whether toaster ovens are used, and if the respondent's refrigerator had a through-the-door ice dispenser.

Additional appliances that were not previously identified as being used include computer laser printer, fax machine, copier, air cleaner, aquarium, and attic exhaust fan. For some appliances, a household may use more than one of the appliances. For ceiling fans and freezers, additional questions were added to identify how many units were being used.

Heating and Cooling. Data on the size and efficiency of heating and cooling equipment were deemed too difficult to collect. There was one exception to this; households with window air-conditioning units will be asked if the unit is a heat pump. This information will allow for separation of heat pumps according to their size--central units or window units. Other than this item, it was believed that respondents would not be expected to know this information. For instance, we have trouble getting accurate data on the number of gas air conditioners; many more households (an order of 5 times more) think they have gas air conditioning than actually do.

Collecting nameplate data is an alternative way to get size and efficiency measures, and this was attempted in the 1990 RECS for the cooling equipment. However, the subsequent effort to derive a size and efficiency measure from the data collected was not very successful. Collecting nameplate data for heating equipment is much more intrusive. The nameplate for many furnaces is hidden behind a cover door which must be physically removed. Since removal of the cover door is more than interviewers may want to do and may open up the government to liability problems if the heating system malfunctions, the RECS is not a very good mechanism for collecting this type of information. Collecting nameplate data for refrigerators may be feasible, but current cost restrictions and higher priorities preclude funding this effort.

Passive solar heating systems will be identified in the 1993 RECS, where as in the past these systems were included in an "other" category.

Water Heating. The RECS added a number of behavioral questions dealing with the use of hot water. It asked how many times baths and showers were used, and, as mentioned earlier, how often the dishwasher and clothes washer were used.

Demand-Side Management (DSM)

The possibility of expanding RECS's coverage of the DSM programs was explored at a number of user-needs meetings (Table 2). In the April 5 meeting, NEMS personnel requested the addition of the following data: a pairing of DSM households with nonparticipating households in the same area, information on the types of DSM programs households participated in, and information on why those households that chose not to participate in DSM made this decision.[Group A1]

Additional rate information would be useful to NEMS personnel. They would be interested in knowing whether a household was on a rate schedule, which varied from summer to winter and for each rate, whether it was an inclining or declining schedule. They felt that the categorization of types of DSM programs asked in RECS could be more refined. It was mentioned that some DSM programs can usefully be identified by the type of appliance involved. It was also hoped that DSM information could be obtained for master-metered apartments by questioning building managers.[Group A1]

Impact of Demand-Side Management Comments

DSM programs are anticipated to have considerable affect on the use of electricity in future years. In order to meet user requests for expanded coverage of DSM programs, several DSM-related questions were added to the 1993 RECS. These questions will be used to identify the types of DSM programs households participate in and the equipment involved. However, because RECS does not collect "before and after" data from the same household, RECS will not be a good source of information on the energy savings from DSM.[17] The RECS questions will ask household respondents what equipment their utility offered rebates on, discounts for

[17]"Before and after" data means collecting consumption patterns and other energy-related data for periods before and after participation in the DSM program. Such data, along with data from a control group, can be used to ascertain savings related to the program.

allowing the utility to shut off equipment during times of peak demand, and what energy conservation items were installed under DSM programs. The RECS also asked whether similar programs were offered by natural gas utilities.

Questions on the type of DSM programs offered and whether the household participated were also added to the electricity and natural gas supplier forms (see Schedule B for Forms EIA-457E and EIA-457F). This information from the supplier will be used to describe the kinds of DSM programs offered by utilities, and the participation data will be used to verify the household report of their participation. Additional data from the annual EIA survey of electric utilities (Form EIA-861) on the availability of DSM programs will be added to the RECS data base so rates of participation can be based on those utilities that offer a DSM program.

Emerging Technologies and Residential Trends

It was also proposed that RECS investigate emerging technologies in the residential sector. This possibility was first raised in a June 9 user-needs meeting. There, NEMS representatives presented the EIA with a list of new technologies. This list included: ground source heat pumps, dual-fueled heat pumps, three-way pump/water heaters, hybrid heat pump/water heaters, compact fluorescent lights, instantaneous water heaters, gas air conditioning, and flexiplace work arrangements. They asked that RECS identify whether respondents had heard of these technologies, whether they had them at home, and whether they planned to purchase or use them in the future.[Group A1]

Home Offices/Working at Home

Some RECS users expressed an interest in adding a section to cover work performed at home (Tables 2 and 3). In both written response and user-needs meetings, LBL emerged as a strong advocate of home office questions. One representative cited a *Washington Post* article, which stated, "nearly 5.5 million employees worked at least part-time at home in 1991." They argued that if this "long discussed trend is anywhere near this scale, we should begin tracking and assessing its implications for energy use and energy policy." LBL advised asking questions to determine time spent working at home, type of work done at home, area used for work in home, and equipment used in home offices.[24] This request was supported by DOE who felt that RECS should determine if the trend toward working at home will "impact the U.S. labor force and change energy consumption trends?" They suggested that the RECS question on computer use "be increased to cover energy-consuming devices such as fax machines, copiers and so on, and the usage level."[20] This equipment information would help in assessing the energy consumption of those working at home.

Impact of Emerging Technologies Comments

Solar Energy. The user-needs study encouraged RECS to expand questioning on solar technologies. One critical question was added to the household questionnaire to give a more precise separation of solar technology into passive and active systems.

New Technologies. A question was added on new technologies, as requested in user needs meetings and response letters. The questionnaire presents the respondent with a list of new technologies. The respondent is then asked which of these technologies he has heard of, and which he has in the home. The 9 new technologies included are:

1. Low-E glazing
2. Instantaneous water heater
3. Ground-source heat pump
4. Water-source heat pump

5. Thermal storage
6. Heat pump water heater
7. Combo heater--gas water heater with heat exchanger
8. Halogen light bulb
9. Compact fluorescent light bulb

As mentioned earlier when discussing appliances, other new questions that have been added to the questionnaire because they related to home businesses include questions relating to fax machines, copiers, and laser printers for the personal computer.

Energy Policy Act of 1992

The Energy Policy Act of 1992 (EPACT), Public Law 102-486, was signed on October 24, 1992. EPACT was signed after the RECS user-needs study was completed; however, it was decided to incorporate as many EPACT needs as possible in the 1993 RECS. Otherwise, we would have to wait until the 1996 RECS. As a result of subsequent meetings with personnel from the Office of Conservation and Renewable Energy, several new questions and topics were added or expanded. EPACT has provisions for labeling the insulating value of windows. Therefore, the section on windows was expanded to provide a more complete inventory of windows and to lay the ground work for data that could be used to calculate household energy losses through the window.

Other items relating to EPACT that have been added to the questionnaire include: some of the new technologies such as compact fluorescent bulbs, the lighting supplement,[18] efficiency measures such as low-flow showerheads, vehicle questions that will be used in the Residential Transportation Energy Consumption Survey (RTECS),[19] and DSM-related questions.

Other Additions

Fuels

One of the changes in the natural gas markets is purchase arrangements in which consumers contract directly with a natural gas producer to buy natural gas. This gas is then transported to the customer through the pipelines of the local gas distributing company or utility (LDC), which charges a transportation fee. This is called "gas transported for the account of others" or "transportation gas."[20]

Under the pressure of a diminishing market for heating oil, some fuel dealers are offering customers a guaranteed price for the year. In the April 10 user-needs meeting, NEMS representatives asked that RECS determine whether fuel oil customers were buying fuel oil at a guaranteed price.[Group A1] A question was added to the fuel oil supplier form (Form EIA-457G) to identify those companies.

[18]The U.S. Environmental Protection Agency expressed particular interest in the lighting supplement.

[19]Data from the RTECS are reported triennially. The last report was *Household Vehicles Energy Consumption 1988*, DOE/EIA-0464(88), February 1990.

[20]The more typical way a household buys gas is completely through the LDC, which then charges the customer for the combined purchase and transportation of the gas. Transportation gas has been a factor in the commercial and industrial natural gas markets, and is now being found in the residential sector. This arrangement, which is usually profitable only for large consumers such as apartment buildings, condominiums, or groups of consumers, will be addressed in the 1993 RECS by asking households, apartment rental agents, and natural gas utilities if any of the RECS households are purchasing transportation gas.

Several questions relating to the use of woodfuel have been added. Respondents will be asked if they use wood pellets made from sawdust and whether their wood stove is EPA certified, which means it produces fewer emissions because it burns wood more efficiently. In addition, interest in the price of woodfuel for NEMS led to adding questions to the 1993 RECS questionnaire about the amount and price of the last woodfuel purchase.

Housing Type

A question was added to the 1993 RECS asking whether the housing unit is part of a condominium or cooperative. This was added to help clarify those households who say they own their unit, but also say they pay rent (condo fee).

Methodological Purposes

A question on humidifiers has been put back into the questionnaire for methodological purposes, in this case to reduce possible respondent confusion between a humidifier and a dehumidifier.

A question has been added for the interviewer to answer when the interview is completed. Interviewers are asked about any unusual ways in which the household uses energy.

Residential Transportation Energy Consumption Survey

The RECS has been modified to collect additional transportation data. These data will be used as the beginning data base for the Residential Transportation Energy Consumption Survey (RTECS). The RTECS uses a subsample of the RECS households for surveying household motor vehicles to obtain data on miles traveled, consumption, and expenditures. This change moves some data collection efforts from the RTECS to the RECS and changes the period for the 12-month RTECS estimates. It also greatly improves the efficiency of the RTECS data collection.

Survey Improvements

In addition to the vast number of proposed additional questions, a number of users requested changes to the survey itself (Tables 2 and 3). The two most often requested changes were increased frequency of the survey and increased sample size. These requests are indicative not of inadequacy, but of RECS's extreme importance to users. RECS users are largely dependent on the survey and they would like to see its scope expanded.

The *Federal Register* notice asked respondents if they would like to have RECS data in electronic form. A few respondents said that electronic data would be of little use to them. However, a number of respondents indicated that they would benefit if the RECS were made available on floppy disk. In addition, a number of RECS users at the user-needs meetings inquired about the availability of electronic data.

Finally, it was also suggested that the RECS make use of Computer-Assisted Personal Interviewing (CAPI). Using a laptop computer, the interviewer is led through the questionnaire by the computer and records the answers into the computer. The computer can identify missing data and inconsistencies, which the interviewer can then resolve during the interview, instead of having the survey contractor's headquarters staff call back to the respondent later. Using a CAPI system, it was argued, would save time and money by eliminating or reducing the need for post-interview coding, keying, and editing. It would increase the speed of data processing and would complete some of the data editing at the time of the interview. It would potentially permit EIA to release data on a more timely basis. However, more detailed analysis of the costs indicated that

the use of CAPI would not offset the cost of leasing the CAPI laptop computers and additional time to train interviewers to use the CAPI system. It was determined that conducting computer assisted interviews would cost approximately $600,000 to $700,000 more than conducting the same interviews without CAPI. Due to budget constraints, EIA could not use CAPI for the 1993 RECS.

Appendix A

Federal Register Notice

Federal Register Notice Soliciting Comments on the Residential Energy Consumption Survey (RECS)

Energy Information Administration

Residential Sector Energy Consumption; Solicitation of Comments for the Design of the 1993 Residential Energy Consumption Survey

AGENCY: Office of Energy Markets and End Use, Energy Information Administration, Department of Energy.

ACTION: Notice of request for comments.

SUMMARY: The Energy Information Administration (EIA) of the Department of Energy (DOE) is examining data requirements, user needs, costs to respondents, and respondent burden for energy consumption and related data for the 1993 Residential Energy Consumption Survey (RECS). The RECS provides basic statistical information on the consumption of, and expenditures for, energy in occupied residential housing units, and on the energy-related characteristics of these units and their occupants. It is designed to meet the needs of many users in addition to meeting the legislative requirements of EIA as specified in section 52(a) of the Federal Energy Administration Act of 1974 (Pub. L. No. 93-275 (FEA)).

Section 52(a) of the FEA Act requires EIA to establish a national energy information system that "shall contain such information as is required to provide a description of and facilitate analysis of energy supply and consumption within and affecting the United States on the basis of such geographic areas and economic sectors as may be appropriate."

The purpose of this Federal Register notice is to obtain information on: the need for residential energy consumption data; the types of data that can be provided; and the strengths and weaknesses of existing residential energy consumption data. This information is required prior to the redesign of the RECS planned for the 1993 survey cycle. As required by the Paperwork Reduction Act as amended (Pub. L. 96-511), EIA will submit a formal request for clearance for the 1993 RECS to the Office of Management and Budget by March 1, 1993.

DATES: Written comments must be submitted within 30 days of the publication of this notice. If you anticipate that you will be submitting comments, but find it difficult to do so within the period of time allowed by this notice, you should advise the contact listed below of your intentions to do so as soon as possible.

ADDRESSES: Send comments to Wendel Thompson, EI-631, Energy Information Administration, U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585. His telephone number is (202) 586-1119 and the FAX number is (202) 586-0018.

FOR FURTHER INFORMATION CONTACT: Requests for additional information and copies of EIA Forms 457A through G used in the 1990 RECS should be directed to Wendel Thompson at the address listed above.

SUPPLEMENTARY INFORMATION:

I. Background

EIA serves as the Government's primary source of energy statistics and provides information to the Executive Branch, Congress, State and local governments, industry and the general public. EIA's mission is to ensure that accurate, timely, and objective statistics on the Nation's energy position are available for use in private and public decisionmaking. The legislation that created EIA provides for the collection of data on energy supply and demand to fulfill these responsibilities. As part of

its programs, EIA conducts energy consumption surveys in the residential, residential transportation, commercial and manufacturing sectors.

The RECS provides basic statistical information on the consumption of and expenditures for energy in occupied residential housing units and on the energy-related characteristics of these units. (Previous surveys were conducted annually from 1978 through 1982, in 1984, 1987, and 1990.) To obtain this information, personal interviews are conducted with a sample of approximately 5,000 households representing the 50 States and the District of Columbia. For households in the survey, data are collected on what types of energy are used in the household and what they are used for, structural characteristics and size of the housing unit, appliances used, energy-using equipment and their characteristics, demographic characteristics and energy-related behavior of the household, and their participation in government energy assistance programs and demand-side management (DSM) programs. Data are also collected by contacting the rental agents who are more likely to know what fuels are used in multifamily apartment buildings and what fuel switching capability there is. Also, when given permission from the household, billing data are collected from utility companies that service the sample household.

Some additional data, identified during the preparation of the National Energy Strategy and through previous feedback from users, have already been added to the RECS. Chief among these new items is more information on refrigerators in order to add that end use category to the end uses already estimated in RECS: space heating, water heating, air conditioning, and appliances. With the growing usage of DSM programs to control electricity demand, questions on household participation in DSM programs have also been added to the RECS. EIA would like to know from users if these newly added items meet, or will meet, their data needs for these areas when data become available in 1995.

EIA is considering using Computer-Assisted Personal Interviewing (CAPI) to collect the 1993 RECS household data. EIA is interested in obtaining feedback on other experiences with household surveys that used CAPI methods.

Obtaining information from the RECS user community and from potential RECS respondents on the strengths and weaknesses of the survey is an important part of the 1993 redesign effort.

II. Request for Comments

EIA is soliciting comments from data users on the household energy consumption data that are required for public policy formulation and analysis, building research, and program monitoring and evaluation purposes in the residential sector. EIA is soliciting comments on the types of applicable information currently available from sources such as energy suppliers or their associations, buildings owners and managers or their associations, other Federal, State or local government agencies, and other private sources. Finally, the EIA is soliciting estimates from potential respondents on the burden and costs to them of providing the RECS data to EIA.

In addition to the publication of this notice, the EIA will directly contact and solicit comments from public policymakers (at the local, State, and Federal levels), public policy groups, the building energy research community, potential survey respondents and industry trade associations.

The following general questions are provided to assist in the preparation of responses:

As a current or prospective user of residential energy consumption and expenditures data:

1. For what purposes do you, or would you, use residential energy consumption or expenditure data? Be specific.

2. What data sources are you currently using, if any?

What types of data are provided?
How often are the data provided?
Are the data maintained on a consistent schedule or intermittently?
Are the data distributed in a paper or electronic medium or both?
Are the data current enough to meet your needs? (If not, specify the problem.)
What are the costs, if any, associated with using the data?
Do you have access to the individual household data or only tabulated aggregate data?

3. What are the strengths and weaknesses of the sources cited in answer to question 2?

4. In your opinion, what are the major gaps, if any, in the data currently available on residential energy consumption and expenditures?

5. Are you aware of other Federal, State, or local agencies or private organizations that collect similar data? If so, please provide the names of these agencies or organizations.

6. Please provide other comments that you believe to be relevant.

As a potential respondent:

1. *Household respondent:* What aspects of the data collection are particularly burdensome to you? What suggestions do you have for making the survey less burdensome?

2. *Electric or gas utility or oil company:* Could you provide the household billing data on microcomputer diskettes? Do you prefer using diskettes, answering on the hard copy survey forms, or printing out a hard copy from your data files?

3. *Rental agent:* Do you know of other sources of information on the energy characteristics of the apartment buildings under your supervision? If so, please provide us with the source of that information?

EIA is also interested in receiving comments from persons regarding their views on the costs and benefits of the EIA maintaining data on residential energy consumption.

Any written comments received in response to this notice will be discussed in the request to the Office of Management and Budget for its approval of the 1993 RECS.

Authority: Sections 5(a), 5(b), 13(b) and 52 of Pub. L. No. 93-275, Federal Energy Administration Act of 1974, 15 U.S.C. 764(a), 764(b), 772(b), 790a.

Issued in Washington, DC April 7, 1992.

Yvonne Bishop,

Director, Statistical Standards, Energy Information Administration.

[FR Doc. 92-8596 Filed 4-13-92; 8:45 am]

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Appendix B

Materials Sent Out Soliciting Written Comments

Appendix B

Materials Sent Out Soliciting Written Comments

This appendix contains copies of the materials sent out soliciting written comments.

Appendix B1:
- Mass Mailings Materials
- Letter
- Overview of Residential Energy Consumption Survey (RECS)

Appendix B2:
- Energy-Related Magazines and Newsletter Materials
- List of Magazines and Newsletters
- Letter
- Press Annoucement

Appendix B3:
- Notice in the *EIA New Releases*

Appendix B1

Mass Mailing Materials

Over 750 letters were mailed to Residential Energy Consumption Survey (RECS) users, inside and outside of the Department of Energy, asking for their needs for information related to residential energy consumption and expenditures. A representative letter follows. Enclosed with the letter were a copy of the Federal Register notice (see Appendix A) and An Overview of the RECS (copy follows).

Department of Energy
Washington, DC 20585

APR 2 9 1992

Dear Editor:

We need your assistance in publicizing a study.

The Energy Information Administration (EIA) is currently designing the 1993 Residential Energy Consumption Survey (RECS). The RECS is a national sample survey of household energy usage and energy-related characteristics.

We are seeking comments from the residential building energy community on the design, survey approach, and data covered to help make the survey more pertinent to its users.

To help the EIA contact the whole spectrum of researchers interested in the RECS, we ask you to carry the enclosed notice in the next issue of your publication. Feel free to edit it as required for your readership.

Also enclosed is an overview of RECS which provides additional information about the survey.

If you have any questions about the article or the RECS, please call me on (202) 586-1119. My FAX number is: (202) 586-0018.

Thank you for your help.

Sincerely,

Wendel Thompson

Wendel Thompson
RECS Survey Manager
Energy Information Administration

Enclosures

Overview

Residential Energy Consumption Survey (RECS)

Purpose	Collect accurate, comprehensive, and timely national and regional data on the consumption of energy in the residential sector.
Sponsor	Energy Information Administration, U.S. Department of Energy.
Sample	5,000 households nationwide representing 94 million U.S. households in 1990.
Geographic Area	Nine Census Divisions (sample is too small to sustain more geographic detail).
Frequency of Data Collection	1978, 1979, 1980, 1981, 1982, 1984, 1987, 1990 (triennial schedule beginning with 1987 survey--next survey planned for 1993).
Information Collected	Households: An hour personal interview to collect data on what energy is used and what it is used for, equipment, appliances, occupant characteristics, housing shell, participation in programs such as weatherization programs, low-income home energy assistance program, and demand-side management programs. Energy Suppliers: Actual household monthly billing data for calendar year. Annual consumption and expenditures for the household are derived from these bills. Rental Agents: Fuels use, heating equipment, fuel switching, and other information about the building not likely to be known by the respondent are asked of the rental agent. Other Sources: Weather data (heating degree-days, cooling degree-days, humidity) and price of electricity and natural gas. Derived Data: Estimates of the amount of energy used for space heating, air conditioning, water heating, refrigerators, and other appliances as a group are derived from the data through statistical procedures.
Distribution of Data	Published Reports: *Housing Characteristics* (DOE/EIA-0314) and *Household Energy Consumption and Expenditures* (DOE/EIA-0321) Public use data files (tapes and diskettes)
Redesign of 1993 Survey	The purpose of the redesign is to make the survey more pertinent to users and potential users. Comments on the survey approach, data covered and question wording are requested.
Contact	Wendel Thompson RECS Survey Manager EI-631 U.S. Department of Energy Washington, D.C. 20585 (Telephone: 202-586-1119) (FAX: 202-586-0018)

Appendix B2

Energy-Related Magazines and Newsletters

The following list of publication and newsletter editors were sent a letter (see the following page) asking them to place a notice in their publications and/or newletters about the RECS user-needs study. A proposed announcement and also an overview of the RECS (see Appendix B1) were also sent with the letter.

List of Magazines and Newsletters

Air Conditioning News
Tom Mahoney, Editor
P. O. Box 2600
Troy, Michigan 48007

ASHRAE Journal
1791 Tullie Circle NE
Atlanta, Georgia 30329

Contracting Business Magazine
Jeff Forker
Penton Publishing Company
1100 Superior Avenue
Cleveland, Ohio 44114

Contractor's Guide
Century Communications, Inc.
6201 West Howard Street
Niles, Illinois 60648

Custom Builder
Publishing Group, Inc.
38 Laffayette Street
Yarmouth, Maine 04096-0470

Electricity Journal
Robert O. Marritz, Editor and Publisher
2121 Fourth Avenue
Suite 635
Seattle, Washington 98121

Energy
Pergamon Press, Inc.
Journals Division
Maxwell House
Fairview Park
Elmstold, New York 10523

Energy Design Update
1100 Massachusetts Avenue
Arlington, Massachusetts 02174

Energy Exchange
P. O. Box 1472
Syracuse, New York 13201

Fine Homebuilding
Taunton Press, Inc.
63 South Main Street
Box 355
Newton, Connecticut 06470

Indoor Comfort News
TAC Inc.
606 North Larchmont Boulevard
Suite 4A
Los Angeles, California 90004

Journal of Light Construction
Hanley-Wood Partners
RR 2, Box 146
Richmond, Vermont 05477

National Association of Regulatory Utility Commissions
Mike Foley
P. O. Box 684
Washington, DC 20044

National Association of State Energy Offices (NASEO)
Frank Bishop
505 11th Street, SE
Washington, DC 20003

Public Utilities Fortnightly
Public Utilities Reports Inc.
2111 Wilson Boulevard, Suite 200
Arlington, Virginia 22201

Strategies
Karen Anderson, Editor
Association for DSM Professionals
Box 78
Garrett Park, Maryland 20896

Department of Energy
Washington, DC 20585

APR

Dear Colleague:

The Energy Information Administration (EIA) of the Department of Energy published a notice in the April 14, 1992 Federal Register (Enclosure I), soliciting comments on the Residential Energy Consumption Survey (RECS). The RECS is a national sample survey of household energy usage and energy-related characteristics. The EIA is particularly interested in learning your data needs as a current or potential user or provider of residential energy consumption data.

We hope that you can assist us by providing comments on the RECS data and other residential sector energy consumption data you currently use or would use, if it were available. A list of questions is provided at the end of the Federal Register notice to assist in the preparation of your response. We are also providing you with a brief overview of the RECS (Enclosure II).

Please send your comments by May 14, 1992 to: Leigh Carleton, Energy Information Administration, EI-631, Mail-Stop 2G-090, 1000 Independence Avenue, SW, Washington, DC 20585. If you would like to obtain additional information about the RECS, please contact Leigh Carleton. She can be reached at: (202) 586-1132; FAX (202) 586-0018.

During the months of May and June, EIA will hold a series of meetings with representative groups of residential energy data users. These meetings will focus on the specific data requirements of particular groups of users, such as engineers and architects, energy analysts, utility company representatives, trade associations, public interest groups and public policy makers. If you, or a member of your organization, is interested in participating in one of these meetings, please contact Leigh Carleton.

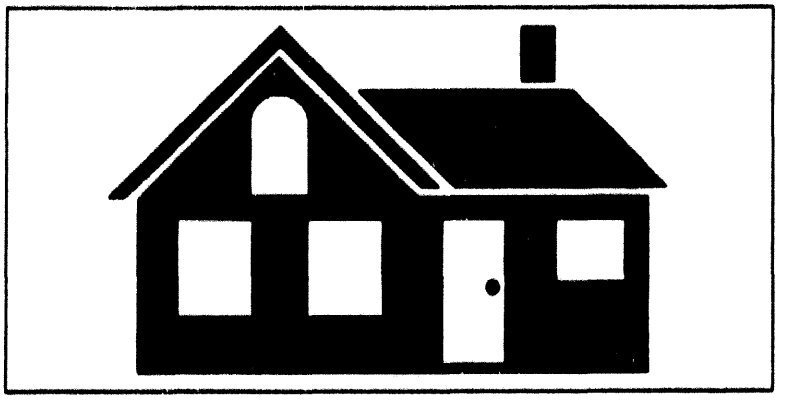
Thank you for your help.

Sincerely,

Lynda T. Carlson, Director
Energy End Use and Integrated Statistics Division
Energy Information Administration

Enclosures (2)

RECS



Residential Energy Consumption Survey

The RECS is conducted by the Energy Information Administration (EIA) of the U.S. Department of Energy to provide basic statistical information on household energy consumption and expenditures along with the energy-related characteristics of the housing units.

EIA is currently designing the 1993 RECS and is seeking comments on the design, survey approach, data covered, and question wording to help make the survey more pertinent to its users.

A user-needs meeting will be held at the 1992 ACEEE summer study on Monday at 2:00. The room will be assigned....

For more information on the user needs informal session, please contact:

Dr. Lynda T. Carlson, Director,
Energy End Use and
Integrated Statistics Division, EI-63
Energy Information Administration,
1000 Independence Ave., SW
Washington, DC 20585
Telephone #: 202-586-1112
FAX #: 202-586-0018

Energy Information Administration, U.S. Department of Energy

Appendix B3

Notice in EIA New Releases

Following is a copy of an article on the RECS published in the July 1992 *EIA New Releases*, a quarterly update of new publications and materials available from EIA. Included with the announcement of the *Housing Characteristics 1990* was a request for input for the user-needs study.

Residential Energy Consumption Report Available

The Energy Information Administration (EIA) has released the report *Housing Characteristics 1990*, which is based on data collected by the 1990 Residential Energy Consumption Survey (RECS). The report provides information on energy use in residential housing units in the United States. Included are the physical characteristics of the various types of housing, the appliances used, the number of occupants, the types of fuels being used, and other characteristics that relate to energy use.

Over 5,000 households were surveyed, representing the characteristics and energy consumption of 94 million households nationwide.

One of the survey's most significant findings is that the characteristics of new housing (built between 1988 and 1990) are changing relative to housing built since the 1970's. New housing is on average larger, more energy efficient, and most likely gas heated, rather than electrically heated.

Some overall trends for the decade (1980-1990) indicated by the 1990 RECS survey are:

- Houses are growing larger while the number of persons in a housing unit is growing smaller.
- Natural gas remained the fuel of choice for space heating (55 percent) and water heating (53 percent) for all homes.
- Despite the preference for natural gas (46 percent) in new homes over other fuels, the level was still below that for all homes and, thus, exerted a downward pull on the national level shares of natural gas. However, fuel switching to natural gas in homes built before 1980 kept the level of natural gas shares from falling between 1980 and 1990.
- Significant potential appears to exist for increased use of natural gas in areas where it is available.
- The growth in natural gas availability has not kept pace with the growth in housing.
- The share for electric space heating increased from 18 percent in 1980 to 23 percent for all homes in 1990.
- Increasingly, central air conditioning is a standard part of new home construction.
- New homes had a higher incidence of storm windows, storm doors, and insulation than older homes.
- The number of active solar households increased significantly between 1980 and 1990, but still remained a tiny minority of all U.S. households.
- In 1990, 62 percent of U.S. households maintained the average temperature in their home at 70 degrees Fahrenheit or warmer, compared to only 37 percent in 1981.
- The number of households using wood was basically unchanged since 1980, with 27 percent of the households reporting that they used wood for any purpose in either wood stoves or fireplaces.
- The average age of household equipment is surprisingly high. The stock of heat pumps and air conditioners averaged between 8 and 9 years old in 1990, while conventional heating systems were somewhat older at 11 to 14 years.
- The availability of a variety of utility-sponsored programs to reduce electricity demand grew rapidly during the decade. However, in 1990, only 5 percent of U.S. households reported that they participated in these programs.

The report may be purchased from the U.S. Government Printing Office. For price and ordering information, see pages 9 and 15.

As part of EIA's mission to provide meaningful data, the consumption surveys have ongoing user needs efforts to ascertain the requirements of its users. A User Needs Study for the 1993 Residential Energy Consumption Survey (RECS) is underway. Therefore, if you have any suggestions to make the data in this report more useful to your needs, please contact Dr. Wendel Thompson, RECS Manager, at (202)586-1119 or at the address below, by August 1.

EI-63, Mail Stop 2G-090
1000 Independence Avenue, S.W.
Washington, D.C. 20585
FAX: (202)586-0018

Appendix C

List of Written Correspondence

Appendix C

List of Written Correspondence

Respondents Representing State Government Agencies:

1. Alexander, Michael S. Minnesota Department of Public Service. St. Paul, Minnesota; May 12, 1992.
2. Bowman, Maynard. New York State Energy Office, Forecasting. Albany, New York; May 14, 1992.
3. Burks, Paul. Office of Energy Resources. Atlanta, Georgia; April 30, 1992.
4. Hruska J.L. Department of Community Development. Olympia, Washington; May 4, 1992.
5. Heulskamp, Richard. Minnesota Department of Public Service. St. Paul, Minnesota; May 15, 1992.
6. Guyant, Al. Public Service Commission of Wisconsin. Madison, Wisconsin; July 1, 1992.
7. Kelly, Thom. California Energy Commission. Sacramento, California; May 13, 1992.
8. McGuire, Mark. Minnesota Department of Public Service. St. Paul, Minnesota; May 8, 1992.
9. Mory, Javier F. State of Florida, Department of Community Affairs. Tallahassee, Florida; May 21, 1992.
10. Milsten, Donald E. Maryland Energy Administration. Annapolis, Maryland; April 22, 1992.
11. Mroczek, Vicky. Ohio Department of Development, Home Energy Assistance Program. Columbus, Ohio; July 7, 1992.
12. Smisson, Charlie T. Jr. Delaware Department of Administrative Services Division, Division of Facilities Management. Dover, Delaware; May 7, 1992.
13. Stanley, Roya. Iowa Department of Natural Resources. Des Moines, Iowa; May 27, 1992.
14. Stapleton, John M. Kentucky Department for Natural Resources, Natural Resources and Environmental Protection Cabinet. Frankfort, Kentucky; April 28, 1992.
15. Moved to position following #30.
16. White, Bruce A. State of Maine Executive Department. Augusta, Maine; May 5, 1992.

Respondents from the U.S. Department of Energy:

17. Atkinson, Barbara. Lawrence Berkeley Laboratory. Berkeley, California; May 12, 1992.
18. Atkinson, Barbara. Lawrence Berkeley Laboratory. Berkeley, California; July 9, 1992.

19. Atkinson, Barbara. Lawrence Berkeley Laboratory. Berkeley, California; July 25, 1992.

20. Brodrick, James B. U.S. Department of Energy, Office of Conservation and Renewable Energy. Washington, D.C.; May 5, 1992.

21. Demetrops, James P. U.S. Department of Energy, Office of Conservation and Renewable Energy. Washington, D.C.; May 4, 1992.

22. Diamond, Rick. Lawrence Berkeley Laboratory. Berkeley, California; May 13, 1992.

23. Hanford, Jim. Lawrence Berkeley Laboratory, Energy and Environment Division. Berkeley, California; March 18, 1992.

24. Harris, Jeffrey P. U.S. Department of Energy. Washington, D.C.; May 17, 1992.

25. Holt, Dick. U.S. Department of Energy, Office of Conservation and Renewable Energy. Washington, D.C.; No Date.

26. Jones, Dick. U.S. Department of Energy, Office of Conservation and Renewable Energy. Washington, D.C.; May 5, 1992.

27. McKinley, Gail. U.S. Department of Energy, Office of Conservation and Renewable Energy. Washington, D.C.; April 17, 1992.

28. Nabors, Ottie. U.S. Department of Energy, Bonneville Power Administration. Portland, Oregon; May 14, 1992.

29. Poyer, David. Argonne National Laboratory. Argonne, Illinois; July 14, 1992.

30. Walton, Howard. U.S. Department of Energy, Energy Information Administration. Washington, D.C.; May 5, 1992.

15.* Weyland, J.D. Idaho National Engineering Laboratory. Idaho Falls, Idaho; May 6 1992.

Respondents from Corporations:

31. Braun, Stephen G. North American Insulation Manufacturers Association, Technical Services. Alexandria, Virginia; May 19, 1992.

32. Brown, Gloria D. Washington Gas, Market Planning and Analysis. Springfield, Virginia; May 21, 1992.

33. Clunie, Thomas J. Exxon Company, U.S.A., Downstream Planning and Analysis. Houston, Texas; May 13, 1992.

34. Colton, Roger. National Consumer Law Center Incorporated. Boston, Massachusetts; June 15, 1992.

35. Ericksen, Lief. American Gas Association Laboratories, Research and Development. Cleveland, Ohio; May 14, 1992.

*Moved from position under State government agencies to its correct position under U.S. Departmewnt of Energy.

36. Leavy, John C. Nielsen Media Research, Nielsen Plaza. Northbrook, Illinois; May 1, 1992.

37. Rubinstein, Ellen and Admad Faruqui. Barakat and Chamberlin Incorporated. Oakland, California; May 14, 1992.

38. Subasic, Christen A. Brick Institute of America. Reston, Virginia; April 30, 1992.

39. Wing, Paul R. Boston Gas Company. Boston, Massachusetts; May 14, 1992.

40. Zeiczer, Al. Azrel Technology Incorporated. Cleveland, Ohio; June 4, 1992.

Respondents from Research Organizations:

41. Dacquisto, David J. National Association of Home Builders Research Center. Upper Marlboro, Maryland; May 20, 1992.

42. Fulkerson, William. Oak Ridge National Laboratory, Advanced Energy Systems. Oak Ridge, Tennessee; May 14, 1992.

43. McMenamin, Stuart J. Regional Economic Research Incorporated. San Diego, California; May 14, 1992.

44. Shire, Forrest. Research Products Incorporated. Phoenix, Arizona; June 12, 1992.

45. Urban, Ruth E. Wisconsin Center for Demand-Side Research. Madison, Wisconsin; May 20, 1992.

Respondents from Federal Government Agencies (other than DOE):

46. Armknecht, Paul A. U.S. Department of Labor, Bureau of Labor Statistics. Washington, D.C.; Undated.

47. Parker, Robert R. U. S. Department of Commerce, Economics and Statistics Administration, Bureau of Economic Analysis. Washington, D.C.; June 24, 1992.

48. Skog, Kenneth. U. S. Department of Agriculture. Madison, Wisconsin; April 30, 1992.

49. Thomas, Eunice. U. S. Department of Health and Human Services, Administration for Children and Families. Washington, D.C.; June 16, 1992.

50. Neida, Bill Von. U.S. Environmental Protection Agency. Washington, D.C.; June 3, 1993.

Other Respondents:

51. Guerin, Denise. University of Minnesota, Department of Design, Housing, and Apparel. St. Paul, Minnesota; May 18, 1992.

52. Kelly, Dan. Railroad Commission of Texas, Alternative Fuels Research and Education Division. Austin, Texas; May 14, 1992.

53. Thurston, Dave. Rochester Housing Authority. Rochester, New York; April 30, 1992.

54. Walsh, Roberta W. University of Vermont, Department of Natural Sciences. Burlington, Vermont; May 14, 1992.

55. Beckstead, Jason W. Rensselaer Polytechnic Institute, Lighting Research Center. Troy, New York; August 5, 1992.

56. Hees, Jing. Bay State Gas Company. Westborough, Massachusetts; July 31, 1992.

Appendix D

User-Needs Meetings and Attendees

Appendix D

User-Needs Meetings and Attendees

Table D1: List of Meetings and Organizations Attending in 1992[21]

Meeting Date	Organizations Represented
April 10	Office of Integrated Analysis and Forecasting (EIA)
May 5	Office of Policy Planning and Analysis (DOE)
May 13	National Association of Home Builders, Office of Technology Assistance (U.S. Congress), Conservation and Renewable Energy (DOE), Oak Ridge National Laboratory (DOE)
May 18	Conservation and Renewable Energy Working Group (DOE)
May 21	Bureau of Labor Statistics (DOL)
June 1	Energy End Use and Integrated Statistics Division (EIA)
June 9	Conservation and Renewable Energy Working Group (DOE)
June 10	Minority Economic Impact (DOE)
June 16	Low-Income Interest Group
June 22	Energy End Use and Integrated Statistics Division (EIA)
June 25	Bureau of Economic Analysis (DOC), Office of Fossil Energy (DOE)
July 8	Office of Integrated Analysis and Forecasting (EIA)
July 9	Conservation and Renewable Energy Working Group (DOE)
July 21	Energy End Use and Integrated Statistics Division (EIA)
August 31	ACEEE Summer Study on Energy Efficiency in Buildings

[21]Minutes are available for all listed meetings except June 1 and July 21.

Table D2. List of Meeting Attendees

Group A: Attendees from the U.S. Department of Energy

Group A1: EIA's Office of Integrated Analysis and Forecasting (OIAF)

Beamon, Alan
Clarius, Henry
Cohen, Barry
Cymbalsky, John
Diedrich, Roger
Flynn, Ed
MacIntyre, Stacy
Rodekohr, Mark

Group A2: Conservation and Renewable Energy (CE)

Abel, Fred
Berlin, Barry
Brodrick, James
Devine, Anita Dean
James, George
Jenior, Mary Margaret
Jones, Dick
Karney, Richard
Klimkos, Rich
LaMontaigne, Jerome
Pirkey, Diane
Turchen, Stephen

Group A3: Office of Fossil Energy (FE)

Carter, Douglas
Dye, Richard

Group A4: Office of Minority Economic Impact (MI)

Johnson, Georgia
Poyer, David (Argonne National Laboratory)

Group A5: Domestic and International Energy Policy (EP)

Dowd, Jeff
Friedrichs, Mark
Fulton, Lewis
Holt, Dick
Patton, David

Table D2. List of Meeting Attendees (Continued)

Group A: **Attendees from the Department of Energy, continued**

Group A6: **Department of Energy Laboratories**

Lawrence Berkeley Laboratory (LBL)
- Atkinson, Barbara
- Diamond, Rick
- Harris, Jeff
- McMahon, Jim
- Meier, Alan
- Schipper, Lee

National Renewable Energy Laboratory (NREL)
- Farhar, Barbara
- Lilienthal, Peter

Oak Ridge National Laboratory (ORNL)
- White, Denis L.

Pacific Northwest Laboratory (PNL)
- Jarnagin, Ron

Table D2. List of Meeting Attendees (Continued)

Group B: Attendees from Other Organizations

Group B1: Association of Home Appliance Manufacturers (AHAM)
Shulz, Craig

Group B2: DOC, Bureau of Economic Analysis (BEA)
Young, Paula

Group B3: DOL, Bureau of Labor Statistics (BLS)
Henderson, Steve
Thiel, Roy

Group B4: Low-Income Interest Group

Name	Organization
Carroll, David	Response Analysis Corporation
Dean, Lois	Housing and Urban Development
Eisenberg, Joel	Economic Opportunity Research Center
Grier, George	Grier Partnership
Leahey, Tom	Housing and Urban Development
Litow, Leon	HHS, Administration for Children and Families
Marden, Jane	American Gas Association
Markey, Pat	Markey and Associates
Mroczek, Vicky	Ohio Department of Development, Home Energy Assistance Program
Saunders, Margaret	National Consumer Law Center
Werner, Marsha	HHS, Administration for Children and Families

Group B5: National Association of Home Builders (NAHB)
D'Alessandris, David
Dacquisto, David
Nickson, Ron
Stauffer, Brooke

Group B6: U.S. Congress, Office of Technology Assistance (OTA)
Kelly, Henry
Komor, Paul

Appendix E

Residential Energy Consumption Survey--1993 Forms

Appendix E

Residential Energy Consumption Survey--1993 Forms

- Form EIA-457A, Household Questionnaire
- Form EIA-457B, Household Mail Questionnaire (Not included in report)
- Form EIA-457C, Rental Agents, Landlords, and Apartment Managers (Not included in report)
- Form EIA-457D, Household Bottled Gas (LPG or Propane) Usage (Not included in report)
- Form EIA-457E, Household Electricity Usage (Not included in report)
- Form EIA-457F, Household Natural Gas Usage (Not included in report)
- Form EIA-457G, Household Fuel Oil or Kerosene Usage (Not included in report)
- Form EIA-457H, Household Lighting Usage Supplement

Form EIA-457A (1993)

Form Approval:
OMB No.: 1905-0092
Expires: June 30, 1996

U.S. Department of Energy

1-4

1993 Residential Energy Consumption Survey

Household Questionnaire

TIME BEGAN:_____

INTRODUCTION TO INTERVIEW

Hello, I am _____ from Response Analysis Corporation, a social science research firm. Here is my identification. We are conducting a study for the U.S. Department of Energy about energy consumption in homes.

Although your response is voluntary, we hope you will participate in this important study of energy usage. Your name and address will be kept strictly confidential.

I have some questions I would like to ask the person who rents or owns this residence.

Did you receive the letter from the Department of Energy regarding this survey? (IF NOT, HAND A COPY OF THE LETTER TO THE RESPONDENT.)

INTERVIEWER: IF ASKED ABOUT CONFIDENTIALITY, REFER THE RESPONDENT TO THE BACK OF THE LETTER.

GO TO SECTION B ON PAGE 2.

Location #:_____ 10-15

Housing Unit #:_____ 16-17

Section A: PREINTERVIEW OBSERVATION

A-1. INTERVIEWER: CIRCLE TYPE OF BUILDING IN WHICH RESPONDENT LIVES

a. SINGLE-FAMILY DETACHED 2
b. SINGLE-FAMILY ATTACHED (TOWNHOUSE, DUPLEX, OR ROWHOUSE) 3
c. MOBILE HOME OR TRAILER . . . . . 1 --> [A-3] 18
d. HOUSE OR BUILDING WITH 2 TO 4 APARTMENT UNITS . . . . . 4 --> [A-3]
e. HOUSE OR BUILDING WITH 5 OR MORE APARTMENT UNITS . . . . . 5 --> [A-3]

INTERVIEWER: MARK FOLDOUT PAGE UNDER A-1 "HOUSING STRUCTURE."

IF SINGLE-FAMILY, RECORD

A-2. INTERVIEWER: CIRCLE STYLE OF SINGLE-FAMILY HOME OR TOWNHOUSE BASED ON GENERAL APPEARANCE FROM OUTSIDE.

a. ONE STORY 1
b. TWO STORIES 2
c. THREE STORIES 3 19
d. SPLIT-LEVEL 4
e. OTHER (SPECIFY):_____ 5

A-3. INTERVIEWER: CIRCLE ONE NUMBER BELOW TO SHOW THE KIND OF AREA THAT THIS HOUSEHOLD IS IN.

a. CITY 1
b. TOWN 2 20
c. SUBURBS 3
d. RURAL OR OPEN COUNTRY 4

Section B: HOUSING TYPE

B-1. First, I have some questions about your household so I can better understand your answers to the home energy use questions that come later. Does any other family besides your own or a person unrelated to you share this home/apartment with you?

YES 1 21
NO . . . . . 0 --> [B-3]

IF 'YES' ON B-1, ASK:

B-2. Does the additional family (or unrelated person):

a. Live and eat separately from other persons in the apartment or building?

YES 1 22
NO . . . . . 0 --> [B-3]

b. Have direct access from outside the building or through a common hall?

YES . . . . . 1 --> [BOX 1] 23
NO . . . . . 0 --> [B-3]

BOX 1

INTERVIEWER: IF THE ANSWERS IN B-2 ARE BOTH "YES", THEN THIS ADDRESS HAS SEPARATE LIVING QUARTERS. FOLLOW THESE INSTRUCTIONS:

- WRITE THE ADDRESS FOR THE SEPARATE LIVING QUARTERS ON YOUR HOUSING UNIT ADDRESS LIST.
- SEE THE SAMPLING INSTRUCTIONS IN YOUR TRAINING MANUAL TO DETERMINE WHETHER AN ADDITIONAL INTERVIEW SHOULD BE COMPLETED.

CHECK ONE OF THESE AND PROCEED AS INSTRUCTED:

___ YES, AN ADDITIONAL INTERVIEW IS REQUIRED. READ TO RESPONDENT "Please exclude the family members and the space of the separate living quarters from this interview."

___ NO, AN ADDITIONAL INTERVIEW IS NOT REQUIRED. READ TO RESPONDENT "Please include the family members and the space of the separate living quarters in this interview."

B-3. Do you or members of your household own this home or do you rent?

a. OWN/BUYING 1
b. RENT 2 24
c. OCCUPIED WITHOUT PAYMENT OF RENT 3

INTERVIEWER: MARK FOLDOUT PAGE UNDER B-3 "TENURE".

B-4. Is this home/apartment part of a condominium or cooperative?

YES, CONDOMINIUM 1
YES, COOPERATIVE 2 25
NO 0

INTERVIEWER: IF "CONDOMINIUM," MARK B-4 UNDER "CONDOMINIUM" ON FOLDOUT PAGE.

IF "RENT," OR "OCCUPIED WITHOUT PAYMENT OF RENT" ON B-3, ASK; OTHERWISE --> [B-7]:

B-5. Is this residence in a public housing project -- that is, is it owned by a housing authority?

YES . . . . . 1 --> [B-7]
NO 0 26
DON'T KNOW 6

IF "NO" OR "DON'T KNOW" ON B-5, ASK:

B-6. Is your household paying lower rent because the federal, State, or local government is paying part of the cost?

YES 1
NO 0 27
DON'T KNOW 6

INTERVIEWER: MILITARY HOUSING DOES NOT QUALIFY AS PAYING LOWER RENT FOR QUESTION B-6.

B-7. Please turn to Exhibit B-7. Approximately, in what year was this (house/building) built?

BEFORE 1940	01	1988	09	
1940-1949	02	1989	10	
1950-1959	03	1990	11	
1960-1969	04	1991	12	28-29
1970-1979	05	1992	13	
1980-1984	06	1993	14	
1985-1986	07	1994	15	
1987	08			

INTERVIEWER: IF BUILT IN 1988 OR LATER, MARK UNDER B-7 "BUILT 1988 OR LATER" ON FOLDOUT PAGE.

B-8. Did your household move into this home/apartment after December 1991?

YES	1	30
NO	0 --> [B-10]	

IF "YES" ON B-8, ASK:

B-9. In what year and month did your household move in?

YEAR

		31
1992	1	
1993	2	
1994	3	

MONTH

				32-33
JANUARY	01	JULY	07	
FEBRUARY	02	AUGUST	08	
MARCH	03	SEPTEMBER	09	
APRIL	04	OCTOBER	10	
MAY	05	NOVEMBER	11	
JUNE	06	DECEMBER	12	

INTERVIEWER: IF "1993 or 1994" MARK UNDER B-9 "YEAR MOVED IN" ON FOLDOUT PAGE.

B-10. How many of each of the following rooms does this home/apartment have? (ASK EACH ITEM AND RECORD NUMBER FOR EACH.)

INTERVIEWER: FOR ONE-ROOM EFFICIENCY OR STUDIO APARTMENT, RECORD "0 BEDROOMS" AND CORRECT NUMBER OF BATHROOMS.

a. Bedrooms? — NUMBER: ..... ☐☐ — NONE ..... 0 — 34

INTERVIEWER: **FULL BATHROOM** -- SINK WITH RUNNING WATER AND FLUSH TOILET AND BATHTUB OR SHOWER. **HALF BATHROOM** -- TOILET OR BATHTUB OR SHOWER.

b. Full bathrooms? — NUMBER: ..... ☐☐ — NONE ..... 0 — 35

c. Half bathrooms? — NUMBER: ..... ☐☐ — NONE ..... 0 — 36

d. All other rooms; do not count laundry room, foyers, or unfinished storage space. Only count porches if they are enclosed and used year-round. — NUMBER: ..... ☐☐ — NONE ..... 0 — 37

B-11. Please turn to Exhibit B-11. What is the major type of outside wall construction material for this home/apartment? IF TWO MATERIALS ARE USED, CIRCLE THE ONE USED MORE.

a. BRICK 01
b. WOOD 02
c. SIDING (ALUMINUM, VINYL, OR STEEL) 03
d. STUCCO 04
e. COMPOSITION (ASBESTOS SHINGLE, ETC.) ..... 05 — 38-39
f. STONE 06
g. CONCRETE OR CONCRETE BLOCK 07
h. GLASS 08
i. OTHER (SPECIFY):_____ 21
j. DON'T KNOW 96

B-12. Is natural gas from underground pipes available in this neighborhood?

YES	1	
NO	0	40
DON'T KNOW	6	

THIS PAGE INTENTIONALLY LEFT BLANK.

SECTION C: HOME HEATING

MAIN SPACE HEATING

C-1. Please turn to Exhibit C-1. What is the one main equipment used for heating your home?

INTERVIEWER: CIRCLE ONLY ONE UNDER C-1.

C-2. Please turn to the "Blue Card". For the main heating equipment in your home, what type of fuel or fuels does your household use with that equipment?

INTERVIEWER: ASK ABOUT MAIN HEATING FUELS EVEN IF EQUIPMENT IS NOT KNOWN.

SHADED CELLS INDICATE FUEL NOT USED IN THAT TYPE OF EQUIPMENT.

MAIN HEATING FUELS AND EQUIPMENT

C-1. MAIN EQUIPMENT 41-42	MAIN HEATING EQUIPMENT	C-2. [CIRCLE ALL THAT APPLY] ELECTRICITY	NATURAL GAS	LPG/PROPANE	FUEL OIL	KEROSENE	WOOD	COAL or COKE	SOLAR	OTHER SPECIFY:	DON'T KNOW FUEL
03	a. CENTRAL WARM-AIR FURNACE WITH DUCTS TO INDIVIDUAL ROOMS (NOT Heat Pump)	05	01	02	03	04	07	06	08	21	96
02	b. STEAM/HOT WATER SYSTEM WITH RADIATORS/CONVECTORS IN ROOM OR PIPES IN FLOOR	05	01	02	03	04	07	06	08	21	96
05	c. BUILT-IN ELECTRIC UNITS (Permanently installed in wall, ceiling, or baseboard.)	05									96
04	d. HEAT PUMP	05									96
06	e. FLOOR/WALL/PIPELESS FURNACE - NOT PORTABLE	05	01	02	03	04	07	06		21	96
07	f. ROOM HEATER (Burning Gas, Oil, or Kerosene.) - NOT PORTABLE		01	02	03	04					96
08	g. HEATING STOVE BURNING WOOD, COAL OR COKE						07	06		21	96
10	h. PORTABLE ELECTRIC HEATER(S)	05									96
11	i. PORTABLE KEROSENE HEATER(S)					04					96
09	j. FIREPLACE(S)	05	01	02			07	06		21	96
12	k. COOKING STOVE (Used to heat home as well as for cooking.)	05	01	02	03	04	07	06		21	96
21	l. EQUIPMENT NOT LISTED (SPECIFY): -->	05	01	02	03	04	07	06	08		96
96	m. DON'T KNOW EQUIPMENT	05	01	02	03	04	07	06	08	21	96
00	n. NO HEATING EQUIPMENT USED --> [D-1]										

43-48

INTERVIEWER: IF TWO FUELS ARE MARKED FOR MAIN EQUIPMENT, WRITE HERE THE FUEL THAT PROVIDES MORE HEAT:_____.

49-50

RECORD ON FOLDOUT PAGE. FOR ALL FUELS CIRCLED IN C-2, CIRCLE "1" IN "FUEL USED" COLUMN. ALSO, IF ELECTRICITY OR NATURAL GAS "FOR HOME HEATING", CIRCLE "1" FOR "YES" IN "USAGE" COLUMN.

C-3. Please turn back to Exhibit C-1. What other types of heating equipment are used in your home, including those that are used JUST occasionally?

INTERVIEWER: FOR "OTHER HEATING FUELS AND EQUIPMENT" GRID ON NEXT PAGE, CIRCLE ALL THAT APPLY UNDER C-3.

C-4. Please turn to the "Blue Card". For each type of other heating equipment that you have, I'm going to ask you what type of fuel or fuels you use with that equipment. Let's start with...?

INTERVIEWER: READ EACH TYPE OF EQUIPMENT MENTIONED IN C-3, CIRCLE TYPE OF FUEL USED. IF "NO OTHER HEATING EQUIPMENT" IS USED, CIRCLE "00" UNDER C-3 AND SKIP TO C-6.

ASK ABOUT SUPPLEMENTAL HEATING FUELS EVEN IF EQUIPMENT IS NOT KNOWN.

SHADED CELLS INDICATE FUEL NOT USED IN THAT TYPE OF EQUIPMENT.

OTHER HEATING FUELS AND EQUIPMENT

C-3.		C-4. [CIRCLE ALL THAT APPLY]										
OTHER EQUIP	OTHER HEATING EQUIPMENT	ELECTRICITY	NATURAL GAS	LPG / PROPANE	FUEL OIL	KEROSENE	WOOD	COAL or COKE	SOLAR	OTHER SPECIFY:	DONT KNOW FUEL	
00	a. NO OTHER HEATING EQUIPMENT USED --> [C-6]											61-62
03	b. CENTRAL WARM-AIR FURNACE WITH DUCTS TO INDIVIDUAL ROOMS (NOT Heat Pump)	05	01	02	03	04	07	06	08	21	96	63-70
02	c. STEAM/HOT WATER SYSTEM WITH RADIATORS/CONVECTORS IN ROOM OR PIPES IN FLOOR	05	01	02	03	04	07	06	08	21	96	71-78
05	d. BUILT-IN ELECTRIC UNITS (Permanently installed in wall, ceiling, or baseboard.)	05									96	79-82
04	e. HEAT PUMP	05									96	83-86
06	f. FLOOR/WALL/PIPELESS FURNACE - NOT PORTABLE	05	01	02	03	04	07	06		21	96	87-94
07	g. ROOM HEATER (Burning gas, oil, or Kerosene.) - NOT PORTABLE		01	02	03	04					96	95-102
08	h. HEATING STOVE BURNING WOOD, COAL OR COKE						07	06		21	96	103-110
10	i. PORTABLE ELECTRIC HEATER(S)	05									96	111-114
11	j. PORTABLE KEROSENE HEATER(S)					04					96	115-118
09	k. FIREPLACE(S)	05	01	02			07	06		21	96	119-126
12	l. COOKING STOVE (Used to heat home as well as for cooking.)	05	01	02	03	04	07	06		21	96	127-134
21	m. OTHER EQUIPMENT (SPECIFY): -->	05	01	02	03	04	07	06	08		96	135-142
96	n. DON'T KNOW EQUIPMENT	05	01	02	03	04	07	06	08	21	96	143-150

INTERVIEWER: RECORD ON FOLDOUT PAGE. FOR ALL FUELS CIRCLED IN C-4, CIRCLE "1" IN "FUEL USED" COLUMN. IF ELECTRICITY OR NATURAL GAS, ALSO CIRCLE "1" FOR "YES" "FOR HOME HEATING" IN "USAGE" COLUMN.

IF OTHER HEATING EQUIPMENT USED, ASK: OTHERWISE --> [C-6]:

C-5. Going back to your main heating equipment - (EQUIPMENT FROM C-1). Does this equipment provide all or almost all of the heat for your home, about three-fourths, or closer to half of the heat for your home?

ALL OR ALMOST ALL (MORE THAN 95%)	1
ABOUT THREE-FOURTHS (67%-94%)	2
CLOSER TO HALF (66% OR LESS)	3
DON'T KNOW	6

195

IF "SOLAR HEATING" ON C-2 OR C-4, ASK; OTHERWISE --> [C-7]:

C-6. Does your solar heating system REQUIRE pumps or fans (other than ceiling fans) to circulate warm air or hot fluids between solar collectors and the rooms they heat?

YES	1
NO	0
DON'T KNOW	6

196

HOME TEMPERATURES

C-7. At what temperature does your household usually keep your home in the winter?

a. During the day, when someone is at home?

DEGREES FAHRENHEIT: ..... ☐ 205-6
HEAT TURNED OFF 95

b. During the day, when no one is at home?

DEGREES FAHRENHEIT: ..... ☐ 207-8
HEAT TURNED OFF 95

c. During sleeping hours?

DEGREES FAHRENHEIT: ..... ☐ 209-10
HEAT TURNED OFF 95

INTERVIEWER: IF RESPONDENT KEEPS DIFFERENT PARTS OF THE HOUSE AT DIFFERENT TEMPERATURES, WE WANT THE TEMPERATURE IN THE PART OF THE HOUSE WHERE THE PEOPLE ARE. IF, FOR EXAMPLE, THE HEAT IS TURNED OFF UPSTAIRS DURING THE DAY BECAUSE THE FAMILY IS DOWNSTAIRS, WE WANT THE DOWNSTAIRS TEMPERATURE.

IF THE RESPONDENT DOESN'T KNOW THE TEMPERATURE, BUT KNOWS THERMOSTAT SETTING, RECORD THERMOSTAT SETTING. OTHERWISE, PROBE FOR BEST ESTIMATE.

C-8. Please look at Exhibit C-8. For your main heating equipment, can you use a thermostat to adjust the temperature in your home during the heating season?

YES 1
NO 0 211
DON'T KNOW 6

INTERVIEWER: IF NEEDED, PLEASE READ "A thermostat automatically responds to temperature changes and turns the heat on/off until the desired temperature is reached."

C-9. Please turn to the "Yellow Card". Approximately, how old is your household's main heating equipment?

LESS THAN 2 YEARS OLD	1	
2 - 4 YEARS OLD	2	
5 - 9 YEARS OLD	3 --> [C-16]	
10 - 19 YEARS OLD	4 --> [C-16]	212
20 YEARS OR OLDER	5 --> [C-16]	
DON'T KNOW	6 --> [C-16]	

IF MAIN HEATING EQUIPMENT LESS THAN 5 YEARS OLD, ASK; OTHERWISE --> [C-16]

C-10. Since January 1, 1990, has your household purchased a <u>new</u> main heating system either to replace an older system or as part of the purchase of a new home?

YES, PURCHASED REPLACEMENT	1 --> [C-12]	
YES, CAME WITH HOME PURCHASE	2	213
NO	0 --> [C-16]	

IF "CAME WITH HOME PURCHASE" ON C-10, ASK:

C-11. Did your household select the system or did the system come standard with the newly purchased home?

HOUSEHOLD SELECTED	1 --> [C-15]	214
STANDARD WITH NEW HOME	0 --> [C-16]	

C-12. How well was the older equipment working when your household replaced it? Was it working very well, well, not well, or not working at all?

VERY WELL	1	
WELL	2	
NOT WELL	3	215
NOT WORKING AT ALL	4	
DID NOT HAVE HEATING SYSTEM BEFORE/ WAS NOT REPLACED	5 --> [C-15]	
DON'T KNOW	6	

C-13. Does the new heating system use the same fuel as the heating equipment it replaced?

YES 1
NO 0 *216*
DON'T KNOW 6

C-14. How do you like your new heating system compared to the old one? Do you like it better than the old, the same, or did you like the old equipment better?

LIKE IT BETTER THAN OLD 1
LIKE IT SAME AS OLD 2 *217*
LIKED OLD EQUIPMENT BETTER 3
DON'T KNOW 6

C-15. Thinking back to why your household decided to purchase this new heating system. Please tell me, for each of the following reasons, whether it was very important, somewhat important, or not important to your decision.

	VERY IMPORTANT	SOMEWHAT IMPORTANT	NOT IMPORTANT	DON'T KNOW	
a. Purchase Price . . . . . a.	1	2	3	6	*218*
b. Reputation of Manufacturer . . . . . b.	1	2	3	6	*219*
c. Energy Efficiency . . . . . c.	1	2	3	6	*220*
d. Rebate or Availability of Low-Interest Financing . . . . . d.	1	2	3	6	*221*

INTERVIEWER: ASK EVERYONE C-16.

C-16. Does the main system for heating your home also heat one or more other apartments, condos, households, businesses, or farm buildings?

YES 1
NO, HEATING EQUIPMENT IS FOR RESPONDENT'S HOME ONLY 0 *222*
DON'T KNOW 6

Section D. AIR CONDITIONING

D-1. Does your household have air-conditioning equipment (either a central system with, or without a heat pump, or wall, or window units?) CIRCLE ALL THAT APPLY.

YES, CENTRAL SYSTEM WITH A HEAT PUMP	1	232
YES, CENTRAL SYSTEM WITHOUT A HEAT PUMP	2	233
YES, INDIVIDUAL (WINDOW/WALL) UNITS	3	234
NO	0 --> [E-1]	235

INTERVIEWER: RECORD ON FOLDOUT PAGE.

CIRCLE ON THE FOLDOUT PAGE UNDER ELECTRICITY "FOR AIR-CONDITIONING", CIRCLE "1" FOR "YES" UNDER "USAGE" COLUMN IF INDIVIDUAL "WINDOW OR WALL UNITS."

D-2. Last summer did your household's air-conditioning (central or window/wall units) cool your entire house or some of the rooms?

ENTIRE HOUSE OR APARTMENT	1 --> [D-4]	
SOME OF THE ROOMS	2	236
DID NOT LIVE HERE LAST SUMMER	3 --> [D-4]	
NO ROOMS COOLED	0 --> [D-4]	

IF "SOME OF THE ROOMS" ON D-2, ASK:

D-3. How many rooms were cooled by your household's air-conditioning last summer?

NUMBER OF ROOMS: ☐ 237-8

CENTRAL AIR-CONDITIONING

INTERVIEWER: IF "CENTRAL SYSTEM" ON D-1, ASK. OTHERWISE SKIP TO BOX 2, PAGE 20.

D-4. Please turn to Exhibit D-4. Which statement on this exhibit best describes the way your household used the central air-conditioner(s) last summer?

DID NOT USE AT ALL	0	
TURNED ON ONLY A FEW DAYS OR NIGHTS WHEN REALLY NEEDED	1	
TURNED ON QUITE A BIT	2	239
TURNED ON JUST ABOUT ALL SUMMER	3	
NOT HERE LAST SUMMER	4	
OTHER (SPECIFY):_____	5	

D-5. Does your household's central air-conditioner run on electricity or is it one of the few that uses natural gas or bottled gas? (DO NOT COUNT FREON AS GAS)

ELECTRICITY	05	
NATURAL GAS (GAS FROM UNDERGROUND PIPES)	01	240-41
BOTTLED GAS (LPG OR PROPANE)	02	
DON'T KNOW	96	

INTERVIEWER: CHECK FOLDOUT PAGE. CIRCLE "FUEL USED" COLUMN IF FUEL NOT ALREADY MARKED.

ALSO, IF ELECTRICITY, "FOR AIR CONDITIONING," CIRCLE "1" FOR "YES" UNDER THE "USAGE" COLUMN.

IF NATURAL GAS, "FOR OTHER" APPLIANCES CIRCLE "1" FOR "YES" UNDER THE "USAGE" COLUMN.

D-6. Does your household's central air-conditioning equipment that cools your home also cool other apartments, condos, houses, businesses, or farm buildings?

NO, A/C IS FOR RESPONDENT'S HOME ONLY	0		
YES, A/C COOLS ONE OR MORE OTHER APARTMENTS, HOUSES, OR BUSINESSES	1	--> [BOX 2]	242
DON'T KNOW	6	--> [BOX 2: PAGE 20]	

IF "NO, A/C IS FOR RESIDENTS HOME ONLY" ON D-6, ASK:

D-7. Please look at the "Yellow Card". How old is your household's central air-conditioning equipment?

LESS THAN 2 YEARS OLD	1	
2 - 4 YEARS OLD	2	
5 - 9 YEARS OLD	3 --> [BOX 2]	
10 - 19 YEARS OLD	4 --> [BOX 2]	243
20 YEARS OR OLDER	5 --> [BOX 2]	
DON'T KNOW	6 --> [BOX 2]	

D-8. Since January 1, 1990, has your household purchased <u>new</u> central air-conditioning equipment for this home or acquired new central air-conditioning as part of the purchase of a new home?

YES, PURCHASED FOR EXISTING HOME	1 --> [D-10]	
YES, CAME WITH HOME PURCHASE	2	244
NO	0 --> [BOX 2]	
DON'T KNOW	6 --> [BOX 2]	

IF "CAME WITH HOME PURCHASE" ON D-8, ASK:

D-9. Did your household select the model or did the model come standard with the new home?

HOUSEHOLD SELECTED	1 --> [D-12]	
STANDARD WITH NEW HOME	0 --> [BOX 2]	245
DON'T KNOW	6 --> [BOX 2]	

IF "PURCHASED FOR EXISTING HOME" ON D-8, ASK:

D-10. Did the new central air-conditioning equipment replace another central air-conditioner, replace a window/wall air conditioner, add to the existing equipment in your home, or did your household have no air-conditioning equipment before this purchase?

REPLACED CENTRAL UNIT	1	
REPLACED WINDOW/WALL UNIT	2	
ADDITIONAL EQUIPMENT	3 --> [D-12]	246
NO EQUIPMENT BEFORE	4 --> [D-12]	
DON'T KNOW	6 --> [D-12]	

D-11. How well was the old air-conditioner working when you replaced it? Very well, well, not well, or not working at all?

VERY WELL 1
WELL 2
NOT WELL 3 247
NOT WORKING AT ALL 4
DON'T KNOW 6

D-12. Thinking back to why your household decided to purchase this new air-conditioner. Please tell me, for each of the following reasons, whether it was very important, somewhat important, or not important to your decision.

	VERY IMPORTANT	SOMEWHAT IMPORTANT	NOT IMPORTANT	DON'T KNOW	
a. Purchase Price . . . . . a.	1	2	3	6	248
b. Reputation of Manufacturer . . b.	1	2	3	6	249
c. Energy Efficiency . . . . . c.	1	2	3	6	250
d. Rebate or Availability of Low-Interest Financing . . . . . d.	1	2	3	6	251

WINDOW/WALL AIR-CONDITIONING

BOX 2

INTERVIEWER: IF "INDIVIDUAL WINDOW/WALL UNITS" ON D-1, ASK. OTHERWISE SKIP TO E-1, PAGE 21.

D-13. How many window or wall air-conditioning units does your household have?

NUMBER OF WINDOW/WALL UNITS: ..... ☐ 252-3

D-14. (Is the window/wall air conditioner a heat pump?) How many of the window/wall air-conditioners are heat pumps?

NO/NONE	0	
YES/ONE	1	
TWO	2	254
THREE OR MORE	3	
DON'T KNOW	6	

D-15. Please turn to the "Yellow Card". About how old is your household's **MOST-USED** unit? "Most-Used" is the unit that is used more often than any other unit.

LESS THAN 2 YEARS	1	
2 - 4 YEARS	2	
5 - 9 YEARS	3	
10 - 19 YEARS	4	255
20 YEARS OR OLDER	5	
DON'T KNOW	6	

D-16. Please look at Exhibit D-16. Which statement <u>best</u> describes the way your household used the (most used) wall or window unit air conditioner(s) last summer?

DID NOT USE AT ALL	0	
TURNED ON ONLY A FEW DAYS OR NIGHTS WHEN REALLY NEEDED	1	
TURNED ON QUITE A BIT	2	256
TURNED ON JUST ABOUT ALL SUMMER	3	
DID NOT LIVE HERE LAST SUMMER	4	
OTHER (SPECIFY):_____	5	

Section E. WATER HEATING

E-1. Please turn to the "Blue Card". Which fuel is used most for heating water for washing or bathing? CIRCLE ONLY ONE.

ELECTRICITY	05	
NATURAL GAS (GAS FROM UNDERGROUND PIPES)	01	
BOTTLED GAS (LPG OR PROPANE)	02	
FUEL OIL	03	
KEROSENE OR COAL OIL	04	266-67
COAL OR COKE	06	
WOOD	07	
SOLAR	08	
OTHER (SPECIFY):_____	21	
DON'T KNOW	96	
NO WATER HEATING DONE FOR WASHING/BATHING	00 --> [F-1]	

INTERVIEWER: CHECK FOLDOUT PAGE. CIRCLE "1" UNDER "FUEL USED" IF FUEL NOT ALREADY MARKED.

ALSO, IF ELECTRICITY OR NATURAL GAS, "FOR HOT WATER" CIRCLE "1" FOR "YES" UNDER "USAGE" COLUMN.

E-2. Does the main equipment for heating water for your home also heat water for other apartments, condos, houses, businesses, or farm buildings?

NO, HOT WATER EQUIPMENT IS FOR RESPONDENT'S HOME ONLY	0	
YES	1 --> [E-9]	268
DON'T KNOW	6 --> [E-9]	

IF "NO, HOT WATER EQUIPMENT IS FOR RESPONDENT'S HOME ONLY" ON E-2, ASK:

E-3. Please turn to Exhibit E-3. How large is your household's main water heater tank?

SMALL (30 GALLONS OR LESS)	1	
MEDIUM (31 TO 49 GALLONS)	2	269
LARGE (50 GALLONS OR MORE)	3	
DON'T KNOW	6	

E-4. Please look at the "Yellow Card". Approximately how old is your household's main water heater? (INTERVIEWER: PROBE FOR BEST GUESS.)

LESS THAN 2 YEARS	1	
2 - 4 YEARS	2	
5 - 9 YEARS	3 --> [E-9]	
10 - 19 YEARS	4 --> [E-9]	270-71
20 YEARS OR MORE	5 --> [E-9]	
DON'T KNOW	6 --> [E-9]	
NO SEPARATE WATER HEATER	0 --> [E-9]	

E-5. Since January 1, 1990, has your household purchased a <u>new</u> main water heater either to replace an older one or as part of the purchase of a new home?

YES, PURCHASED REPLACEMENT	1 --> [E-7]	
YES, CAME WITH HOME PURCHASE	2	272
NO	0 --> [E-9]	
DON'T KNOW	6 --> [E-9]	

IF "CAME WITH HOME PURCHASE" ON E-5, ASK:

E-6. Did your household select the model or did the model come standard with the new home?

HOUSEHOLD SELECTED	1 --> [E-8]	
STANDARD WITH NEW HOME	0 --> [E-9]	273
DON'T KNOW	6 --> [E-9]	

IF "PURCHASED REPLACEMENT" ON E-5, ASK:

E-7. Does the new water heater use the same fuel as the equipment it replaced?

YES	1	
NO	0	274
DON'T KNOW	6	

E-8. Think back to why your household decided to purchase this new water heater. Please tell me, for each of the following reasons, whether it was very important, somewhat important, or not important to your decision.

	VERY IMPORTANT	SOMEWHAT IMPORTANT	NOT IMPORTANT	DON'T KNOW	
a. Purchase Price ..... a.	1	2	3	6	275
b. Immediate Availability ..... b.	1	2	3	6	276
c. Energy Efficiency ..... c.	1	2	3	6	277
d. Rebate or Availability of Low-Interest Financing ..... d.	1	2	3	6	278

E-9. Please turn to Exhibit E-9. The following questions will help us learn about your household's hot water usage. How many baths or showers are taken in the household in a week? Please be sure to count all the times a bath or shower is used by anyone in the house.

9 OR FEWER A WEEK 1
10 - 20 A WEEK 2 279
21 OR MORE A WEEK 3
DON'T KNOW 6

E-10. In addition to (FUEL FROM E-1), does your household use any other fuel for heating water for washing or bathing?

YES 1 280
NO ..... 0 --> [F-1]

E-11. Please turn to the "Blue Card." What is this additional water heating fuel?

ELECTRICITY	05
NATURAL GAS (GAS FROM UNDERGROUND PIPES)	01
BOTTLED GAS (LPG OR PROPANE)	02
FUEL OIL	03
KEROSENE OR COAL OIL	04
COAL OR COKE	06
WOOD	07
SOLAR	08
OTHER (SPECIFY): _____	21
DON'T KNOW	96

281-82

INTERVIEWER: CHECK FOLDOUT PAGE. CIRCLE "1" FOR "FUEL USED" IF FUEL NOT ALREADY CIRCLED.

ALSO, IF ELECTRICITY OR NATURAL GAS USED "FOR HOT WATER", CIRCLE "1" FOR "YES" UNDER THE "USAGE" COLUMN ON THE FOLDOUT PAGE.

Section F. LIGHTS

INDOOR LIGHTS

F-1. Please turn to Exhibit F-1. Thinking of a typical November weekday, please tell me the number of indoor lights your household has turned on for each of the following time periods.

	F-1. NUMBER OF LIGHTS	F-2. NUMBER OF FLUORESCENT LIGHTS	
a. More than 12 hours per day	NONE 00	NONE 00	293-96
b. Between 4 hours and 12 hours per day	NONE 00	NONE 00	297-300
c. Between 1 hour and 4 hours per day	NONE 00	NONE 00	301-04

FOR EACH ANSWER OF 1 LIGHT OR MORE IN "a" THROUGH "c" IN F-1 ABOVE, ASK F-2:

F-2. Of the (NUMBER) indoor lights on (HOURS), how many are fluorescent?

OUTDOOR LIGHTS

F-3. **Please turn to Exhibit F-3. Thinking about a typical November weekday, please indicate all the statements that describe the outdoor lights used by your household.**

	YES	NO	
a. NO OUTDOOR LIGHTS OR RARELY USED	1	0	*305*
b. OUTDOOR LIGHTS TURNED ON DURING THE EVENING, BUT TURNED OFF BEFORE BEDTIME	1	0	*306*
c. OUTDOOR LIGHTS LEFT ON ALL NIGHT	1	0	*307*
d. OUTDOOR LIGHTS WITH A TIMER, MOTION SENSOR, OR PHOTOSENSOR	1	0	*308*
e. OUTDOOR GAS LIGHT	1	0	*309*
f. HIGH INTENSITY DISCHARGE (HID) OUTDOOR LIGHTS, SUCH AS METAL HALIDE OR HIGH PRESSURE SODIUM LIGHTS	1	0	*310*
g. TOTAL WATTAGE OF ALL OUTDOOR LIGHTS IS LESS THAN 150 WATTS	1	0	*311*
h. DON'T KNOW	1	0	*312*

INTERVIEWER: RECORD ON FOLDOUT PAGE. IF GAS OUTDOOR LIGHT, CIRCLE "1" FOR "YES" ON THE "USAGE" COLUMN UNDER NATURAL GAS "FOR OTHER APPLIANCES."

Section G. APPLIANCES

COOKING

G-1. Turn to the "Blue Card". What fuel is used most for cooking in your home/apartment?

ELECTRICITY	05	
NATURAL GAS (GAS FROM UNDERGROUND PIPES)	01	
BOTTLED GAS (LPG OR PROPANE)	02	
FUEL OIL	03	
KEROSENE OR COAL OIL	04	*331-32*
COAL OR COKE	06	
WOOD	07	
SOLAR	08	
OTHER (SPECIFY): _____	21	
DON'T KNOW	96	
NO COOKING DONE	00 --> [G-6]	

INTERVIEWER: CHECK FOLDOUT PAGE. CIRCLE "1" FOR "FUEL USED" IF FUEL NOT ALREADY CIRCLED.

ALSO, IF ELECTRICITY OR NATURAL GAS, "FOR COOKING" CIRCLE "1" FOR "YES" UNDER THE "USAGE" COLUMN.

G-2. Please turn to Exhibit G-2. Which of these categories best describes, on average, how often hot meals are usually cooked in your home?

a.	2 OR MORE TIMES A DAY	1
b.	ONCE A DAY	2
c.	A FEW TIMES PER WEEK	3 *333*
d.	ABOUT ONCE A WEEK	4
e.	LESS THAN ONCE A WEEK	5
f.	DON'T KNOW	6

G-3. Please turn to Exhibit G-3. Which of the following equipment is used for cooking in your home/apartment?

G-3. COOKING EQUIPMENT USED	YES	NO	G-4. TYPE OF FUEL USED		
a. Stovetop or Burners (DO NOT INCLUDE GAS GRILLS) 334	1	0	Electricity	5	335-36
			Natural Gas	1	
			Bottled Gas (LPG or Propane) . .	2	
			Other	8	
b. Oven (NOT MICROWAVE OR TOASTER OVEN) 339	1	0	Electricity	5	340-41
			Natural Gas	1	
			Bottled Gas (LPG or Propane) . .	2	
			Other	8	
c. Toaster Oven 344	1	0			
d. Outdoor Gas Grill 345	1	0	Natural Gas	1	346
			Bottled Gas (LPG or Propane) . .	2	
e. Microwave Oven 348	1	0			

INTERVIEWER: FOR STANDARD COMBINATION UNITS, OVEN AND STOVETOP, RECORD BOTH AS "YES".

FOR EACH "YES" ON G-3, ASK:

G-4. Which fuel is used for (COOKING EQUIPMENT)?

INTERVIEWER: CHECK FOLDOUT PAGE. CIRCLE "1" FOR "FUEL USED" IF FUELS NOT ALREADY CIRCLED.

DO NOT MARK BOTTLED GAS (LPG OR PROPANE) IF ONLY USE OF BOTTLED GAS (LPG OR PROPANE) IS FOR AN OUTDOOR GRILL.

ALSO, IF ELECTRICITY OR NATURAL GAS "FOR COOKING" CIRCLE "1" FOR "YES" UNDER THE "USAGE" COLUMN.

IF MICROWAVE USED, ASK:

G-5. Please turn to Exhibit G-5. How much of your food is cooked in the microwave?

a. MOST OR ALL 1
b. ABOUT HALF 2
c. SOME OR VERY LITTLE ..... 3 — 349
d. USED ONLY FOR SNACKS, DEFROSTING OR REHEATING FOOD 4
e. DON'T KNOW 6

REFRIGERATORS AND FREEZERS

G-6. How many refrigerators in your home are used either regularly or occasionally?

ONE	1	
TWO	2	350
THREE OR MORE	3	
NONE	0	

INTERVIEWER: CIRCLE COLUMNS A AND B ON PAGE 31 IF TWO OR MORE REFRIGERATORS.

CIRCLE ONLY COLUMN A ON GRID IF ONE REFRIGERATOR.

G-7. Does your household use a separate freezer that is not part of the refrigerator?

YES	1	351
NO	0 --> [BOX 3]	

INTERVIEWER: CIRCLE COLUMN C ON GRID IF "YES"

IF "YES" ON G-7, ASK:

G-8. How many freezers in your home are used either regularly or occasionally?

ONE	1 --> [BOX 3]	
TWO	2 --> [BOX 3]	352
THREE OR MORE	3 --> [BOX 3]	

BOX 3

IF ONLY ONE REFRIGERATOR, ASK COLUMN A

IF MORE THAN ONE REFRIGERATOR, ASK COLUMNS A AND B
READ FOR COLUMN "A": "Let's start with the refrigerator used most often."

READ FOR COLUMN "B": "Next I'd like to ask the same questions for the second most used refrigerator."

IF MORE THAN ONE FREEZER, ASK ABOUT THE LARGEST ONE.

IF NO REFRIGERATOR OR FREEZER, SKIP TO G-22.

ASK ALL FOR COLUMN "A" BEFORE GOING ON TO COLUMN "B" OR "C"

	COLUMN: A (Most Used) Refrigerator	B Second Most Used Refrigerator	C (Largest) Freezer
G-9. Please look at the top of Exhibit G-9. How old is your household's (COLUMN A, B or C)?	*353*	*358*	*363*
a. LESS THAN 2 YEARS OLD	1	1	1
b. 2-4 YEARS OLD	2	2	2
c. 5-9 YEARS OLD	3	3	3
d. 10-19 YEARS OLD	4	4	4
e. 20 YEARS OLD OR MORE	5	5	5
f. DON'T KNOW	6	6	6
G-10. Please look at the bottom of Exhibit G-9. What is the size of your household's (COLUMN A, B, or C)?	*354*	*359*	*364*
a. VERY SMALL (10 CUBIC FEET OR LESS)	1	1	1
b. SMALL (11-14 CUBIC FEET)	2	2	2
c. MEDIUM (15-18 CUBIC FEET)	3	3	3
d. LARGE (19-22 CUBIC FEET)	4	4	4
e. VERY LARGE (23+ CUBIC FEET)	5	5	5
f. DON'T KNOW	6	6	6
G-11. Please turn to Exhibit G-11. What type is your household's (COLUMN A or B)?	*355*	*360*	
a. HALF-SIZE OR QUARTER	1	1	
b. REGULAR WITH SINGLE DOOR	2	2	
c. TWO DOORS - TOP AND BOTTOM	3	3	
d. TWO DOORS - SIDE BY SIDE	4	4	
e. OTHER (SPECIFY:)_____	5	5	
f. DON'T KNOW	6	6	
G-12. What type of defrosting does your household's (COLUMN A, B, or C) have, manual or frost-free?	*356*	*361*	*365*
a. MANUAL DEFROST	1	1	1
b. FROST-FREE (AUTOMATIC OR SEMI-AUTOMATIC DEFROST)	2	2	2
c. NO WORKING FREEZER SECTION (VOLUNTEERED)	3	3	
d. DON'T KNOW	6	6	6

CONTINUE ON NEXT PAGE

COLUMN:	A (Most Used) Refrigerator	B Second Most Used Refrigerator	C (Largest) Freezer
G-13. Does your household's most-used refrigerator have a through-the-door ice service? (COLUMN A only)	367		
YES ..... a.	1		
NO ..... b.	0		
G-14. How many months in 1993 was the second most used refrigerator turned on? (COLUMN B only)		368	
a. 1-3 Months ..... a.		1	
b. 4-6 Months ..... b.		2	
c. 7-9 Months ..... c.		3	
d. 10-12 Months ..... d.		4	
G-15. Is the freezer an upright or chest model? (COLUMN C only).			369
a. AN UPRIGHT (VERTICAL CABINET WITH DOOR ON FRONT) ..... a.			1
b. A CHEST-TYPE (HORIZONTAL CABINET WITH DOOR ON TOP) ..... b.			2

G-16. Since January 1, 1990, has your household purchased a <u>new</u> refrigerator to replace an older one, or as part of the purchase of a new home?

YES, PURCHASED REPLACEMENT	1 --> [G-18]	370
YES, CAME WITH HOME PURCHASE	2	371
NO	0 --> [G-22]	372

IF "YES, CAME WITH HOME PURCHASE" IN G-16, ASK:

G-17. Did your household select the model or did the model come standard with the newly purchased home?

HOUSEHOLD SELECTED	1 --> [G-18]	373
STANDARD WITH NEW HOME	0 --> [G-22]	

IF "YES, PURCHASED REPLACEMENT" ON G-16, ASK:

G-18. Was the new refrigerator a replacement for your household's most-used refrigerator?

YES 1
NO . . . . . 0 --> [G-21] 374
DON'T KNOW 6

G-19. What did your household do with the old refrigerator?

USE AS SECOND REFRIGERATOR 1
SOLD, GAVE AWAY, OR DONATED TO CHARITY FOR FURTHER USE 2 375
DISCARDED WITHOUT FURTHER USE 3
OTHER (SPECIFY):_____ . . . 5
DON'T KNOW 6

G-20. How well was the old refrigerator working when your household bought the new one? Very well, well, not well, or not working at all.

VERY WELL 1
WELL 2
NOT WELL 3 376
NOT WORKING AT ALL 4
DON'T KNOW 6

G-21. Think back to why your household decided to purchase your new refrigerator. Please tell me, for each of the following reasons, whether it was very important, somewhat important, or not important to your decision.

	VERY IMPORTANT	SOMEWHAT IMPORTANT	NOT IMPORTANT	DON'T KNOW	
a. Purchase Price . . . . . a.	1	2	3	6	377
b. Size . . . . . b.	1	2	3	6	378
c. Energy Efficiency . . . . . c.	1	2	3	6	379
d. Availability . . . . . d.	1	2	3	6	380

WASHER AND DRYER

G-22. Does your household **use** a clothes washer in your home/apartment?

YES	1	381
NO	0 --> [G-24]	

INTERVIEWER: DO NOT INCLUDE COMMUNITY WASHERS AND DRYERS THAT ARE LOCATED IN THE BASEMENT OR LAUNDRY ROOM OF APARTMENT BUILDING.

IF "YES" ON G-22, ASK:

G-23. Please look at Exhibit G-23. How many loads of laundry are washed in your household's clothes washer in an average week?

1 TO 5 LOADS	1	
6 TO 10 LOADS	2	
11 TO 15 LOADS	3	382
16 OR MORE LOADS	4	
DON'T KNOW	6	

G-24. Does your household **use** an electric or gas clothes dryer in your home/apartment?

a.	ELECTRIC CLOTHES DRYER	1	383
b.	NATURAL GAS CLOTHES DRYER	2	384
c.	BOTTLED GAS CLOTHES DRYER	3	385
d.	NONE USED	0	386

INTERVIEWER: CHECK FOLDOUT PAGE. CIRCLE "1" FOR APPROPRIATE "FUEL USED" IF NOT ALREADY CIRCLED.

ALSO, IF NATURAL GAS DRYER, "FOR OTHER APPLIANCES" CIRCLE "1" FOR "YES" UNDER "USAGE" COLUMN.

DISHWASHER

G-25. Does your household **use** an automatic dishwasher?

YES 1 397
NO . . . . . 0 --> [G-27]

IF "YES" ON G-25, ASK:

G-26. Please turn to Exhibit G-26. How often does your household **use** the dishwasher in an average week?

A FEW TIMES A WEEK (1 - 3) 1
SEVERAL TIMES A WEEK (4 - 6) 2
EVERY DAY OF THE WEEK (7) 3 398
MORE THAN EVERY DAY (8+) 4
DON'T KNOW 6

TV

G-27. How many color television sets does your household **use**?

COLOR TV SETS . . . . . NUMBER: ☐ 399

G-28. How many black and white television sets does your household **use**?

BLACK AND WHITE TV SETS . . . . . NUMBER: ☐ 400

WATERBEDS

G-29. Does your household **use** any waterbed heaters?

YES 1 401
NO . . . . . 0 --> [G-32]

IF "YES" ON G-29, ASK:

G-30. How many waterbed heaters does your household use?

ONE	1	
TWO	2	392
THREE OR MORE	3	

G-31. How many of these waterbed heaters are used all year long?

NONE	0	
ONE	1	393
TWO	2	
THREE OR MORE	3	

OTHER APPLIANCES

G-32. Please turn to Exhibit G-32. Please tell me which of the appliances on the Exhibit are used in your home/apartment? (CIRCLE ALL THAT APPLY.)

	YES	NO	
a. HEATED AQUARIUM (20 GALLONS OR LARGER)	1	0	394
b. ELECTRIC DEHUMIDIFIER	1	0	395
c. ELECTRIC HUMIDIFIER	1	0	396
d. ELECTRIC PUMP FOR WELL WATER	1	0	397
e. EXHAUST FAN (INCLUDE BATHROOM, KITCHEN OR BASEMENT EXHAUST FANS)	1	0	398
f. AIR CLEANER (PORTABLE FLOOR OR FURNACE MODEL)	1	0	399
g. EVAPORATIVE COOLER (SWAMP COOLER)	1	0	400
h. PERSONAL COMPUTER	1	0	401
i. LASER PRINTER FOR COMPUTER (NOT DOT MATRIX)	1	0	402
j. FACSIMILE MACHINE (FAX)	1	0	403
k. PHOTOCOPIER (SEPARATE FROM FACSIMILE MACHINE)	1	0	404

POOLS AND HOT TUBS

INTERVIEWER: CHECK A-1 "HOUSING STRUCTURE" ON FOLDOUT PAGE. IF SINGLE FAMILY OR MOBILE HOME, ASK THE FOLLOWING QUESTIONS; OTHERWISE, SKIP TO H-1 ON PAGE 38.

G-33. Does your home have its own swimming pool with a filtering system?

YES	1	405
NO	0 --> [G-36]	

IF "YES" ON G-33, ASK:

G-34. Is it a heated pool?

YES, HEATED	1	406
NO	0 --> [G-36]	

IF "YES" ON G-34, ASK:

G-35. Please turn to the "Blue Card" and tell me what fuel is used **most often** to heat the pool water? (IF MORE THAN ONE FUEL USED, CHECK FUEL USED MOST OFTEN.)

ELECTRICITY	05	
NATURAL GAS (UNDERGROUND PIPES)	01	
BOTTLED GAS (LPG OR PROPANE GAS)	02	
FUEL OIL	03	
KEROSENE OR COAL OIL	04	407-08
COAL OR COKE	06	
WOOD	07	
SOLAR	08	
OTHER (SPECIFY):_____	21	
DON'T KNOW	96	

INTERVIEWER: CHECK FOLDOUT PAGE. CIRCLE "1" FOR "FUEL USED" IF NOT ALREADY CIRCLED.

ALSO, IF NATURAL GAS, "FOR OTHER APPLIANCES" CIRCLE "1" FOR "YES" UNDER "USAGE" COLUMN.

G-36. Does your home have a heated hot tub, spa, or jacuzzi, other than a bathtub?

YES	1	409
NO	0 --> [H-1]	

INTERVIEWER: IF AFTER EACH USE, THE WATER DRAINS OUT, CIRCLE "NO" FOR G-36 AND SKIP TO H-1.

IF "YES" ON G-36, ASK:

G-37. Please turn to the "Blue Card". Which fuel is used to heat the water in your hot tub, spa, or jacuzzi? (IF MORE THAN ONE FUEL USED, CIRCLE FUEL USED MOST OFTEN)

ELECTRICITY	05	
NATURAL GAS (GAS FROM UNDERGROUND PIPES)	01	
BOTTLED GAS (LPG OR PROPANE GAS)	02	
FUEL OIL	03	
KEROSENE OR COAL OIL	04	410-11
COAL OR COKE	06	
WOOD	07	
SOLAR	08	
OTHER (SPECIFY):_____	21	
DON'T KNOW	96	

INTERVIEWER: CHECK FOLDOUT PAGE. CIRCLE "1" FOR "FUEL USED" IF NOT ALREADY CIRCLED.

ALSO, IF NATURAL GAS, "FOR OTHER APPLIANCES" CIRCLE "1" FOR "YES" UNDER "USAGE" COLUMN.

Section H. CONSERVATION MEASURES AND USAGE

INSULATION

H-1. Overall, would you say that this home/apartment is well insulated, adequately insulated, or poorly insulated? Insulation includes window caulking or weather stripping.

WELL INSULATED	1	
ADEQUATELY INSULATED	2	
POORLY INSULATED	3	412
NO INSULATION (VOLUNTEERED)	4	
DON'T KNOW	6	

INTERVIEWER: CHECK A-1 "HOUSING STRUCTURE" ON THE FOLDOUT PAGE. IF SINGLE-FAMILY HOME OR MOBILE HOME, ASK H-2, OTHERWISE SKIP TO H-3.

H-2. Does your home have any of the following insulation?

	YES	NO	DON'T KNOW	
a. Roof or Ceiling Insulation	1	0	6	413
b. Insulation in Outside Walls	1	0	6	414
c. Insulation (Blanket) Around the Hot Water Heater	1	0	6	415
d. Insulation Around Hot Water Pipes	1	0	6	416
e. Insulation Around Heating and/or Cooling Ducts	1	0	6	417
f. Weather Stripping Around Any Windows or Doors to the Outside	1	0	6	418
g. Caulking	1	0	6	419

INTERVIEWER: ASK EVERYONE

H-3. Does your home have any of the following?

	YES	NO	DON'T KNOW	
a. Automatic Set-back or Clock Thermostat	1	0	6	*420*
b. Regular Maintenance of Heating System/ Furnace	1	0	6	*421*
c. Large Tree(s) That Shade Your House or Apartment from the Afternoon Summer Sun	1	0	6	*422*

NEW TECHNOLOGIES

H-4. Please turn to Exhibit H-4. There are new products designed to save energy. They are just becoming available and most people may not have heard about them yet. Have you heard of any of the following:

NEW PRODUCTS	H-4. Have Heard		H-5. Used In Home			
	YES	NO	YES	NO	DK	
a. Low-E Window Glass ..... a.	1	0	1	0	6	423-24
b. Instantaneous (or Point-of-Use) Water Heater ..... b.	1	0	1	0	6	425-26
c. Ground-Source Heat Pump ..... c.	1	0	1	0	6	427-28
d. Water-Source Heat Pump ..... d.	1	0	1	0	6	429-30
e. Thermal Storage ..... e.	1	0	1	0	6	431-32
f. Heat Pump Water Heater ..... f.	1	0	1	0	6	433-34
g. "Combo Heater" Gas-Fired Water Heater with Heat Exchanger for Space Heating .... g.	1	0	1	0	6	435-36
h. Halogen Light Bulbs ..... h.	1	0	1	0	6	437-38
i. Compact Fluorescent Light Bulbs ..... i.	1	0	1	0	6	439-40

FOR EACH "YES" ON H-4, ASK, OTHERWISE --> [H-6]

H-5. Does your household use (NEW PRODUCT) in your home?

WINDOWS/DOORS

H-6. How many sliding glass doors does your household have that go from a heated area to the outside or to an unheated area?

NUMBER OF SLIDING GLASS DOORS: . . . . . ☐ *441*
NONE . . . . . 0 --> [H-8]

INTERVIEWER: COUNT EACH PAIR OF SLIDING GLASS DOORS AS ONE DOOR.

H-7. Please turn to Exhibit H-7. Which describes the glass in your sliding door?

SINGLE PANE GLASS 1
DOUBLE PANE GLASS 2
DOUBLE PANE GLASS WITH LOW-E COATING 3 *442*
TRIPLE PANE GLASS 4
TRIPLE PANE GLASS WITH LOW-E COATING 5
DON'T KNOW 6

INTERVIEWER: IF ASKED, LOW-E COATING IS A TRANSPARENT, MICROSCOPIC LAYER OF METALLIC MATERIAL APPLIED AT THE FACTORY TO THE INSIDE OF A DOUBLE- OR TRIPLE-PANE GLASS TO REDUCE HEAT TRANSFER.

H-8. Please turn to Exhibit H-8. How many windows does your home have? Each window that opens **separately** should be counted as one window. Include basement, attic, garage, and porch windows **only if these areas are heated.**

NUMBER OF WINDOWS . . . . . ☐ *443-44*

INTERVIEWER: IF ASKED, DOUBLE HUNG SLIDER WINDOWS COUNT AS ONE WINDOW. EACH WINDOW THAT OPENS SEPARATELY SHOULD BE COUNTED AS ONE WINDOW. ALSO COUNT WINDOWS THAT ARE FIXED IN PLACE. **DO NOT** INCLUDE WINDOWS (GLASS PANELS) IN DOORS.

H-9. Please turn to Exhibit H-9. Which best describes most of the windows in your home? Do not consider storm windows.

SINGLE-PANE GLASS	1	
DOUBLE-PANE GLASS	2	
DOUBLE-PANE GLASS WITH LOW-E COATING	3	445
TRIPLE-PANE GLASS	4	
TRIPLE-PANE GLASS WITH LOW-E COATING	5	
DON'T KNOW	6	

INTERVIEWER: IF ASKED, LOW-E COATING IS A TRANSPARENT, MICROSCOPIC LAYER OF METALLIC MATERIAL APPLIED AT THE FACTORY TO THE INSIDE OF A DOUBLE- OR TRIPLE-PANE GLASS TO REDUCE HEAT TRANSFER

H-10. Do you have storm windows or plastic coverings on most of your windows?

YES, STORM WINDOWS	1	446
YES, PLASTIC COVERINGS	2	447
NO	0	448

INTERVIEWER READ: "Please do not consider storm windows in answering the following questions."

H-11. Exhibit H-9 shows the location of the window frame. Is most of the window glass held in place by a metal or nonmetal frame? (If storm windows are present, answer for regular windows, not the storm windows.)

METAL (ALUMINUM OR STEEL)	1	
NONMETAL (WOOD OR VINYL)	2	449
OTHER	3	
DON'T KNOW	6	

H-12. How many of the original windows have been replaced, all, some, or none of the windows? (Exclude additions onto the house.)

ALL OF THE WINDOWS	1 --> [H-14]	
SOME OF THE WINDOWS	2	450
NONE OF THE WINDOWS	0 --> [H-15]	
DON'T KNOW	6 --> [H-15]	

IF "SOME" ON H-12, ASK:

H-13. Please turn to Exhibit H-13. Which best describes most of the replacement windows? CIRCLE ONE ONLY.

SINGLE-PANE GLASS	1
DOUBLE-PANE GLASS	2
DOUBLE-PANE GLASS WITH LOW-E COATING	3
TRIPLE-PANE GLASS	4
TRIPLE-PANE GLASS WITH LOW-E COATING	5
DON'T KNOW	6

451

H-14. Please turn to the "Yellow Card". Approximately how long ago were the windows replaced?

LESS THAN 2 YEARS	1
2 - 4 YEARS	2
5 - 9 YEARS	3
10 - 19 YEARS	4
20 YEARS OR MORE	5
DON'T KNOW	6

452

COOLING FANS

H-15. Which fans did your household use to assist in cooling your home last summer?

TYPES OF HOUSEHOLD FANS	YES	NO	NOT HERE LAST SUMMER	DON'T KNOW	
a. Window Fan	1	0	5	6	453
b. Portable Table or Floor Fan	1	0	5	6	454
c. Attic Exhaust Fan	1	0	5	6	455
d. "Whole House" Cooling Fan (usually in attic or entrance to attic)	1	0	5	6	456
e. Ceiling Fan	1	0	5	6	457

IF USE CEILING FAN ON H-15, ASK:

H-16. How many ceiling fans does your household use? . . . Number: ☐ 458

HOME ACTIVITIES

H-17. On a typical weekday in this home, is there:

	YES	NO	DON'T KNOW	
a. Operation of a home-based service or business?	1	0	6	459
b. Some other activity requiring a lot of energy? If "YES" (SPECIFY): _____	1	0	6	460
c. Someone home all day?	1	0	6	461

INTERVIEWER: "Lot of Energy" DOES NOT MEAN HUMAN ENERGY, SUCH AS HOUSEWORK

Section I. DEMAND-SIDE MANAGEMENT

INTERVIEWER READ: "This next Section applies only to your experiences living in this home/apartment."

I-1. Please turn to Exhibit I-1. Are any of these programs offered by your electric utility, natural gas utility, or through some other group?

YES	1		
NO	0 -->	[BOX 4: PAGE 48]	465
DON'T KNOW	6		

I-2. Has your household participated in any of these programs for this home during the last 12 months?

YES	1		
NO	0 -->	[BOX 4]	466
DON'T KNOW	6 -->	[BOX 4: PAGE 48]	

INTERVIEWER: CHECK FOLDOUT PAGE. IF HOUSEHOLD USES NATURAL GAS, ASK I-3, OTHERWISE SKIP TO I-4.

I-3. Were these electric or natural gas programs? (CIRCLE ALL THAT APPLY.)

ELECTRIC PROGRAM	5	467
NATURAL GAS PROGRAM	1	468
DON'T KNOW	6	469

INTERVIEWER: IF THE RESPONDENT HAS QUESTIONS CONCERNING DEFINITIONS FOR THE FOLLOWING QUESTIONS, REFER TO EXHIBIT I-1.

I-4. Has your household had a home energy audit within the past 12 months?

YES	1	
NO	0	470
DON'T KNOW	6	

I-5. Has your household participated in a load control program within the past 12 months where you agreed to allow your electric utility to shut off some equipment in your home during the weekday in return for a discount on your utility bill?

YES	1	
NO	0 --> [I-7]	471
DON'T KNOW	6 --> [I-7]	

IF "YES" ON I-5, ASK:

I-6. Was the discount offered for the air-conditioner, the water heater, or other appliance or equipment? (CIRCLE ALL THAT APPLY)

	YES	NO	
AIR-CONDITIONER	1	0	472
WATER HEATER	1	0	473
OTHER APPLIANCE/EQUIPMENT	1	0	474
DON'T KNOW	1	0	475

I-7. Has your household participated in an energy conservation program in the last 12 months where you received some equipment or service, such as a water heater blanket, low flow showerhead, or furnace maintenance?

YES	1	
NO	0 --> [I-9]	476
DON'T KNOW	6 --> [I-9]	

IF "YES" ON I-7, ASK:

I-8. Please turn to Exhibit I-8. Which energy conservation items were received by your household?

	YES	NO	
COMPACT FLUORESCENT LIGHT BULBS	1	0	477
LOW-FLOW SHOWERHEAD	1	0	478
WATER HEATER BLANKET	1	0	479
INSULATION	1	0	480
CAULKING/WEATHER STRIPPING	1	0	481
ENERGY-CONSERVING WINDOWS	1	0	482
MAINTENANCE--HEATING SYSTEM, ETC.	1	0	483
OTHER ITEM (SPECIFY): _____	1	0	484
DON'T KNOW	1	0	485

I-9. Did your household receive, within the last 12 months, a low interest loan, rebate or other financial incentive to encourage you to buy energy-efficient equipment?

YES	1		
NO	0 --> [I-12]		495
DON'T KNOW	6 --> [I-12]		

IF "YES" ON I-9, ASK:

I-10. Please turn to Exhibit I-10. For what type of equipment did your household get a rebate or other financial incentive? (CIRCLE ALL THAT APPLY)

	YES	NO	
AIR CONDITIONING EQUIPMENT	1	0	496
WATER HEATER	1	0	497
HEATING EQUIPMENT	1	0	498
REFRIGERATOR	1	0	499
COMPACT FLUORESCENT LIGHT BULBS	1	0	500
OTHER (SPECIFY): _____	1	0	501
DON'T KNOW	1	0	502

I-11. How important was the utility's financial assistance in making the decision to purchase the energy efficient equipment? Was it very important, somewhat important, or would you have bought it anyway?

VERY IMPORTANT	2	
SOMEWHAT IMPORTANT	1	503
WOULD HAVE BOUGHT IT ANYWAY	0	
DON'T KNOW	6	

I-12. Has your household participated in a program within the last 12 months that encouraged you to switch fuels for certain equipment in your home?

YES	1	
NO	0	504
DON'T KNOW	6	

I-13. Has your household participated in a time-of-use rate program within the last 12 months, where you receive cheaper electric rates if you use electricity at certain times of the day when demand is lowest?

YES	1	
NO	0	505
DON'T KNOW	6	

Section J. FUEL USED

BOX 4

INTERVIEWER: USE THE FOLDOUT PAGE TO CHECK AND UPDATE THE ANSWERS TO THE FOLLOWING QUESTIONS.

INTERVIEWER READ: "To be sure that I have the correct information about which fuels are used for certain purposes, I need to double check the following."

J-1. I have circled that your household uses (READ EACH FUEL CIRCLED "YES" UNDER "FUEL USED" ON THE FOLDOUT PAGE.) Is that correct?

INTERVIEWER: CHECK [ ] IF NO CHANGES, OTHERWISE INDICATE CHANGES ON FOLDOUT.

J-2. During 1993, did your household use (READ EACH FUEL NOT CIRCLED "YES" UNDER "FUEL USED" ON THE FOLDOUT PAGE. CIRCLE EACH "YES" OR "NO.")

ELECTRICITY

J-3. Now, let's talk about electricity. I have circled that electricity is used for (READ EACH USE CIRCLED "YES" UNDER "USAGE" ON THE FOLDOUT PAGE.) Is that correct?

INTERVIEWER: CHECK [ ] IF NO CHANGES, OTHERWISE INDICATE CHANGES ON FOLDOUT.

J-4. During 1993, did your household use electricity for (READ EACH FUEL NOT CIRCLED "YES" UNDER "USAGE" ON THE FOLDOUT PAGE. CIRCLE EACH "YES" OR "NO.")

FOR EACH USAGE OF ELECTRICITY, ASK:

J-5. Did your household pay for the electricity used for (USE), or was it included in the rent or condo fee, or was it paid some other way? (CIRCLE THE ANSWER UNDER "HOW USAGE IS PAID" FOR EACH "YES" CIRCLED UNDER "USAGE.")

NATURAL GAS

BOX 5

INTERVIEWER: CHECK FOLDOUT PAGE. IF NATURAL GAS USED, CONTINUE, OTHERWISE CHECK HERE [ ] AND SKIP TO BOX 6, (BOTTLED GAS) PAGE 50.

J-6. Now let's talk about natural gas. I have circled that natural gas is used for (READ EACH USE CIRCLED "YES" UNDER "USAGE" ON THE FOLDOUT PAGE.) Is that correct?

INTERVIEWER: CHECK [ ] IF NO CHANGES, OTHERWISE INDICATE CHANGES ON FOLDOUT.

J-7. During 1993, did your household use natural gas for (READ EACH USAGE NOT CIRCLED "YES" UNDER "USAGE" ON THE FOLDOUT PAGE. CIRCLE EACH "YES" OR "NO".)

FOR EACH USAGE OF NATURAL GAS, ASK:

J-8. Did your household pay for the natural gas used for (USE), or was it included in the rent or condo fee, or was it paid some other way? (CIRCLE THE ANSWER UNDER "HOW USAGE IS PAID" FOR EACH "YES" CIRCLED UNDER "USAGE.")

J-9. Does your household combine with others in your building or development (Home Owners Association) to buy or contract for natural gas from someone other than the local gas utility and then have the local utility deliver the gas? Gas bought this way is often called "gas transported for the account of others," "transported gas," "spot market gas," or "direct purchase gas."

YES	1	
NO	0 --> [BOX 6]	517
DON'T KNOW	6 --> [BOX 6]	

IF "YES" ON J-9, ASK:

J-10. Can you give me the name of the company or broker or another contact person that can give me more information about direct purchase gas?

Contact Person: _____

Telephone Number: (_____) _____

Company Name: _____ 518

Address: _____

City/State/ZIP: _____

Unable to provide more information 0

BOTTLED GAS (LPG OR PROPANE)

BOX 6

INTERVIEWER: CHECK FOLDOUT PAGE, IF "BOTTLED GAS" USED, CONTINUE, OTHERWISE CHECK HERE [ ] SKIP TO BOX 7 (FUEL OIL), PAGE 51.

J-11. Is your bottled gas paid for by your household, included in your rent or condo fee, or is it paid by some other means?

PAID BY HOUSEHOLD	1	
INCLUDED IN RENT OR CONDO FEE	2 --> [BOX 7]	*520*
OTHER WAY (SPECIFY ON FOLDOUT PAGE)	5 --> [BOX 7]	

INTERVIEWER: CIRCLE THE ANSWER UNDER "HOW USAGE IS PAID" FOR BOTTLED GAS ON FOLDOUT PAGE.

J-12. Is bottled gas delivered to your home?

YES	1	
NO	0 --> [BOX 7]	*521*
DON'T KNOW	6 --> [BOX 7]	

INTERVIEWER: MARK UNDER "FUEL DELIVERED" ON FOLDOUT PAGE.

IF "YES" ON J-12, ASK:

J-13. How many different companies delivered bottled gas to you since January 1, 1993?

ONE	1	
TWO	2	*522*
THREE OR MORE	3	
DON'T KNOW	6	

J-14. About how many deliveries did your household get in the past 12 months?

NUMBER OF DELIVERIES	☐☐☐	
NOT SURE	96	*523-24*
DID NOT LIVE HERE FULL 12 MONTHS	95 --> [BOX 7]	

FUEL OIL

BOX 7

INTERVIEWER: CHECK FOLDOUT PAGE, IF FUEL OIL USED, CONTINUE, OTHERWISE CHECK HERE [ ] AND SKIP TO BOX 8 (KEROSENE SECTION), PAGE 53.

J-15. Is your fuel oil paid by your household, included in your rent or condo fee, or is it paid some other way?

PAID BY HOUSEHOLD	1		
INCLUDED IN RENT OR CONDO FEE	2	--> [BOX 8]	526
OTHER WAY (SPECIFY ON FOLDOUT PAGE)	5	--> [BOX 8: PAGE 53]	

INTERVIEWER: CIRCLE THE ANSWER UNDER "HOW USAGE IS PAID" FOR FUEL OIL ON FOLDOUT PAGE.

J-16. Please turn to Exhibit J-16. About how much fuel oil did your household use in the past 12 months, just approximately?

a. 99 GALLONS OR LESS	1	
b. 100-499 GALLONS	2	
c. 500-999 GALLONS	3	527
d. 1,000 GALLONS OR MORE	4	
e. DON'T KNOW	6	

J-17. Is fuel oil delivered to your home?

YES	1		
NO	0	--> [BOX 8]	528
DON'T KNOW	6	--> [BOX 8: PAGE 53]	

INTERVIEWER: MARK UNDER "FUEL DELIVERED" ON FOLDOUT PAGE.

J-18. How many different companies delivered fuel oil to your household since January 1, 1993?

ONE	1	
TWO	2	529
THREE OR MORE	3	
DON'T KNOW	6	

J-19. About how many deliveries did your household get in the past 12 months?

NUMBER OF DELIVERIES	☐☐☐	530-31
NOT SURE	96	

KEROSENE

BOX 8

INTERVIEWER: CHECK FOLDOUT PAGE. IF KEROSENE IS USED, CONTINUE, OTHERWISE, CHECK HERE [ ] AND SKIP TO J-28, PAGE 55.

J-20. Is kerosene delivered to your (home/apartment)?

YES	1	
NO	0 --> [J-23]	533
DON'T KNOW	6 --> [J-23]	

INTERVIEWER: MARK UNDER "FUEL DELIVERED" ON FOLDOUT PAGE.

IF "YES" ON J-20, ASK:

J-21. How many different companies delivered kerosene to your household since January 1, 1993?

ONE	1	
TWO	2	534
THREE OR MORE	3	
DON'T KNOW	6	

J-22. About how many deliveries did your household get in the past 12 months?

NUMBER OF DELIVERIES	☐	535-36
NOT SURE	96	

J-23. Did your household buy kerosene in the past 12 months and bring it home, that is, cash and carry?

YES	1	
NO	0 --> [J-28]	537
DON'T KNOW	6 --> [J-28]	

IF "YES" ON J-23, ASK:

J-24. How many times in the past 12 months did your household buy kerosene and bring it home?

NUMBER OF TIMES	☐	
NOT SURE	96	538-39
DID NOT LIVE HERE FULL 12 MONTHS	95	

J-25. Please turn to Exhibit J-25. These are common sizes for kerosene containers. On average how much kerosene did your household buy and bring home each time?

1 GALLON	1	
3 GALLONS	2	
5 GALLONS	3	540
55 GALLONS	4	
OTHER (SPECIFY):_____	5	
NOT SURE	6	

J-26. About how much per gallon did your household pay for kerosene, on the average?

PRICE	$___.___ PER GALLON --> [J-28]	541-43
NOT SURE	996	

IF "NOT SURE" ON J-26, ASK:

J-27. About how much did you pay for kerosene each time your household bought it (total amount)?

PRICE	$___.___ IN TOTAL	544-48
NOT SURE	99996	

WOOD

INTERVIEWER: ASK EVERYONE.

J-28. Please turn to Exhibit J-28. We may have covered this before. Have any wood logs or other wood such as wood scraps or pellets been burned in the past 12 months? (CIRCLE ALL THAT APPLY.)

YES, WOOD LOGS	1		549
YES, WOOD SCRAPS SUCH AS MILL WASTE OR BARK	2		550
YES, WOOD PELLETS	3		551
NO WOOD BURNED	0 -->	[BOX 9: PAGE 57]	552

J-29. Please turn to Exhibit J-29. Where were the wood, scraps, pellets or other material burned? (CIRCLE ALL THAT APPLY.)

HEATING STOVE	1		553
FIREPLACE INSERT	2		554
FIREPLACE WITHOUT INSERT	3 -->	[J-31]	555
FURNACE	4 -->	[J-31]	556
PELLET STOVE	5 -->	[BOX 9: PAGE 57]	557

IF "HEATING STOVE" OR "FIREPLACE INSERT" ON J-29, ASK:

J-30. Does the (heating stove/fireplace insert) have EPA certification?

YES	1	
NO	0	558
DON'T KNOW	6	

IF "YES, WOOD LOGS" OR "YES, WOOD SCRAPS" ON J-28, ASK; OTHERWISE --> [BOX 9]

J-31. Please turn to Exhibit J-31. Using the pictures, about how much wood has your household burned in the past 12 months?

LESS THAN 1/4 CORD	1 -->	[J-33]	
1/4 TO 1/3 OF A CORD	2 -->	[J-33]	
ABOUT 1/2 CORD	3 -->	[J-33]	559
MORE THAN 1/2 BUT LESS THAN ONE FULL CORD	4 -->	[J-33]	
ONE CORD OR MORE	5		

IF "ONE CORD OR MORE" IN J-31, ASK:

J-32. Please turn to Exhibit J-32. Using the pictures as references, how many cords were burned?

NUMBER OF CORDS BURNED: ..... ☐ CORDS 560-61

INTERVIEWER: PROBE FOR RESPONDENT'S BEST ESTIMATE OF NUMBER OF CORDS BURNED. RECORD ANSWER TO NEAREST CORD, OR CORD PLUS FRACTION, (FOR EXAMPLE: 1, 1 1/2, 4, 10, 12, AND SO ON).

J-33. Did your household purchase any firewood for your home in the past 12 months?

YES 1 562
NO ..... 0 --> [BOX 9]

J-34. Please look again at Exhibit J-34. Which category best describes how much wood your household bought the last time you bought wood?

LESS THAN 1/4 CORD 1
1/4 TO 1/3 OF A CORD 2
ABOUT 1/2 CORD 3 563
MORE THAN 1/2 CORD BUT LESS THAN ONE FULL CORD 4
ONE CORD OR MORE ..... 5 --> [J-36]

J-35. Please turn to Exhibit J-35. How much did your household pay for that wood?

a. $10 OR LESS ..... 01 --> [BOX 9]
b. $11 - $25. ..... 02 --> [BOX 9]
c. $26 - $50. ..... 03 --> [BOX 9]
d. $51 - $75. ..... 04 --> [BOX 9] 564-65
e. $76 - $100. ..... 05 --> [BOX 9]
f. $101 OR MORE. ..... 06 --> [BOX 9]
g. DON'T KNOW ..... 96 --> [BOX 9]

IF "ONE CORD OR MORE" IN J-34, ASK:

J-36. How much did your household pay per cord of wood?

PRICE PER CORD ..... $____.00 566-68
DON'T KNOW 996

Section K: FUEL BILLS

BOX 9

INTERVIEWER: CHECK THE FOLDOUT PAGE. IF THE HOUSEHOLD PAYS FOR ANY TYPE OF ENERGY, COMPLETE THIS SECTION. IF ALL FUELS ARE INCLUDED IN RENT, FEES OR OTHER, CHECK HERE [ ] AND SKIP TO BOX 16, PAGE 71.

ELECTRICITY BILL

INTERVIEWER: CHECK FOLDOUT PAGE, IF ELECTRICITY BILL IS PAID BY THE HOUSEHOLD, CONTINUE. OTHERWISE CHECK HERE [ ] AND SKIP TO BOX 10, PAGE 59.

K-1. What is the name, address, telephone number and account number for your household's electricity supplier?

SUPPLIER NAME:_____

STREET ADDRESS:_____

CITY:_____ 581

STATE:_____ ZIP:_____

TELEPHONE:_____

ACCOUNT NUMBER:_____ 582

INTERVIEWER: IT IS VERY IMPORTANT TO OBTAIN THE ACCOUNT NUMBERS FROM THE RESPONDENT. PLEASE ENCOURAGE THEM TO LOOK UP THE NUMBERS, IF POSSIBLE.

K-2. Does your electricity bill come addressed to you or is it in another name?

a.	SAME NAME	1 --> [BOX 10]	583
b.	ANOTHER NAME	2	

K-3. What is the billing name and address?

BILLING NAME:_____

STREET ADDRESS:_____ 584

CITY:_____

STATE:_____ ZIP:_____

K-4. Please turn to the "Beige Card". Just for our records, what is the relationship of this person to you?

a.	SPOUSE	01	
b.	PARTNER	02	
c.	PARENT OR GRANDPARENT	03	
d.	SIBLING	04	
e.	CHILD OR GRANDCHILD	05	585-86
f.	OTHER RELATED INDIVIDUAL	06	
g.	ROOMMATE	07	
h.	OTHER UNRELATED INDIVIDUAL OR COMPANY	08	
i.	REFUSED	09	

NATURAL GAS BILL

BOX 10

INTERVIEWER: CHECK FOLDOUT PAGE, IF NATURAL GAS BILL IS PAID BY THE HOUSEHOLD, CONTINUE. OTHERWISE CHECK HERE [ ] AND SKIP TO BOX 11, ON PAGE 61.

K-5. What is the name, address, telephone number and account number for your household's natural gas supplier?

SUPPLIER NAME:_____

STREET ADDRESS:_____

CITY:_____ 588

STATE:_____ ZIP:_____

TELEPHONE:_____

ACCOUNT NUMBER:_____ 589

INTERVIEWER: IT IS VERY IMPORTANT TO OBTAIN THE ACCOUNT NUMBERS FROM THE RESPONDENT. PLEASE ENCOURAGE THEM TO LOOK UP THE NUMBERS, IF POSSIBLE.

K-6. Does your natural gas bill come addressed to you or is it in another name?

a. SAME NAME . . . . . 1 --> [BOX 11] 590
b. ANOTHER NAME 2

K-7. What is the billing name and address?

BILLING NAME:_____

STREET ADDRESS:_____ 591

CITY:_____

STATE:_____ ZIP:_____

K-8. Please turn to the "Beige Card". Just for our records, what is the relationship of this person to you?

a.	SPOUSE	01	
b.	PARTNER	02	
c.	PARENT OR GRANDPARENT	03	
d.	SIBLING	04	
e.	CHILD OR GRANDCHILD	05	592-93
f.	OTHER RELATED INDIVIDUAL	06	
g.	ROOMMATE	07	
h.	OTHER UNRELATED INDIVIDUAL OR COMPANY	08	
i.	REFUSED	09	

BOTTLED GAS (LPG) BILL

BOX 11

INTERVIEWER: CHECK FOLDOUT PAGE, IF BOTTLED GAS BILL IS PAID BY THE HOUSEHOLD, AND BOTTLED GAS IS DELIVERED TO HOUSEHOLD CONTINUE, OTHERWISE CHECK HERE [ ] AND SKIP TO BOX 12, ON PAGE 63.

K-9. What is the name, address, telephone number and account number for your household's bottled gas supplier?

SUPPLIER NAME:_____

STREET ADDRESS:_____

CITY:_____ 595

STATE:_____ ZIP:_____

TELEPHONE:_____

ACCOUNT NUMBER:_____ 596

INTERVIEWER: IT IS VERY IMPORTANT TO OBTAIN THE ACCOUNT NUMBERS FROM THE RESPONDENT. PLEASE ENCOURAGE THEM TO LOOK UP THE NUMBERS, IF POSSIBLE.

K-10. Does your bottled gas bill come addressed to you or is it in another name?

a. SAME NAME . . . . . 1 --> [BOX 12] 597
b. ANOTHER NAME 2

K-11. What is the billing name and address?

BILLING NAME:_____

STREET ADDRESS:_____ 598

CITY:_____

STATE:_____ ZIP:_____

K-12. Please turn to "Beige Card". Just for our records, what is the relationship of this person to you?

a.	SPOUSE 01	
b.	PARTNER 02	
c.	PARENT OR GRANDPARENT 03	
d.	SIBLING 04	
e.	CHILD OR GRANDCHILD 05	*599-600*
f.	OTHER RELATED INDIVIDUAL 06	
g.	ROOMMATE 07	
h.	OTHER UNRELATED INDIVIDUAL OR COMPANY 08	
i.	REFUSED 09	

INTERVIEWER: RECORD ADDITIONAL SUPPLIERS ON PAGE 67.

FUEL OIL BILL

BOX 12

INTERVIEWER: CHECK FOLDOUT PAGE, IF THE FUEL OIL BILL IS PAID BY THE HOUSEHOLD AND FUEL OIL IS DELIVERED TO THE HOUSEHOLD CONTINUE, OTHERWISE, CHECK HERE [ ] AND SKIP TO BOX 13, PAGE 65.

K-13. What is the name, address, telephone number and account number for your household's fuel oil supplier?

SUPPLIER NAME:_____

STREET ADDRESS:_____

CITY:_____ *602*

STATE:_____ ZIP:_____

TELEPHONE:_____

ACCOUNT NUMBER:_____ *603*

INTERVIEWER: IT IS VERY IMPORTANT TO OBTAIN THE ACCOUNT NUMBERS FROM THE RESPONDENT. PLEASE ENCOURAGE THEM TO LOOK UP THE NUMBERS, IF POSSIBLE.

K-14. Does your fuel oil bill come addressed to you or is it in another name?

a. SAME NAME . . . . . 1 --> [BOX 13] *604*
b. ANOTHER NAME 2

K-15. What is the billing name and address?

BILLING NAME:_____

STREET ADDRESS:_____ *605*

CITY:_____

STATE:_____ ZIP:_____

K-16. Please turn to the "Beige Card". Just for our records, what is the relationship of this person to you?

a.	SPOUSE	01	
b.	PARTNER	02	
c.	PARENT OR GRANDPARENT	03	
d.	SIBLING	04	
e.	CHILD OR GRANDCHILD	05	*606-07*
f.	OTHER RELATED INDIVIDUAL	06	
g.	ROOMMATE	07	
h.	OTHER UNRELATED INDIVIDUAL OR COMPANY	08	
i.	REFUSED	09	

INTERVIEWER: RECORD ADDITIONAL SUPPLIERS ON PAGE 67.

KEROSENE BILL

BOX 13

INTERVIEWER: CHECK FOLDOUT PAGE, IF THE KEROSENE IS DELIVERED TO THE HOUSEHOLD CONTINUE, OTHERWISE CHECK HERE [ ] AND SKIP TO BOX 14, PAGE 68.

K-17. What is the name, address, telephone number and account number for your household's kerosene supplier?

SUPPLIER NAME:_____

STREET ADDRESS:_____

CITY:_____ *609*

STATE:_____ ZIP:_____

TELEPHONE:_____

ACCOUNT NUMBER:_____ *610*

INTERVIEWER: IT IS VERY IMPORTANT TO OBTAIN THE ACCOUNT NUMBERS FROM THE RESPONDENT. PLEASE ENCOURAGE THEM TO LOOK UP THE NUMBERS, IF POSSIBLE.

K-18. Does your kerosene bill come addressed to you or is it in another name?

a. SAME NAME . . . . . 1 --> [BOX 14: *611*
b. ANOTHER NAME . . . . . 2 PAGE 68]

K-20. What is the billing name and address?

BILLING NAME:_____

STREET ADDRESS:_____ *612*

CITY:_____

STATE:_____ ZIP:_____

K-21. Please turn to the "Beige Card". Just for our records, what is the relationship of this person to you?

a.	SPOUSE 01	
b.	PARTNER 02	
c.	PARENT OR GRANDPARENT 03	
d.	SIBLING 04	
e.	CHILD OR GRANDCHILD 05	613-14
f.	OTHER RELATED INDIVIDUAL 06	
g.	ROOMMATE 07	
h.	OTHER UNRELATED INDIVIDUAL OR COMPANY 08	
i.	REFUSED 09	

INTERVIEWER: RECORD ADDITIONAL SUPPLIERS ON PAGE 67.

INTERVIEWER: USE THIS PAGE TO RECORD ADDITIONAL BOTTLED GAS/FUEL OIL/KEROSENE SUPPLIERS

ADDITIONAL SUPPLIERS

FUEL:

[ ] BOTTLED GAS
[ ] FUEL OIL
[ ] KEROSENE

SUPPLIER NAME:_____
STREET ADDRESS:_____
_____
CITY:_____
STATE:_____
TELEPHONE:_____
ACCOUNT NUMBER:_____

615

NOTES:_____
_____

FUEL:

[ ] BOTTLED GAS
[ ] FUEL OIL
[ ] KEROSENE

SUPPLIER NAME:_____
STREET ADDRESS:_____
_____
CITY:_____
STATE:_____
TELEPHONE:_____
ACCOUNT NUMBER:_____

616

NOTES:_____
_____

FUEL:

[ ] BOTTLED GAS
[ ] FUEL OIL
[ ] KEROSENE

SUPPLIER NAME:_____
STREET ADDRESS:_____
_____
CITY:_____
STATE:_____
TELEPHONE:_____
ACCOUNT NUMBER:_____

617

NOTES:_____
_____

AUTHORIZATION FORM

BOX 14

INTERVIEWER: COMPLETE THE AUTHORIZATION FORM NOW FOR ANY FUELS PAID FOR BY THE HOUSEHOLD (SEE FOLDOUT PAGE). USE THE YELLOW PAGE INSERTED IN THE QUESTIONNAIRE.

ON THE AUTHORIZATION FORM:

STEP 1: ENTER THE NAME OF EACH COMPANY THAT SUPPLIED FUEL TO THE HOUSEHOLD IN THE APPROPRIATE BOX. THIS INFORMATION WAS OBTAINED ON THE PREVIOUS PAGES.

STEP 2: EITHER YOU OR THE RESPONDENT ENTER THE RESPONDENT'S NAME, ADDRESS, AND TELEPHONE NUMBER.

STEP 3: HAVE THE RESPONDENT SIGN THE AUTHORIZATION FORM.

READ TO RESPONDENT:

The Department of Energy is interested in how much energy households use and pay for and household participation in energy programs. With your permission on this form, your supplier of electricity, natural gas, bottled gas, fuel oil or kerosene will provide your household information to Response Analysis Corporation, who is conducting this survey for the Department of Energy.

All your information is kept confidential and will be combined with information from other households across the United States to indicate national and regional trends.

K-22. Will you please enter your name, address, and sign this Authorization Form.

AUTHORIZATION FORM SIGNED	1	618
AUTHORIZATION FORM NOT SIGNED	0	

NONHOUSEHOLD USES

BOX 15

INTERVIEWER: CHECK FOLDOUT PAGE. IF USE OF ANY FUEL IS PAID BY HOUSEHOLD, ASK. OTHERWISE, GO TO BOX 16, PAGE 71.

K-23. Please turn to the "Pink Card". Look at the top. Do any of your household fuel bills in 1993 include fuel used for any of the purposes listed on the card?

YES	1		
NO	0	--> [BOX 16]	619
DON'T KNOW	6	--> [BOX 16: PAGE 71]	

IF "YES" ON K-23, ASK:

K-24. For which of the purposes listed at the top of the card are costs of fuel included in your household fuel bills? (CIRCLE ALL THAT APPLY.)

FARM BUILDINGS OR MACHINERY	1	620
THE HOUSE OR APARTMENT OF ANOTHER HOUSEHOLD	2	621
A BUSINESS OR OFFICE	3	622
SOME USE OTHER THAN FOR YOUR OWN HOUSEHOLD (SPECIFY):_____	4	623

K-25. Which fuel bills include costs of fuel used for purposes other than your own living quarters? (CIRCLE ALL THAT APPLY.)

NATURAL GAS (FROM UNDERGROUND PIPES)	1	624
BOTTLED GAS (LPG OR PROPANE)	2	625
FUEL OIL	3	626
KEROSENE OR COAL OIL	4	627
ELECTRICITY	5	628

INTERVIEWER: ASK THE FOLLOWING QUESTIONS FOR EACH FUEL CIRCLED IN K-25.

IF "NATURAL GAS (FROM UNDERGROUND PIPES)" ON K-25, ASK:

K-26. Please refer again to the "Pink Card." What portion of the natural gas bill is for nonhousehold uses in 1993?

VERY LITTLE (1-4%)	0	
SOME (5-33%)	1	
ABOUT HALF (34-66%)	2	629
ABOUT 3/4 (67-95%)	3	
MOST ALL OF IT (96-99%)	4	

IF "BOTTLED GAS" ON K-25, ASK:

K-27. Please refer again to the "Pink Card". What portion of the bottled gas bill is for nonhousehold uses in 1993?

VERY LITTLE (1-4%)	0	
SOME (5-33%)	1	
ABOUT HALF (34-66%)	2	630
ABOUT 3/4 (67-95%)	3	
MOST ALL OF IT (96-99%)	4	

IF "FUEL OIL" ON K-25, ASK:

K-28. Please refer again to the "Pink Card". What portion of the fuel oil bill is for nonhousehold uses in 1993?

VERY LITTLE (1-4%)	0	
SOME (5-33%)	1	
ABOUT HALF (34-66%)	2	631
ABOUT 3/4 (67-95%)	3	
MOST ALL OF IT (96-99%)	4	

IF "KEROSENE OR COAL OIL" ON K-25, ASK:

K-29. Please refer again to the "Pink Card". What portion of the kerosene bill is for nonhousehold uses in 1993?

VERY LITTLE (1-4%)	0	
SOME (5-33%)	1	
ABOUT HALF (34-66%)	2	632
ABOUT 3/4 (67-95%)	3	
MOST ALL OF IT (96-99%)	4	

IF "ELECTRICITY" ON K-25, ASK:

K-30. Please refer again to the "Pink Card". What portion of the electric bill is for nonhousehold uses in 1993?

VERY LITTLE (1-4%)	0
SOME (5-33%)	1
ABOUT HALF (34-66%)	2
ABOUT 3/4 (67-95%)	3
MOST ALL OF IT (96-99%)	4

633

BOX 16

INTERVIEWER: ASK K-31 ONLY IF DATA NOT AVAILABLE FROM AUTHORIZATION FORM. OTHERWISE SKIP TO BOX 17.

K-31. For interview verification purposes, may I have your name, phone number, and mailing address please? My supervisor may want to call you to see if I really have talked to you.

RESPONDENT'S NAME: _____

STREET ADDRESS: _____

CITY OR TOWN/STATE/ZIP CODE: _____

TELEPHONE NUMBER: AREA CODE: (____) _____

BOX 17

INTERVIEWER: CHECK FOLDOUT PAGE, IF "CONDOMINIUM" OR "RENT" OR "OCCUPIED WITHOUT PAYMENT OF RENT", ASK K-32, OTHERWISE SKIP TO L-1.

K-32. We may be needing some additional information about fuels used in this building (house). May I have the name of the person or company to whom you pay rent or who is responsible for paying the fuel bills for this building (house)?

NAME: _____

STREET ADDRESS: _____ 634

CITY OR TOWN/STATE/ZIP CODE: _____

TELEPHONE NUMBER: AREA CODE: (____) _____

IF LIVES IN AN APARTMENT OR MOBILE HOME COMPLEX ASK, OTHERWISE, --> L-1.

K-33. Does this (building/development/complex/park) have a name?

YES 1 635
NO . . . . . 0 --> [L-1]

K-34. What is the name?

NAME: _____

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION L: BACKGROUND INFORMATION

INTERVIEWER: ASK EVERYONE

L-1. Now I have some questions about the people who live here. Please tell me their relationship to (HOUSEHOLDER) and their ages on their last birthday. First, I need to get this information for (HOUSEHOLDER).

COMPLETE INFORMATION IN COLUMN A THROUGH C FOR HOUSEHOLDER FIRST. THEN ASK FOR EACH REMAINING PERSON. RECORD RELATIONSHIP, NOT NAMES.

INTERVIEWER: PERSONS WHO ARE NORMALLY MEMBERS OF THE HOUSEHOLD, BUT WHO ARE NOW LIVING AWAY FROM HOME (e.g., college students or members of the armed forces) SHOULD NOT BE LISTED

PERSON NUMBER	CHECK BOX IN THIS COLUMN TO IDENTIFY RESPONDENT	L-1. COLUMN A RELATIONSHIP TO HOUSEHOLDER	COLUMN B SEX FEMALE	COLUMN B SEX MALE	COLUMN C AGE	L-3. COLUMN D EMPLOYMENT STATUS (AGE 14+) FULL TIME	PART TIME	NOT EMPLOYED	
1	[ ]	Householder	1	2		1	2	0	646-52
2	[ ]		1	2		1	2	0	653-59
3	[ ]		1	2		1	2	0	660-66
4	[ ]		1	2		1	2	0	667-73
5	[ ]		1	2		1	2	0	674-80
6	[ ]		1	2		1	2	0	681-87
7	[ ]		1	2		1	2	0	688-94
8	[ ]		1	2		1	2	0	695-701
9	[ ]		1	2		1	2	0	702-08
10	[ ]		1	2		1	2	0	709-15
11	[ ]		1	2		1	2	0	716-22
12	[ ]		1	2		1	2	0	723-29

730-31

L-2. I have listed (READ RELATIONSHIPS FROM L-1 IN GRID). Have I missed: [QUESTIONS ANSWERED "YES" ADD TO LISTING]

	YES	NO
a. Any babies or small children?	1	0
b. Any lodgers, boarders, or persons in your employment who live there?	1	0
c. Anyone who usually lives here but is away traveling or in the hospital?	1	0
d. Anyone else staying here who does not have a regular residence elsewhere?	1	0

INTERVIEWER: MARK NUMBER OF HOUSEHOLD MEMBERS UNDER "HOUSEHOLD MEMBERS" ON FOLDOUT PAGE.

INTERVIEWER: FOR EACH PERSON 14 YEARS OR OLDER ON L-1 COLUMN C, ASK L-3.

L-3. Is (he/she) now employed full-time, that is 30 hours or more per week, employed part-time, or not employed? (RECORD UNDER L-3 COLUMN D ON GRID)

L-4. How many people in this household drive a car on a fairly regular basis -- that is, at least once a month?

NUMBER OF REGULAR DRIVERS: ☐☐
NONE 00
DON'T KNOW 96

732-33

L-5. For background statistical purposes, I have a few questions about the (householder). **Please look at Exhibit L-5. What is the highest grade or year (HOUSEHOLDER) completed in school or college?**

GRADE SCHOOL/HIGH SCHOOL
- KINDERGARTEN TO 4TH GRADE 04
- 5TH, 6TH, 7TH OR 8TH GRADES 08
- 9TH TO 11TH GRADES 11
- 12TH GRADE OR HIGH SCHOOL DIPLOMA 12

COLLEGE:
- 1 YEAR 13
- 2 YEARS 14
- 3 YEARS 15 *734-35*
- 4 YEARS 16
- 5 YEARS 17
- 6 OR MORE YEARS OF COLLEGE 18

NEVER ATTENDED SCHOOL 00
DON'T KNOW 96

L-6. Please look at Exhibit L-6. Which best describes (HOUSEHOLDER)?

- NOW MARRIED 1
- WIDOWED 2
- DIVORCED OR SEPARATED 3 *736*
- NEVER MARRIED 4
- UNMARRIED LIVING WITH PARTNER 5

L-7. Is (HOUSEHOLDER) of Spanish or Hispanic origin or descent?

- YES 1
- NO 0 *737*
- DON'T KNOW 6

L-8. Please turn to Exhibit L-8. Which of the groups on the exhibit best describes (HOUSEHOLDER)?

- WHITE 1
- BLACK 2
- AMERICAN INDIAN, ALASKAN NATIVE 3 *738*
- ASIAN, PACIFIC ISLANDER 4
- OTHER (SPECIFY): _____ 5

INCOME

L-9. Please turn to Exhibit L-9. In the past 12 months, did you or any member of your **family** living here receive any income or benefits from these sources? When we say "family," we mean all related persons living in this household.

(INTERVIEWER: READ AND MARK "YES" OR "NO" FOR EACH ITEM.)

		YES	NO	
a.	Wages and salaries	1	0	*739*
b.	Self-employed from a business or farm	1	0	*740*
c.	Social Security or Railroad Retirement	1	0	*741*
d.	Pensions and other retirement funds	1	0	*742*
e.	Food Stamps	1	0	*743*
f.	Aid to Families with Dependent Children (AFDC)	1	0	*744*
g.	Unemployment Compensation	1	0	*745*
h.	Supplemental Security Income (SSI)	1	0	*746*
i.	General assistance or other public assistance	1	0	*747*

L-10. Now please look at the next Exhibit L-10. This is a list of income groups. Please tell me which group letter best describes the total combined income in the past 12 months of all members of your **family** living here, from all sources -- wages, interest, alimony, Social Security, and so forth -- before taxes and deductions.

CIRCLE NUMBER FOR INCOME GROUP

A. LESS THAN $3,000	01		O. $22,500 - $24,999	15			
B. $3,000 - $3,999	02		P. $25,000 - $27,499	16			CHECK
C. $4,000 - $4,999	03		Q. $27,500 - $29,999	17			BOX 18
D. $5,000 - $5,999	04		R. $30,000 - $32,499	18	-->		NEXT
E. $6,000 - $7,499	05		S. $32,500 - $34,999	19			PAGE
F. $7,500 - $8,999	06	SKIP	T. $35,000 - $39,999	20			
G. $9,000 - $9,999	07	--> TO	U. $40,000 - $44,999	21			
H. $10,000 - $10,999	08	BOX 19					
I. $11,000 - $12,499	09	PAGE 80	V. $45,000 - $49,999	22			SKIP
J. $12,500 - $13,999	10		W $50,000 - $74,999	23	-->		TO
K. $14,000 - $14,999	11		X. $75,000 - $99,999	24			N-1 ON
L. $15,000 - $17,499	12		Y. $100,000 OR MORE	25			PAGE 83
M. $17,500 - $19,999	13						
N. $20,000 - $22,499	14		DON'T KNOW	96			
			REFUSED	97	-->		[L-11]

748-49

PROBE IF "DON'T KNOW" OR "REFUSED" ON L-10, ASK:

L-11. Was your family income in the last 12 months under $45,000?

YES, INCOME UNDER $45,000	1 --> [BOX 19]	
NO	0 --> [N-1]	750
DON'T KNOW	6 --> [BOX 19]	
REFUSED	7 --> [BOX 19]	

BOX 18

INTERVIEWER: CHECK INCOME FROM L-10 WITH NUMBER OF HOUSEHOLD MEMBERS ON FOLDOUT PAGE. IF IT MATCHES BELOW, GO TO [N-1] ON PAGE 83. OTHERWISE, GO TO BOX 19 ON THE NEXT PAGE.

If Income Group	Number of Household Members is	then
O	1	go to [N-1]
P	1 or 2	go to [N-1]
Q	1 or 2	go to [N-1]
R	1, 2, or 3	go to [N-1]
S	1, 2, or 3	go to [N-1]
T	1, 2, 3, or 4	go to [N-1]
U	1, 2, 3, 4, or 5	go to [N-1]

Section M: PROGRAM PARTICIPATION

BOX 19

INTERVIEWER: THESE QUESTIONS REFER TO ANY HOME THE RESPONDENT OCCUPIED IN THE LAST YEAR.

M-1. Please turn to Exhibit M-1. This shows some examples of how a person can weatherize a home, for example, improve the heating system, insulate walls, insulate the hot water heater, weather strip or caulk, and so on. During the last year -- from October 1992 to September 1993 -- did you receive any help from the government in paying the costs of weatherizing your home?

YES 1
NO 0 *761*
DON'T KNOW 6

M-2. Are you aware of an **energy assistance program** that helps people pay for their heating, cooling, and other home energy costs? Some names used for the program are HEAP, LIHEAP, and HEAT. It is run by State, county, or local government. The assistance can be paid directly to the household or to the electric or gas company or fuel supplier. If heat is included in a household's rent, the payment can be used to help reduce the rent. Are you aware of this energy assistance program?

YES 1 *762*
NO 0

M-3. Please turn to Exhibit M-3. During the last year -- from October 1992, through September 1993 -- did anyone in your household receive government assistance for any of the following:

	YES	NO	DON'T KNOW	
a. Help in paying home heating costs?	1	0	6	*763*
b. Help in paying home cooling or air-conditioning costs?	1	0	6	*764*
c. Help with other home energy costs?	1	0	6	*765*
d. Emergency supplies, such as blankets, portable heaters, or temporary emergency shelter due to loss of home heat?	1	0	6	*766*

INTERVIEWER: IF ALL "NO" OR "DON'T KNOW" IN M-3, SKIP TO M-7.

IF "YES" IN M-3, ASK M-4., OTHERWISE --> [M-7]

M-4. Please describe this help.

IF "YES" IN M-3a, (HEATING ASSISTANCE), ASK:

M-5. Please turn to EXHIBIT M-5. You mentioned that your household got help in paying for home heating costs. How were these payments received? (READ EACH AND CIRCLE "YES" OR "NO")

		YES	NO	DON'T KNOW	
a.	Check to household	1	0	6	767
b.	Sent directly to utility company or fuel dealer	1	0	6	768
c.	Coupon/voucher to household	1	0	6	769
d.	Two-party check to household	1	0	6	770
e.	Other (SPECIFY): _____	1	0	6	771

M-6. About how much money for your heating assistance did **you or your utility or fuel supplier** receive from October 1992 to September 1993?

AMOUNT RECEIVED ..... $_____.00 772-75
NOT SURE 9996

M-7. Please think about the home or homes you lived in last year -- that is, the time period from October 1992 to September 1993. Was there ever a time during that period when you wanted to use your main source of heat, but could not, for one or more of the following reasons: (CIRCLE "YES" OR "NO" FOR EACH ITEM.)

	YES	NO	
a. Your heating system was broken and you were unable to pay for its repair or replacement?	1	0	776
b. You ran out of fuel oil, kerosene, LPG, coal, or wood because you were unable to pay for a delivery?	1	0	777
c. The utility company discontinued your gas or electric service because you were unable to pay your bill?	1	0	778

INTERVIEWER: IF ALL ITEMS MARKED "NO," SKIP TO N-1.

IF YES TO M-7 "a," "b," or "c", ASK: OTHERWISE --> [N-1].

M-8. Thinking about these times that you went without heat--how many separate times were there?

TOTAL TIMES: ..... ☐☐ 779-80

M-9. Altogether, how many hours or days were you without heat from October 1992 to September 1993?

HOURS: ☐☐ OR DAYS: ☐☐ 781-83

M-10. During which month or months were you without heat? (CHECK ALL THAT APPLY.)

01	OCTOBER ('92)	784-85	08	MAY ('93)	798-99
02	NOVEMBER ('92)	786-87	09	JUNE ('93)	800-01
03	DECEMBER ('92)	788-89	10	JULY ('93)	802-03
04	JANUARY ('93)	790-91	11	AUGUST ('93)	804-05
05	FEBRUARY ('93)	792-93	12	SEPTEMBER ('93)	806-07
06	MARCH ('93)	794-95			
07	APRIL ('93)	796-97	96	NOT SURE	808-09

M-11. During these times, were you able to heat your home in some other way?

YES 1 810
NO 0

Section N: VEHICLES

N-1. Do you or other members of your household own or have the regular use of any cars, trucks, vans, or similar vehicles? (DO NOT INCLUDE MOTORCYCLES OR MOPEDS. SEE INSTRUCTIONS ON NEXT PAGE.)

YES 1 *913*
NO . . . . . 0 --> [BOX 20: PAGE 95]

INTERVIEWER: "REGULAR USE" MEANS THE VEHICLE IS KEPT AT HOME AND IS AVAILABLE FOR SOME PERSONAL USE.

N-2. How many do you have?

NUMBER OF VEHICLES: . . . . . ☐ *914-15*

N-2. IF HOUSEHOLD HAS MORE THAN EIGHT VEHICLES, MARK ANSWERS FOR THE EIGHT VEHICLES USED MOST. USE VEHICLE SUPPLEMENT FORM FOR VEHICLES 5-8.

INTERVIEWER READ TO RESPONDENT: "I'd like you to describe each vehicle your household owns or uses. First, let's start with the vehicle you use most often."

ASK SERIES OF QUESTIONS FOR EACH VEHICLE.

SPECIAL INSTRUCTIONS:

N-4. MODEL NAME: A MODEL NAME MAY CONSIST OF SEVERAL PARTS -- BE SURE TO GET THE COMPLETE MODEL NAME. HERE ARE SOME EXAMPLES, WHERE THE COMPLETE MODEL NAME IS IN PARENTHESES: FORD (GALAXY), CHEVROLET (V10 SUBURBAN, GMC (V15 JIMMY), TOYOTA (2WD CARGO VAN). IF RESPONDENT DOES NOT KNOW THE MODEL NAME OF A TRUCK, PROBE FOR SIZE (1/2 TON, 3/4 TON, ETC.)

N-30. EXPLAIN WHAT THE VIN IS IF RESPONDENT DOES NOT KNOW. IF RESPONDENT QUESTIONS NEED FOR VIN, SAY: "The VIN is a set of codes assigned to a vehicle at the factory that, when decoded, describes several of the vehicle's characteristics. These characteristics may then be used to calculate an estimated miles per gallon for that specific type of vehicle."

SHOW EXHIBIT N-30 OF POSSIBLE VIN LOCATIONS. ATTEMPT TO SECURE VIN FROM ONE OF THESE DOCUMENT SOURCES. RECORD THE VIN AND VERIFY FOR CORRECTNESS.

IF VEHICLE AVAILABLE--RECORD VIN FROM VEHICLE ITSELF.

VEHICLES PAGE

QUESTION	
N-3. What is the make?	MAKE . . . . .
N-4. What is the model name? (SEE INSTRUCTIONS)	MODEL . . . . .
N-5. What is the model year?	YEAR . . . . .
N-6. Please turn to Exhibit N-6. What is the type of vehicle? (CIRCLE ONE). WRITE ADDITIONAL IDENTIFYING INFORMATION IN MARGIN.	CAR . . . . . 01 STATION WAGON . . . . . 02 LARGE VAN . . . . . 03 MINI VAN . . . . . 04 PICKUP TRUCK . . . . . 05 SPORT-UTILITY VEHICLE . . 06 OTHER (SPECIFY): 21
N-7. Does it have an air conditioner?	YES . . . . . 1 NO 0
N-8. Does it have an automatic transmission or manual shift?	AUTOMATIC TRANSMISSION 1 MANUAL SHIFT . . . . . 2 DON'T KNOW 6
N-9. How many cylinders does the engine have?	3-CYLINDERS . . . . . 03 4-CYLINDERS . . . . . 04 5-CYLINDERS . . . . . 05 6-CYLINDERS . . . . . 06 8-CYLINDERS . . . . . 08 OTHER . . . . . 21 DON'T KNOW 96

	VEHICLE #1	VEHICLE #2	VEHICLE #3	VEHICLE #4
N-3.	MAKE *916-17*	MAKE *992-93*	MAKE *1067-68*	MAKE *1153-54*
N-4.	MODEL *918-19*	MODEL *994-95*	MODEL *1069-70*	MODEL *1155-56*
N-5.	19_____ *920-21*	19_____ *996-97*	19_____ *1071-72*	19_____ *1157-58*
N-6.	CAR . . . . . 01 STATN WAGON . . 02 LARGE VAN . . . . . 03 MINI VAN . . . . . 04 PICK UP TRUCK . 05 SPORT UTILITY . . 06 _____ . 21 *922-23*	CAR . . . . . 01 STATN WAGON . . 02 LARGE VAN . . . . . 03 MINI VAN . . . . . 04 PICK UP TRUCK . 05 SPORT UTILITY . . 06 _____ . 21 *998-99*	CAR . . . . . 01 STATN WAGON . 02 LARGE VAN . . . . 03 MINI VAN . . . . . 04 PICK UP TRUCK 05 SPORT UTILITY . 06 _____ 21 *1073-74*	CAR . . . . . 01 STATN WAGON . . 02 LARGE VAN . . . . . 03 MINI VAN . . . . . 04 PICK UP TRUCK . 05 SPORT UTILITY . . 06 _____ . 21 *1159-60*
N-7.	YES . . . . . 1 NO 0 *924*	YES . . . . . 1 NO 0 *1000*	YES . . . . . 1 NO 0 *1075*	YES . . . . . 1 NO 0 *1161*
N-8.	AUTOMATIC . . . . . 1 MANUAL . . . . . 2 DON'T KNOW 6 *925*	AUTOMATIC . . . . . 1 MANUAL . . . . . 2 DON'T KNOW 6 *1001*	AUTOMATIC . . . . 1 MANUAL . . . . . 2 DON'T KNOW . . . 6 *1076*	AUTOMATIC . . . . . 1 MANUAL . . . . . 2 DON'T KNOW 6 *1162*
N-9.	3 CYLINDERS . . . 03 4 CYLINDERS . . . 04 5 CYLINDERS . . . 05 6 CYLINDERS . . . 06 8 CYLINDERS . . . 08 OTHER . . . . . 21 DON'T KNOW . . . 96 *926-27*	3 CYLINDERS . . . 03 4 CYLINDERS . . . 04 5 CYLINDERS . . . 05 6 CYLINDERS . . . 06 8 CYLINDERS . . . 08 OTHER . . . . . 21 DON'T KNOW . . . 96 *1002-03*	3 CYLINDERS . . 03 4 CYLINDERS . . 04 5 CYLINDERS . . 05 6 CYLINDERS . . 06 8 CYLINDERS . . 08 OTHER . . . . . 21 DON'T KNOW . . 96 *1077-78*	3 CYLINDERS . . . 03 4 CYLINDERS . . . 04 5 CYLINDERS . . . 05 6 CYLINDERS . . . 06 8 CYLINDERS . . . 08 OTHER . . . . . 21 DON'T KNOW . . . 96 *1163-64*

QUESTION	
N-10. Does it have front-wheel, rear-wheel, or 4-wheel drive? (IF RESPONDENT SAYS COMBINATION THAT INCLUDES 4-WHEEL DRIVE, MARK 4-WHEEL DRIVE.)	FRONT-WHEEL . . . . . 1 REAR-WHEEL . . . . . 2 4-WHEEL . . . . . 3 OTHER: (Specify) . . . . . 5 DON'T KNOW 6
N-11. Does the fuel system use a carburetor, fuel injection, or is it a diesel engine or an electric vehicle?	CARBURETOR . . . . . 1 FUEL INJECTION . . . . . 2 DIESEL . . . . . 3 -> [N-13] ELECTRIC . . . . . 4 -> [N-14] OTHER: (Specify) . . . . . 5 DON'T KNOW 6
N-12. Please turn to Exhibit N-12. During the past year, what type of fuel did this vehicle use?	UNLEADED GASOLINE Regular (87-88.9 Octane) . . . . . 01 Mid-grade (89-90.9 Octane) . . . . 02 Premium (91 or Greater Octane) 03 LEADED GASOLINE . . . . . 04 ETHANOL BLEND (Gasohol) . . . . 05 NATURAL GAS . . . . . 06 PROPANE . . . . . 07 ALCOHOL . . . . . 08 OTHER: (Specify) . . . . . 21 DON'T KNOW 96
N-13. When fuel was purchased for this vehicle during the past year, was most of the fuel purchased at full-service pumps or self-service pumps? (IF "MINI-SERVICE," RECORD AS SELF-SERVICE.)	FULL-SERVICE . . . . . 1 SELF-SERVICE . . . . . 2 BOTH EQUALLY . . . . . 3 OTHER: (Specify) . . . . . 5 DON'T KNOW 6
N-14. Did you get this vehicle within the past 12 months or did you get it before that? (CIRCLE ONE, THEN ASK APPROPRIATE FOLLOW-UP QUESTION)	WITHIN PAST 12 MONTHS . . . . . 1 BEFORE THAT . . . . . 2 -> [N-17]

	VEHICLE #1	VEHICLE #2	VEHICLE #3	VEHICLE #4
N-10.	FRONT WHEEL . . 1 REAR WHEEL . . . 2 4 WHEEL . . . . . 3 _____ 5 DON'T KNOW . . . 6 928	FRONT WHEEL . . . 1 REAR WHEEL . . . . 2 4 WHEEL . . . . . 3 _____ . 5 DON'T KNOW 6 1004	FRONT WHEEL . . 1 REAR WHEEL . . . 2 4 WHEEL . . . . . 3 _____ 5 DON'T KNOW . . . 6 1079	FRONT WHEEL . . . 1 REAR WHEEL . . . . 2 4 WHEEL . . . . . 3 _____ . 5 DON'T KNOW 6 1155
N-11.	CARBURETOR . . . 1 FUEL INJECTION . 2 DIESEL >[N-13] . 3 ELECTRIC >[N-14] 4 _____ 5 DON'T KNOW . . . 6 929	CARBURETOR . . . . 1 FUEL INJECTION . . 2 DIESEL >[N-13] . . 3 ELECTRIC >[N-14] 4 _____ . 5 DON'T KNOW 6 1005	CARBURETOR . . . 1 FUEL INJECTION . 2 DIESEL >[N-13] . 3 ELECTRIC >[N-14] 4 _____ 5 DON'T KNOW . . . 6 1080	CARBURETOR . . . . 1 FUEL INJECTION . . 2 DIESEL >[N-13] . . 3 ELECTRIC >[N-14] 4 _____ . 5 DON'T KNOW 6 1156
N-12.	UNLEADED GAS Reg. (87-88.9 oct).01 Mid. (89-90.9 oct). 02 Prem. (91+ oct) . 03 LEADED GAS . . . . 04 ETHANOL BND . . 05 NATURAL GAS . . 06 PROPANE . . . . . 07 ALCOHOL . . . . . 08 OTHER >[N-14] . 21 _____ DON'T KNOW . . . 96 930-31	UNLEADED GAS Reg. (87-88.9 oct). 01 Mid. (89-90.9 oct). .02 Prem. (91+ oct) . . 03 LEADED GAS . . . . 04 ETHANOL BND . . 05 NATURAL GAS . . 06 PROPANE . . . . . 07 ALCOHOL . . . . . 08 OTHER >[N-14] . 21 _____ DON'T KNOW . . . 96 1006-07	UNLEADED GAS Reg. (87-88.9 oct)01 Mid. (89-90.9 oct).02 Prem. (91+ oct) . 03 LEADED GAS . . . 04 ETHANOL BND . 05 NATURAL GAS . 06 PROPANE . . . . . 07 ALCOHOL . . . . . 08 OTHER >[N-14] 21 _____ DON'T KNOW . . 96 1081-82	UNLEADED GAS Reg. (87-88.9 oct).01 Mid. (89-90.9 oct). 02 Prem. (91+ oct) . .03 LEADED GAS . . . . 04 ETHANOL BND . . 05 NATURAL GAS . . 06 PROPANE . . . . . 07 ALCOHOL . . . . . 08 OTHER >[N-14] . 21 _____ DON'T KNOW . . . 96 1157-58
N-13.	FULL SERVICE . . . 1 SELF SERVICE . . 2 BOTH . . . . . 3 _____ 5 DON'T KNOW . . . 6 932	FULL SERVICE . . . . 1 SELF SERVICE . . . 2 BOTH . . . . . 3 _____ 5 DON'T KNOW 6 1008	FULL SERVICE . . . 1 SELF SERVICE . . 2 BOTH . . . . . 3 _____ 5 DON'T KNOW . . . 6 1083	FULL SERVICE . . . . 1 SELF SERVICE . . . 2 BOTH . . . . . 3 _____ 5 DON'T KNOW 6 1159
N-14.	WITHIN 12 MNTHS 1 BEFORE >[N-17] 2 933	WITHIN 12 MNTHS . 1 BEFORE >[N-17] . 2 1009	WITHIN 12 MNTHS 1 BEFORE >[N-17] 2 1084	WITHIN 12 MNTHS . 1 BEFORE >[N-17] . 2 1170

QUESTION	
IF "WITHIN PAST 12 MONTHS," ASK:	MONTH . . . . .
N-15. In what month and year did you get it?	YEAR . . . . .
N-16. Approximately how many miles has it been driven since you obtained it?	MILES . . . . .
IF "BEFORE THAT," ASK:	MILES PAST 12 MOS. . . . .
N-17. Approximately how many miles has it been driven in the past 12 months?	
N-18. What is your best estimate of the average miles per gallon (MPG) for this vehicle?	MPG . . . . . DON'T KNOW 6
N-19. Please look at Exhibit N-19. What is the basis for your estimate of miles per gallon?	FUEL PURCHASE LOG . . . . . 1 COMPUTER . . . . . 2 ADVERTISED . . . . . 3 ROUGH ESTIMATE . . . . . 4 DON'T KNOW 6
N-20. What is the sex of the household member who usually drives this vehicle?	FEMALE . . . . . 1 MALE . . . . . 2 DON'T KNOW DRIVER 6
N-21. What is the approximate age of the household member who usually drives this vehicle?	AGE . . . . . DON'T KNOW AGE 96

	VEHICLE #1	VEHICLE #2	VEHICLE #3	VEHICLE #4
N-15.	MONTH YEAR *934-37*	MONTH YEAR *1010-13*	MONTH YEAR *1085-88*	MONTH YEAR *1171-74*
N-16.	MILES *938-42*	MILES *1014-18*	MILES *1089-93*	MILES ->[N-18] *1175-79*
N-17.	MILES *943-47*	MILES *1019-23*	MILES *1094-98*	MILES *1180-84*
N-18.	MPG DK->[N-20] 96 *948-49*	MPG DK->[N-20] . . . 96 *1024-25*	MPG DK->[N-20] . . . 96 *1099-1100*	MPG DK->[N-20] 96 *1185-86*
N-19.	LOG . . . . . 1 COMPUTER . . . . . 2 ADVERTISED . . . . 3 ESTIMATE . . . . . 4 DON'T KNOW . . . 6 *950*	LOG . . . . . 1 COMPUTER . . . . . 2 ADVERTISED . . . . 3 ESTIMATE . . . . . 4 DON'T KNOW . . . 6 *1026*	LOG . . . . . 1 COMPUTER . . . . . 2 ADVERTISED . . . . 3 ESTIMATE . . . . . 4 DON'T KNOW . . . 6 *1101*	LOG . . . . . 1 COMPUTER . . . . . 2 ADVERTISED . . . . . 3 ESTIMATE . . . . . 4 DON'T KNOW 6 *1187*
N-20.	FEMALE . . . . . 1 MALE . . . . . 2 DON'T KNOW . . . 6 *951*	FEMALE . . . . . 1 MALE . . . . . 2 DON'T KNOW . . . 6 *1027*	FEMALE . . . . . 1 MALE . . . . . 2 DON'T KNOW . . . 6 *1102*	FEMALE . . . . . 1 MALE . . . . . 2 DON'T KNOW 6 *1188*
N-21.	AGE DON'T KNOW . . . 96 *952-53*	AGE DON'T KNOW . . 96 *1028-29*	AGE DON'T KNOW . . 96 *1103-04*	AGE DON'T KNOW . . . 96 *1189-90*

QUESTION	
N-22. Please look at Exhibit N-22. Where is this vehicle usually parked at home?	GARAGE . . . . . 1 CARPORT . . . . . 2 DRIVEWAY . . . . . 3 STREET . . . . . 4 PARKING LOT . . . . . 5 PARKING GARAGE . . . . . 6 IT VARIES . . . . . 7 OTHER: (Specify)_____ 8
N-23. Other than commuting, is this vehicle used for business purposes?	YES . . . . . 1 NO . . . . . 0 DON'T KNOW 6
IF USED FOR BUSINESS PURPOSES, ASK: N-24. What percent of total miles is for business purposes?	PERCENT . . . . . . DON'T KNOW 96
N-25. Is this vehicle owned or leased by your employer?	YES . . . . . 1 NO . . . . . 0 DON'T KNOW 6
IF "YES" ON N-25, ASK: N-26. Please look at Exhibit N-26. How would you best describe the organization or business that owns or leases this vehicle?	POLICE/FIRE . . . . . 1 OTHER GOVERNMENT . . . . . 2 TAXI . . . . . 3 UTILITY COMPANY . . . . . 4 SALES . . . . . 5 AUTO DEALER . . . . . 6 OTHER BUSINESS 7
N-27. Is this vehicle refueled at a central site?	YES . . . . . 1 NO . . . . . 0 DON'T KNOW 6

	VEHICLE #1	VEHICLE #2	VEHICLE #3	VEHICLE #4
N-22.	GARAGE . . . . . 1 CARPORT . . . . . 2 DRIVEWAY . . . . . 3 STREET . . . . . 4 PARKING LOT . . . 5 PARKING GARAGE 6 VARIES . . . . . 7 _____ 8 *954*	GARAGE . . . . . 1 CARPORT . . . . . 2 DRIVEWAY . . . . . 3 STREET . . . . . 4 PARKING LOT . . . . 5 PARKING GARAGE 6 VARIES . . . . . 7 _____ 8 *1030*	GARAGE . . . . . 1 CARPORT . . . . . 2 DRIVEWAY . . . . . 3 STREET . . . . . 4 PARKING LOT . . . . 5 PARKING GARAGE 6 VARIES . . . . . 7 _____ 8 *1105*	GARAGE . . . . . 1 CARPORT . . . . . 2 DRIVEWAY . . . . . 3 STREET . . . . . 4 PARKING LOT . . . . . 5 PARKING GARAGE . 6 VARIES . . . . . 7 _____ . 8 *1191*
N-23.	YES . . . . . 1 NO–>[N-28] . . . . 0 DON'T KNOW . . . 6 *955*	YES . . . . . 1 NO–>[N-28] . . . . . 0 DON'T KNOW 6 *1031*	YES . . . . . 1 NO–>[N-28] . . . . . 0 DON'T KNOW 6 *1106*	YES . . . . . 1 NO–>[N-28] . . . . . 0 DON'T KNOW 6 *1192*
N-24.	_____ DON'T KNOW . . 96 *956-57*	_____ DON'T KNOW . . . 96 *1032-33*	_____ DON'T KNOW . . . 96 *1107-08*	_____ DON'T KNOW 96 *1193-94*
N-25.	YES . . . . . 1 NO–>[N-28] . . . . 0 DK–>[N-28] 6 *958*	YES . . . . . 1 NO–>[N-28] . . . . . 0 DK–>[N-28] 6 *1034*	YES . . . . . 1 NO–>[N-28] . . . . . 0 DK–>[N-28] 6 *1109*	YES . . . . . 1 NO–>[N-28] . . . . . 0 DK–>[N-28] 6 *1195*
N-26.	POLICE/FIRE . . . . 1 OTHER GOVN . . . 2 TAXI . . . . . 3 UTIL COMPANY . . 4 SALES . . . . . 5 AUTO DEALER . . . 6 OTHR BUSINESS . 7 *959*	POLICE/FIRE . . . . . 1 OTHER GOVN . . . . 2 TAXI . . . . . 3 UTIL COMPANY . . . 4 SALES . . . . . 5 AUTO DEALER . . . . 6 OTHR BUSINESS . . 7 *1035*	POLICE/FIRE . . . . . 1 OTHER GOVN . . . . 2 TAXI . . . . . 3 UTIL COMPANY . . . 4 SALES . . . . . 5 AUTO DEALER . . . . 6 OTHR BUSINESS . . 7 *1110*	POLICE/FIRE . . . . . 1 OTHER GOVN . . . . . 2 TAXI . . . . . 3 UTIL COMPANY . . . . 4 SALES . . . . . 5 AUTO DEALER . . . . . 6 OTHR BUSINESS . . . 7 *1196*
N-27.	YES . . . . . 1 NO . . . . . 0 DON'T KNOW . . . 6 *960*	YES . . . . . 1 NO . . . . . 0 DON'T KNOW 6 *1036*	YES . . . . . 1 NO . . . . . 0 DON'T KNOW 6 *1111*	YES . . . . . 1 NO . . . . . 0 DON'T KNOW 6 *1197*

QUESTION	
N-28. Is the vehicle here now? (CIRCLE ANSWER, READ APPROPRIATE FOLLOW-UP QUESTION.)	YES VEHICLE HERE . . . . . 1 NO . . . . . 0->[N29]
IF "YES," READ: I would like to get the Vehicle Identification Number and odometer reading directly from the vehicle. I'll do that at the end of the interview. Do you know what a Vehicle Identification Number or VIN is? (IF DON'T KNOW, EXPLAIN VIN BY SHOWING EXHIBIT N-30. THEN, ASK QUESTIONS N-3 THRU N-30 FOR NEXT VEHICLE.	
N-29. **ODOMETER READING** RECORD FROM OBSERVATION OR ASK IF "NO" ON N-28.: Approximately what is the odometer reading for this vehicle? RECORD WHETHER ACTUAL OR ESTIMATE.	ODOMETER . . . . . . Actual Reading . . . . . 1 Estimate . . . . . 2 DON'T KNOW 6
N-30. **VEHICLE IDENTIFICATION NUMBER** I would like to get the Vehicle Identification Number or VIN Number for this vehicle. Do you know what the VIN Number is? (IF DON'T KNOW, EXPLAIN VIN BY SHOWING EXHIBIT N-30.) RECORD FROM OBSERVATION OR ASK IF "NO" ON N-28: Do you have any records that may contain the VIN Number such as an insurance card, registration, title, or bill of sale?	VIN FROM OBSERVATION . . . . . 4 VIN FROM RECORDS . . . . . 5 VIN REFUSED . . . . . 7 VIN NOT OBTAINED 8

INTERVIEWER: ASK N-3 THRU N-30 FOR NEXT VEHICLE.

	VEHICLE #1	VEHICLE #2	VEHICLE #3	VEHICLE #4
N-28.	HERE . . . . . 1 NO->[N-29] 0 *961*	HERE . . . . . 1 NO->[N-29] 0 *1037*	HERE . . . . . 1 NO->[N-29] 0 *1112*	HERE . . . . . 1 NO->[N-29] 0 *1198*
	962-67	*1038-43*	*1113-18*	*1199-1204*
N-29.	(Circle One) ACTUAL . . . . . 1 ESTIMATE . . . . . 2 DON'T KNOW . . . 6 *968*	(Circle One) ACTUAL . . . . . 1 ESTIMATE . . . . . 2 DON'T KNOW 6 *1044*	(Circle One) ACTUAL . . . . . 1 ESTIMATE . . . . . 2 DON'T KNOW 6 *1119*	(Circle One) ACTUAL . . . . . 1 ESTIMATE . . . . . 2 DON'T KNOW 6 *1205*
N-30.	OBSERVATION . . 4 RECORDS . . . . . 5 REFUSED . . . . . 7 NOT OBTAINED . . 8 GET VIN #, WRITE IN NEXT PAGE *969*	OBSERVATION . . . 4 RECORDS . . . . . 5 REFUSED . . . . . 7 NOT OBTAINED . . . 8 GET VIN #, WRITE IN NEXT PAGE *1045*	OBSERVATION . . . 4 RECORDS . . . . . 5 REFUSED . . . . . 7 NOT OBTAINED . . . 8 GET VIN #, WRITE IN NEXT PAGE *1120*	OBSERVATION . . . . 4 RECORDS . . . . . 5 REFUSED . . . . . 7 NOT OBTAINED . . . . 8 GET VIN #, WRITE IN NEXT PAGE *1206*

Form EIA-457A (1993)

VIN #1:

970 _____ 986

VIN #2

1046 _____ 1062

VIN #3

1121 _____ 1137

VIN #4

1207 _____ 1223

NEW HOME SUPPLEMENT

BOX 20

INTERVIEWER: CHECK FOLDOUT PAGE. ASK THIS SECTION IF SINGLE-FAMILY HOME, OWNED (NOT RENTED), AND BUILT IN 1988 OR LATER. OTHERWISE GO TO THE LIGHTING SUPPLEMENT, IF HOUSEHOLD HAS BEEN SELECTED FOR THE LIGHTING SUPPLEMENT. (SEE THE HOUSING UNIT RECORD SHEET.)

INTERVIEWER READ: "Since this is a (relatively) new house, I have a few questions about this house."

NH-1. Do you know which side of your home faces the South?

YES 1 *1234*
NO . . . . . 0 --> [NH-3]

If "YES" on NH-1, ASK:

NH-2. Using your best estimate, does the side of your home facing the South have more, the same, or less glass area than the North side of your home?

MORE GLASS AREA 1
SAME GLASS AREA 2 *1235*
LESS GLASS AREA 3
NO GLASS AREA ON SOUTH SIDE 0

INTERVIEWER READ: "Here are some questions that relate to the technical characteristics of your house. You might remember some of these items from the materials you received when you bought the house."

NH-3. What is your best estimate of the R-value of the insulation in the roof or ceiling, or perhaps you know the inches of insulation? (R-VALUES RANGE FROM 4 TO 49.)

R-VALUE ☐☐ OR INCHES ☐☐ . . . --> [NH-5]
DON'T KNOW 9996 *1236-39*
NO INSULATION . . . . . 0000 --> [NH-5]

IF "DON'T KNOW" ON NH-3, ASK:

NH-4. When you purchased your home, were you informed that the insulation in your roof or ceiling meets or exceeds the building code for your location?

MEETS THE BUILDING CODES 1
EXCEEDS THE BUILDING CODES 2 *1240*
DON'T REMEMBER/NOT INFORMED 6

INTERVIEWER: CHECK FOLDOUT PAGE. IF CENTRAL AIR CONDITIONING CONTINUE, OTHERWISE SKIP TO NH-7.

IF HAS CENTRAL AIR-CONDITIONING, ASK; OTHERWISE --> [NH-7]

NH-5. For your central air-conditioner, what is your best estimate of the size of the cooling capacity in tons or Btu? (12,000 Btu per hour = 1 ton cooling capacity.)

TONS ☐ OR BTU/HOUR ☐ *1241-44*

DON'T KNOW 9996

NH-6. Is your air-conditioner a high-efficiency unit?

YES 1
NO 0 *1249*
DON'T KNOW 6

NH-7. Is your heating equipment a high-efficiency unit?

YES 1
NO 0 *1250*
DON'T KNOW 6

NH-8. Can you set thermostats for your main heating equipment so that you have different temperatures in sections of your home? This is usually called "Zoned-Heating".

YES 1
NO/NO THERMOSTAT 2 *1251*
DON'T KNOW 6

NH-9. Please don't try to find them, but we are interested in whether you maintain files or still have the brochures pertaining to information about the characteristics of your home and major appliances?

YES	1	
NO	0	1252
DON'T KNOW	6	

INTERVIEWER: SEE THE HOUSING UNIT RECORD SHEET. IF THE HOUSING UNIT HAS BEEN SELECTED FOR THE LIGHTING SUPPLEMENT, GO TO THE LIGHTING SUPPLEMENT, OTHERWISE CONTINUE WITH SECTION O.

Section O. HOUSING MEASUREMENTS

GARAGE

BOX 21

INTERVIEWER: CHECK FOLDOUT PAGE: IF SINGLE-FAMILY OR MOBILE HOME, CONTINUE. OTHERWISE, SKIP TO O-2.

O-1. Please turn to Exhibit O-1. Which of these does your home have here? CIRCLE ALL THAT APPLY.

		YES	NO	
a.	NO GARAGE	1	0	1266
b.	ONE-CAR GARAGE	1	0	1267
c.	TWO-CAR GARAGE	1	0	1268
d.	THREE OR MORE CAR GARAGE	1	0	1269
e.	COVERED CARPORT	1	0	1270

BASEMENT

IF SINGLE-FAMILY HOME OR BUILDING WITH 2-4 UNITS, ASK. OTHERWISE , --> [O-5].

O-2. Please turn to Exhibit O-2. Does your home have a basement, an enclosed crawl space, a crawl space open to the outside, a concrete slab, or a combination of these?

A BASEMENT	1	
CRAWL SPACE -- ENCLOSED	2	
CRAWL SPACE -- OPEN TO THE OUTSIDE	3	1271
CONCRETE SLAB	4 --> [O-5]	
COMBINATION (MARK ALL BELOW THAT APPLY)	5	
BASEMENT	1	1272
CRAWL SPACE -- ENCLOSED	2	1273
CRAWL SPACE -- OPEN TO THE OUTSIDE	3	1274
CONCRETE SLAB	4	1275

INTERVIEWER: REMEMBER TO INCLUDE BASEMENT ON DIAGRAM. DO NOT INCLUDE CRAWL SPACE.

O-3. About how much of the basement/crawl space would you say is warm enough to sit, work, or play in during the winter months -- all, part, or none?

ALL	1	
PART	2	1276
NONE	0	

O-4. Do you have insulation in the floor area above the basement/crawl space?

YES, ALL	1	
YES, PART	2	1277
NO	0	
DON'T KNOW	6	

O-5. Please turn to Exhibit O-5. How much longer do you plan to live in this home?

LESS THAN 1 YEAR	01	
1-2 YEARS	02 --> [O-7]	
3-5 YEARS	03 --> [O-7]	
6-10 YEARS	04 --> [O-7]	1278-79
MORE THAN 10 YEARS	05 --> [O-7]	
REST OF MY LIFE/AS LONG AS I CAN	06 --> [O-7]	
NOT SURE	96	

IF "LESS THAN 1 YEAR" ON O-5, ASK:

O-6. Do you know where and when you may be moving?

YES	1	
ADDRESS OR CITY: _____		1280
MONTH/YEAR: _____		
NO	2	

MEASUREMENTS

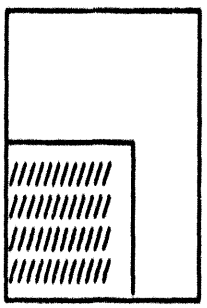
INTERVIEWER: ALWAYS DO MEASUREMENTS FROM THE OUTSIDE WHERE POSSIBLE. IF NOT POSSIBLE, READ TO RESPONDENT: "With your home, I think it would be most appropriate to measure the inside."

UNHEATED AREAS: WITHIN THE HOUSING UNIT THAT YOU MEASURE, INDICATE UNHEATED AREA(S) IN THE DIAGRAMS WITH SHADING. GIVE DIMENSIONS OF UNHEATED AREA(S).

USE BLANK PAGES FACING MEASUREMENT PAGES FOR ADDITIONAL SKETCHES, MEASUREMENTS, AND EXPLANATIONS.

RECORD ALL MEASUREMENTS ON DIAGRAMS TO NEAREST FOOT.

DO NOT INCLUDE OPEN PORCH IN DIAGRAM

SHADE UNHEATED AREAS THIS WAY. . . . . 

O-7. To understand the usage of energy in your (house/apartment), we need to know its size in square feet. With your permission, I would like to measure your home.

MEASUREMENTS FOLLOW 1
RESPONDENT REFUSED . . . . . 7 --> [BOX 22: *1281* PAGE 110]
OTHER: _____ . . . 2

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Form EIA-457A (1993)

NOTES REGARDING BASEMENT MEASUREMENTS

FOR OFFICE USE ONLY

Floor Codes			Unit A			Unit B			Unit C			Unit D			# of Units
1301	02	03	04	05-06	07-08	09	10-11	12-13	14	15-16	17-18	19	20-21	22-23	24

BASEMENT MEASUREMENTS FOR HOME/APARTMENT

Single-Family Home or Townhouse [ ]	Apartment in 2-4 Unit Building [ ]	Apartment in 5+ Unit Building [ ]	Mobile Home [ ]
Garage type: [ ] No garage this floor [ ] Heated attached (INCLUDE) [ ] Unheated attached (INCLUDE/SHADE) [ ] Detached (DO NOT INCLUDE)	EXCLUDE GARAGE	DO NOT MEASURE BASEMENT	MOBILE HOMES DO NOT HAVE BASEMENTS
Include all enclosed space in basement Do not measure crawl space	Include only space for exclusive or primary use by household		
Floor is: [ ] All heated [ ] All unheated (SHADE) [ ] Partially heated (SHADE UNHEATED PART)			

INTERVIEWER: REMEMBER TO SHADE UNHEATED AREAS. IN A BASEMENT, THE AREA IS HEATED IF IT WARM ENOUGH TO SIT, WORK, OR PLAY IN DURING THE WINTER.

Diagram for Floor with Rectangular Shape	Diagram for Floor if Other than Rectangular
[ ] [ ]	

INTERVIEWER: Measurements based on [ ] Inside [ ] Outside [ ] Other: Specify _____

Form EIA-457A (1993)

NOTES REGARDING FIRST FLOOR MEASUREMENTS

FOR OFFICE USE ONLY

Floor Codes			Unit A			Unit B			Unit C			Unit D			# of Units
1326	27	28	29	30-31	32-33	34	35-36	37-38	39	40-41	42-43	44	45-46	47-48	49

FIRST FLOOR MEASUREMENTS FOR HOME/APARTMENT

Single-Family Home or Townhouse [ ]	Apartment in 2-4 Unit Building [ ]	Apartment in 5+ Unit Building [ ]	Mobile Home [ ]
Include all space enclosed from the weather			
Garage type: [ ] No garage [ ] Heated attached (INCLUDE) [ ] Unheated attached (INCLUDE/SHADE) [ ] Detached (DO NOT INCLUDE)	EXCLUDE GARAGE	EXCLUDE GARAGE	Garage type: [ ] No garage [ ] Heated attached (INCLUDE) [ ] Unheated Attached (INCLUDE/SHADE) [ ] Detached (DO NOT INCLUDE)
Floor is: [ ] All heated [ ] All unheated - SHADE [ ] Part heated and part unheated - SHADE UNHEATED PART			
Porch type: [ ] No porch [ ] Heated Enclosed Porch - INCLUDE IN DRAWING [ ] Unheated Enclosed Porch -- INCLUDE IN DRAWING AND SHADE [ ] Open Porch -- DO NOT INCLUDE			

Diagram for Floor with Rectangular Shape	Diagram for Floor if Other than Rectangular
[ ] [ ]	

INTERVIEWER: Measurements based on [ ] Inside [ ] Outside [ ] Other: Specify _____

IF NO ADDITIONAL FLOORS OR ATTIC, GO TO BOX 22, PAGE 110.

Form EIA-457A (1993)

NOTES REGARDING SECOND FLOOR MEASUREMENTS

FOR OFFICE USE ONLY

Floor Codes			Unit A			Unit B			Unit C			Unit D			# of Units
1351	52	53	54	55-56	57-58	59	60-61	62-63	64	65-66	67-68	69	70-71	72-73	74

SECOND FLOOR OF HOME/APARTMENT

Single-Family Home or Townhouse [ ]	Apartment in 2-4 Unit Building [ ]	Apartment in 5+ Unit Building [ ]	Mobile Home [ ]
Garage type: [ ] No garage [ ] Heated attached (INCLUDE) [ ] Unheated attached (INCLUDE/SHADE) [ ] Detached (DO NOT INCLUDE)	EXCLUDE GARAGE	EXCLUDE GARAGE	Garage type: [ ] No garage [ ] Heated attached (INCLUDE) [ ] Unheated attached (INCLUDE/SHADE) [ ] Detached (DO NOT INCLUDE)
Floor is: [ ] All heated [ ] All unheated - SHADE [ ] Part heated and part unheated - SHADE UNHEATED PART			
Porch type: [ ] No Porch [ ] Heated Enclosed Porch - INCLUDE IN DRAWING [ ] Unheated Enclosed Porch -- INCLUDE IN DRAWING AND SHADE [ ] Open Porch -- DO NOT INCLUDE			

Diagram for Floor with Rectangular Shape	Diagram for Floor if Other than Rectangular
[ ] [ ]	
INTERVIEWER: Measurements based on [ ] Inside [ ] Outside [ ] Other: Specify _____	
IF NO ADDITIONAL FLOORS OR ATTIC, GO TO BOX 22, PAGE 110.	

THIRD FLOOR OF HOME/APARTMENT

Single-Family Home or Townhouse [ ]	Apartment in 2-4 Unit Building [ ]	Apartment in 5+ Unit Building [ ]	Mobile Home [ ]
Include all space enclosed from the weather			

Floor is:
- [ ] All heated
- [ ] All unheated - SHADE
- [ ] Part heated and part unheated - SHADE UNHEATED PART

Porch type:
- [ ] No porch
- [ ] Heated Enclosed Porch - INCLUDE IN DRAWING
- [ ] Unheated Enclosed Porch -- INCLUDE IN DRAWING AND SHADE
- [ ] Open Porch -- DO NOT INCLUDE

Diagram for Floor with Rectangular Shape	Diagram for Floor if Other than Rectangular
[ ] [ ]	

INTERVIEWER: Measurements based on [ ] Inside [ ] Outside [ ] Other: Specify _____

IF NO ADDITIONAL FLOORS OR ATTIC, GO TO BOX 22, PAGE 110.

FOR OFFICE USE ONLY

Floor Codes			Unit A			Unit B			Unit C			Unit D			# of Units
1376	77	78	79	80-81	82-83	84	85-86	87-88	89	90-91	92-93	94	95-96	97-98	99

ATTIC OF HOME

INTERVIEWER: IF APARTMENT IN 2-4 UNITS, ATTIC MUST BE FOR EXCLUSIVE USE OF HOUSEHOLD.

IF APARTMENT IN 5+ UNITS BUILDING, **DO NOT INCLUDE**

Single-Family Home or Townhouse [ ]	**Apartment in 2-4 Unit Building [ ]**	**Apartment in 5+ Unit Building [ ]**	**Mobile Home [ ]**

Attic is:

[ ] Heated - DRAW
[ ] All unheated and finished - DRAW
[ ] Part heated and part unheated - SHADE UNHEATED PART
[ ] Unheated and unfinished - DO NOT DRAW

Diagram for Attic with Rectangular Shape	Diagram for Floor if Other than Rectangular
[ ] [ ]	

INTERVIEWER: Measurements based on [ ] Inside [ ] Outside [ ] Other: Specify _____

FOR OFFICE USE ONLY

Floor Codes			Unit A			Unit B			Unit C			Unit D			# of Units
1400	01	02	03	04-05	06-07	08	09-10	11-12	13	14-15	16-17	18	19-20	21-22	23

BOX 22

INTERVIEWER: DID YOU REMEMBER TO INSPECT VEHICLES FOR VIN NUMBERS AND ODOMETER READINGS?

YES . . . . . [ ]
NO - PLEASE DO SO NOW (VINS ON PAGE 94) . . . . . [ ]

This is the end of the interview. Thank you very much for your help.

TIME ENDED:_____

Section P. INTERVIEWER OBSERVATION

FILL IN AND CHECK THAT ALL INFORMATION IS COMPLETE:

P-1. LENGTH OF INTERVIEW: _____ MINUTES *1424-26*

P-2. INTERVIEWER'S SIGNATURE: _____ DATE: _____ *1427-30*

P-3. INTERVIEWER'S I.D.#: _____ *1431-34*

FILL THIS OUT AFTER YOU COMPLETE THE INTERVIEW.

P-4. WHAT PROBLEMS, IF ANY, DID YOU HAVE IN MEASURING THIS (HOME/APARTMENT)?

_____

_____

_____

_____

_____

P-5. WHAT EFFECT, IF ANY, DID THESE PROBLEMS HAVE ON THE ACCURACY OF YOUR MEASUREMENTS?

_____

_____

_____

_____

_____

P-6. WHAT IS UNIQUE OR UNUSUAL ABOUT THIS HOUSEHOLD THAT IS RELATED TO ITS USE OF ENERGY?

P-7. WHICH QUESTION WAS THE MOST TROUBLESOME FOR THE RESPONDENT TO UNDERSTAND OR ANSWER?

P-8. WAS THERE A PROBLEM GETTING THE AUTHORIZATION FORM SIGNED? WHAT COULD BE DONE TO DEAL WITH THIS IN THE FUTURE?

P-9. WHAT ELSE WOULD IT BE HELPFUL FOR US TO KNOW ABOUT THIS HOUSING UNIT OR INTERVIEW?

P-10. DO YOU HAVE ANY SUGGESTIONS TO IMPROVE THE SURVEY FOR HOMES LIKE THIS ONE?

FOLDOUT PAGE

A-1. Housing Structure	B-3. Tenure	B-4. Condominium	B-7. When Home Built	B-9. Year Moved In
Single Family Detached . ☐	Own . . . . ☐	Yes . . . . . ☐	Built 1988 or Later . . . . . ☐	1993 . . . . . ☐
Single Family Attached . . ☐	Rent . . . ☐			1994 . . . . . ☐
Apartments 2-4 Units . . . ☐	Occupy W/O Payment ☐	FUEL DELIVERED TO HOUSEHOLD		
5+ Units . . . . . ☐		J-12. Bottled Gas . . . . . ☐		
Mobile Home . . . . . ☐		J-17. Fuel Oil . . . . . ☐		
		J-20. Kerosene . . . . . ☐		

L-1. HOUSEHOLD MEMBERS					
1 . . ☐	2 . . ☐	3 . . ☐	4 . . ☐	5 . . ☐	6 or more . . ☐

FUEL USED			FUEL/USAGE CATEGORIES	USAGE (Recorded During Interview)			HOW USAGE IS PAID				
YES	NO	DK		YES	NO	DK	PAID BY HH	IN RENT/ CONDO FEE	OTHER: Specify		
1			ELECTRICITY USED:								1440
			a. For home heating	1	0	6	1	2	6->		1441-42
			b. For hot water	1	0	6	1	2	6->		1443-44
			c. For cooking	1	0	6	1	2	6->		1445-46
			d. For air conditioning	1	0	6	1	2	6->		1447-48
			e. For lighting and appliances	1			1	2	6->		1449-50
1	0	6	NATURAL GAS USED:								1451
			f. For home heating	1	0	6	1	2	6->		1452-53
			g. For hot water	1	0	6	1	2	6->		1454-55
			h. For cooking	1	0	6	1	2	6->		1456-57
			i. For other appliances (clothes dryer, outdoor lights, central air conditioning)	1	0	6	1	2	6->		1458-59
1	0	6	BOTTLED GAS (LPG OR PROPANE USED: Do not mark used if only use is for outdoor grill				1	2	6->		1460-61
1	0	6	FUEL OIL USED:				1	2	6->		1462-63
1	0	6	KEROSENE USED:								1464
1	0	6	WOOD BURNED:								1465
1	0	6	COAL USED:								1466
1	0	6	SOLAR USED:								1467

Form EIA-457A (1993)

Form Approval:
OMB No.: 1905-0092
Expires: June 30,1996

U.S. DEPARTMENT OF ENERGY
Authorization Form
RESIDENTIAL ENERGY CONSUMPTION SURVEY

I hereby give permission to the company (companies) below to provide information to Response Analysis Corporation (or other designee of the U.S. Department of Energy) for confidential use in connection with their survey for the U.S. Department of Energy.

This authorization covers the following data for the period from October 1, 1992 through December 21, 1996:

1) the total amount of fuels used by my household
2) the total price charged for fuels used by my household
3) participation in demand-side management, energy audit, and other programs

Companies are authorized to provide this information by monthly periods or by delivery date, whichever applies. A photocopy of this authorization may be accepted with the same authority as the original.

Signature: _____ Date: _____

PLEASE PRINT

YOUR NAME: _____

ADDRESS: _____ APT. NO.

CITY OR POST OFFICE: _____ STATE _____ ZIP CODE

TELEPHONE: AREA CODE _____ NUMBER _____

[ ] Demand-side management and information about energy audit and other programs is not to be released if this box is initialed by the authorizing person.

PLEASE COMPLETE ONE BLOCK BELOW FOR EACH FUEL USED BY THE HOUSEHOLD. IF MORE THAN ONE SUPPLIER OF A PARTICULAR FUEL, USE THE OTHER SIDE OF THIS SHEET.

ELECTRICITY

PRINT FULL NAME OF ELECTRIC COMPANY

_____

NATURAL GAS or BOTTLED GAS

PRINT FULL NAME OF GAS COMPANY

_____

FUEL OIL or KEROSENE

PRINT FULL NAME OF OIL COMPANY

_____

BOTTLED GAS (LPG or Propane)

SECOND GAS COMPANY

PRINT FULL NAME OF GAS COMPANY

_____

BOTTLED GAS (LPG or Propane)

THIRD GAS COMPANY

PRINT FULL NAME OF GAS COMPANY

_____

FUEL OIL or KEROSENE

SECOND FUEL OIL/KEROSENE COMPANY

PRINT FULL NAME OF OIL COMPANY

_____

FUEL OIL or KEROSENE

THIRD FUEL OIL/KEROSENE COMPANY

PRINT FULL NAME OF OIL COMPANY

_____

Form EIA-457A (1993)

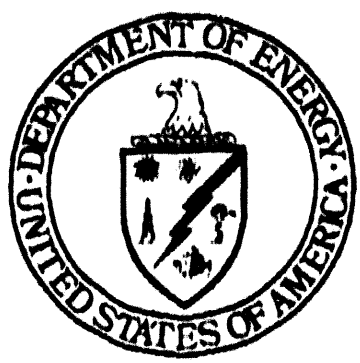
Form Approval:
OMB No.: 1905-0092
Expires: June 30, 1996

U.S. Department of Energy

1-4

1993 Residential Energy Consumption Survey

Additional Household Vehicles



INTERVIEWER: THIS BOOKLET WILL BE USED ONLY IF THE HOUSEHOLD HAS MORE THAN 5 VEHICLES.

MAKE SURE TO ENTER BOTH THE LOCATION # AND HOUSING UNIT # BELOW.

Location #: _____ 10-15

Housing Unit #: _____ 16-17

ADDITIONAL VEHICLES (5-8)

QUESTION	
N-3. What is the make?	MAKE . . . . .
N-4. What is the model name? (SEE INSTRUCTIONS)	MODEL . . . . .
N-5. What is the model year?	YEAR . . . . .
N-6. Please turn to Exhibit N-6. What is the type of vehicle? (CIRCLE ONE). WRITE ADDITIONAL IDENTIFYING INFORMATION IN MARGIN.	CAR . . . . . 01 STATION WAGON . . . . . 02 LARGE VAN . . . . . 03 MINI VAN . . . . . 04 PICKUP TRUCK . . . . . 05 SPORT-UTILITY VEHICLE . . 06 OTHER (SPECIFY): 21
N-7. Does it have an air conditioner?	YES . . . . . 1 NO 0
N-8. Does it have an automatic transmission or manual shift?	AUTOMATIC TRANSMISSION 1 MANUAL SHIFT . . . . . 2 DON'T KNOW 6
N-9. How many cylinders does the engine have?	3-CYLINDERS . . . . . 03 4-CYLINDERS . . . . . 04 5-CYLINDERS . . . . . 05 6-CYLINDERS . . . . . 06 8-CYLINDERS . . . . . 08 OTHER . . . . . 21 DON'T KNOW 96

	VEHICLE #5	VEHICLE #6	VEHICLE #7	VEHICLE #8
N-3.	MAKE *18-19*	MAKE *94-95*	MAKE *170-71*	MAKE *246-47*
N-4.	MODEL *20-21*	MODEL *96-97*	MODEL *172-73*	MODEL *248-49*
N-5.	19_____ *22-23*	19_____ *98-99*	19_____ *174-75*	19_____ *250-51*
N-6.	CAR . . . . . 01 STATN WAGON . . 02 LARGE VAN . . . . . 03 MINI VAN . . . . . 04 PICK UP TRUCK . 05 SPORT UTILITY . . 06 _____ . 21 *24-25*	CAR . . . . . 01 STATN WAGON . . 02 LARGE VAN . . . . . 03 MINI VAN . . . . . 04 PICK UP TRUCK . 05 SPORT UTILITY . . 06 _____ . 21 *100-01*	CAR . . . . . 01 STATN WAGON . 02 LARGE VAN . . . . 03 MINI VAN . . . . . 04 PICK UP TRUCK 05 SPORT UTILITY . 06 _____ 21 *176-77*	CAR . . . . . 01 STATN WAGON . . 02 LARGE VAN . . . . . 03 MINI VAN . . . . . 04 PICK UP TRUCK . 05 SPORT UTILITY . . 06 _____ . 21 *252-53*
N-7.	YES . . . . . 1 NO 0 *26*	YES . . . . . 1 NO 0 *102*	YES . . . . . 1 NO 0 *178*	YES . . . . . 1 NO 0 *254*
N-8.	AUTOMATIC . . . . . 1 MANUAL . . . . . 2 DON'T KNOW 6 *27*	AUTOMATIC . . . . . 1 MANUAL . . . . . 2 DON'T KNOW 6 *103*	AUTOMATIC . . . . 1 MANUAL . . . . . 2 DON'T KNOW . . . 6 *179*	AUTOMATIC . . . . . 1 MANUAL . . . . . 2 DON'T KNOW 6 *255*
N-9.	3 CYLINDERS . . . 03 4 CYLINDERS . . . 04 5 CYLINDERS . . . 05 6 CYLINDERS . . . 06 8 CYLINDERS . . . 08 OTHER . . . . . 21 DON'T KNOW . . . 96 *28-29*	3 CYLINDERS . . . 03 4 CYLINDERS . . . 04 5 CYLINDERS . . . 05 6 CYLINDERS . . . 06 8 CYLINDERS . . . 08 OTHER . . . . . 21 DON'T KNOW . . . 96 *104-05*	3 CYLINDERS . . 03 4 CYLINDERS . . 04 5 CYLINDERS . . 05 6 CYLINDERS . . 06 8 CYLINDERS . . 08 OTHER . . . . . 21 DON'T KNOW . . 96 *180-81*	3 CYLINDERS . . . 03 4 CYLINDERS . . . 04 5 CYLINDERS . . . 05 6 CYLINDERS . . . 06 8 CYLINDERS . . . 08 OTHER . . . . . 21 DON'T KNOW . . . 96 *256-57*

QUESTION	
N-10. Does it have front-wheel, rear-wheel, or 4-wheel drive? (IF RESPONDENT SAYS COMBINATION THAT INCLUDES 4-WHEEL DRIVE, MARK 4-WHEEL DRIVE.)	FRONT-WHEEL . . . . . 1 REAR-WHEEL . . . . . 2 4-WHEEL . . . . . 3 OTHER: (Specify) . . . . . 5 DON'T KNOW 6
N-11. Does the fuel system use a carburetor, fuel injection, or is it a diesel engine or an electric vehicle?	CARBURETOR . . . . . 1 FUEL INJECTION . . . . . 2 DIESEL . . . . . 3–>[N-13] ELECTRIC . . . . . 4–>[N-14] OTHER: (Specify) . . . . . 5 DON'T KNOW 6
N-12. Please turn to Exhibit N-12. During the past year, what type of fuel did this vehicle use?	UNLEADED GASOLINE Regular (87-88.9 Octane) . . . . . 01 Mid-grade (89-90.9 Octane) . . . . 02 Premium (91 or Greater Octane) 03 LEADED GASOLINE . . . . . 04 ETHANOL BLEND (Gasohol) . . . . 05 NATURAL GAS . . . . . 06 PROPANE . . . . . 07 ALCOHOL . . . . . 08 OTHER: (Specify) . . . . . 21 DON'T KNOW 96
N-13. When fuel was purchased for this vehicle during the past year, was most of the fuel purchased at full-service pumps or self-service pumps? (IF "MINI-SERVICE," RECORD AS SELF-SERVICE.)	FULL-SERVICE . . . . . 1 SELF-SERVICE . . . . . 2 BOTH EQUALLY . . . . . 3 OTHER: (Specify) . . . . . 5 DON'T KNOW 6
N-14. Did you get this vehicle within the past 12 months or did you get it before that? (CIRCLE ONE, THEN ASK APPROPRIATE FOLLOW-UP QUESTION)	WITHIN PAST 12 MONTHS 1 BEFORE THAT . . . . . 2->[N-17]

	VEHICLE #5	VEHICLE #6	VEHICLE #7	VEHICLE #8
N-10.	FRONT WHEEL . . 1 REAR WHEEL . . . 2 4 WHEEL . . . . . 3 _____ 5 DON'T KNOW . . . 6 *30*	FRONT WHEEL . . . 1 REAR WHEEL . . . . 2 4 WHEEL . . . . . 3 _____ . 5 DON'T KNOW 6 *106*	FRONT WHEEL . . 1 REAR WHEEL . . . 2 4 WHEEL . . . . . 3 _____ 5 DON'T KNOW . . . 6 *182*	FRONT WHEEL . . . 1 REAR WHEEL . . . . 2 4 WHEEL . . . . . 3 _____ . 5 DON'T KNOW 6 *258*
N-11.	CARBURETOR . . . 1 FUEL INJECTION . 2 DIESEL–>[N-13] . 3 ELECTRIC–>[N-14] 4 _____ 5 DON'T KNOW . . . 6 *31*	CARBURETOR . . . . 1 FUEL INJECTION . . 2 DIESEL–>[N-13] . . 3 ELECTRIC–>[N-14] 4 _____ . 5 DON'T KNOW 6 *107*	CARBURETOR . . . 1 FUEL INJECTION . 2 DIESEL–>[N-13] . 3 ELECTRIC–>[N-14] 4 _____ 5 DON'T KNOW . . . 6 *183*	CARBURETOR . . . . 1 FUEL INJECTION . . 2 DIESEL–>[N-13] . . 3 ELECTRIC–>[N-14] 4 _____ . 5 DON'T KNOW 6 *259*
N-12.	UNLEADED GAS Reg. (87-88.9 oct).01 Mid. (89-90.9 oct).02 Prem. (91+ oct) . 03 LEADED GAS . . . . 04 ETHANOL BND . . 05 NATURAL GAS . . 06 PROPANE . . . . . 07 ALCOHOL . . . . . 08 OTHER–>[N-14] . 21 _____ DON'T KNOW . . . 96 *32-33*	UNLEADED GAS Reg. (87-88.9 oct). 01 Mid. (89-90.9 oct). 02 Prem. (91+ oct) . . 03 LEADED GAS . . . . 04 ETHANOL BND . . 05 NATURAL GAS . . 06 PROPANE . . . . . 07 ALCOHOL . . . . . 08 OTHER–>[N-14] . 21 _____ DON'T KNOW . . . 96 *108-09*	UNLEADED GAS Reg. (87-88.9 oct)01 Mid. (89-90.9 oct).02 Prem. (91+ oct) . 03 LEADED GAS . . . 04 ETHANOL BND . 05 NATURAL GAS . 06 PROPANE . . . . . 07 ALCOHOL . . . . . 08 OTHER–>[N-14] 21 _____ DON'T KNOW . . 96 *184-85*	UNLEADED GAS Reg. (87-88.9 oct).01 Mid. (89-90.9 oct). 02 Prem. (91+ oct) . .03 LEADED GAS . . . . 04 ETHANOL BND . . 05 NATURAL GAS . . 06 PROPANE . . . . . 07 ALCOHOL . . . . . 08 OTHER–>[N-14] . 21 _____ DON'T KNOW . . . 96 *260-61*
N-13.	FULL SERVICE . . . 1 SELF SERVICE . . 2 BOTH . . . . . 3 _____ 5 DON'T KNOW . . . 6 *34*	FULL SERVICE . . . . 1 SELF SERVICE . . . 2 BOTH . . . . . 3 _____ 5 DON'T KNOW 6 *110*	FULL SERVICE . . . 1 SELF SERVICE . . 2 BOTH . . . . . 3 _____ 5 DON'T KNOW . . . 6 *186*	FULL SERVICE . . . . 1 SELF SERVICE . . . 2 BOTH . . . . . 3 _____ 5 DON'T KNOW 6 *262*
N-14.	WITHIN 12 MNTHS 1 BEFORE–>[N-17] 2 *35*	WITHIN 12 MNTHS . 1 BEFORE–>[N-17] . 2 *111*	WITHIN 12 MNTHS 1 BEFORE–>[N-17] 2 *187*	WITHIN 12 MNTHS . 1 BEFORE–>[N-17] . 2 *263*

QUESTION	
IF "WITHIN PAST 12 MONTHS," ASK: N-15. In what month and year did you get it?	MONTH ..... YEAR .....
N-16. Approximately how many miles has it been driven since you obtained it?	MILES .....
IF "BEFORE THAT," ASK: N-17. Approximately how many miles has it been driven in the past 12 months?	MILES PAST 12 MOS. .....
N-18. What is your best estimate of the average miles per gallon (MPG) for this vehicle?	MPG ..... DON'T KNOW 6
N-19. Please look at Exhibit N-19. What is the basis for your estimate of miles per gallon?	FUEL PURCHASE LOG ..... 1 COMPUTER ..... 2 ADVERTISED ..... 3 ROUGH ESTIMATE ..... 4 DON'T KNOW 6
N-20. What is the sex of the household member who usually drives this vehicle?	FEMALE ..... 1 MALE ..... 2 DON'T KNOW DRIVER 6
N-21. What is the approximate age of the household member who usually drives this vehicle?	AGE ..... DON'T KNOW AGE 96

	VEHICLE #5	VEHICLE #6	VEHICLE #7	VEHICLE #8
N-15.	MONTH YEAR *36-39*	MONTH YEAR *112-15*	MONTH YEAR *188-91*	MONTH YEAR *264-67*
N-16.	MILES *40-44*	MILES *116-20*	MILES *192-96*	MILES ->[N-18] *268-72*
N-17.	MILES *45-49*	MILES *121-25*	MILES *197-201*	MILES *273-77*
N-18.	MPG DK->[N-20] 96 *50-51*	MPG DK->[N-20] . . . 96 *126-27*	MPG DK->[N-20] . . . 96 *202-03*	MPG DK->[N-20] 96 *278-79*
N-19.	LOG . . . . . 1 COMPUTER . . . . . 2 ADVERTISED . . . . 3 ESTIMATE . . . . . 4 DON'T KNOW . . . 6 *52*	LOG . . . . . 1 COMPUTER . . . . . 2 ADVERTISED . . . . 3 ESTIMATE . . . . . 4 DON'T KNOW . . . 6 *128*	LOG . . . . . 1 COMPUTER . . . . . 2 ADVERTISED . . . . 3 ESTIMATE . . . . . 4 DON'T KNOW . . . 6 *204*	LOG . . . . . 1 COMPUTER . . . . . 2 ADVERTISED . . . . . 3 ESTIMATE . . . . . 4 DON'T KNOW 6 *280*
N-20.	FEMALE . . . . . 1 MALE . . . . . 2 DON'T KNOW . . . 6 *53*	FEMALE . . . . . 1 MALE . . . . . 2 DON'T KNOW . . . 6 *129*	FEMALE . . . . . 1 MALE . . . . . 2 DON'T KNOW . . . 6 *205*	FEMALE . . . . . 1 MALE . . . . . 2 DON'T KNOW 6 *281*
N-21.	AGE DON'T KNOW . . . 96 *54-55*	AGE DON'T KNOW . . 96 *130-31*	AGE DON'T KNOW . . 96 *206-07*	AGE DON'T KNOW . . . 96 *282-83*

QUESTION	
N-22. Please look at Exhibit N-22. Where is this vehicle usually parked at home?	GARAGE . . . . . 1 CARPORT . . . . . 2 DRIVEWAY . . . . . 3 STREET . . . . . 4 PARKING LOT . . . . . 5 PARKING GARAGE . . . . . 6 IT VARIES . . . . . 7 OTHER: (Specify)_____ 8
N-23. Other than commuting, is this vehicle used for business purposes?	YES . . . . . 1 NO . . . . . 0 DON'T KNOW 6
IF USED FOR BUSINESS PURPOSES, ASK: N-24. What percent of total miles is for business purposes?	PERCENT . . . . . . DON'T KNOW 96
N-25. Is this vehicle owned or leased by your employer?	YES . . . . . 1 NO . . . . . 0 DON'T KNOW 6
IF "YES" ON N-25, ASK: N-26. Please look at Exhibit N-26. How would you best describe the organization or business that owns or leases this vehicle?	POLICE/FIRE . . . . . 1 OTHER GOVERNMENT . . . . . 2 TAXI . . . . . 3 UTILITY COMPANY . . . . . 4 SALES . . . . . 5 AUTO DEALER . . . . . 6 OTHER BUSINESS 7
N-27. Is this vehicle refueled at a central site?	YES . . . . . 1 NO . . . . . 0 DON'T KNOW 6

	VEHICLE #5	VEHICLE #6	VEHICLE #7	VEHICLE #8
N-22.	GARAGE . . . . . 1 CARPORT . . . . . 2 DRIVEWAY . . . . . 3 STREET . . . . . 4 PARKING LOT . . . 5 PARKING GARAGE 6 VARIES . . . . . 7 _____ 8 *56*	GARAGE . . . . . 1 CARPORT . . . . . 2 DRIVEWAY . . . . . 3 STREET . . . . . 4 PARKING LOT . . . . 5 PARKING GARAGE 6 VARIES . . . . . 7 _____ 8 *132*	GARAGE . . . . . 1 CARPORT . . . . . 2 DRIVEWAY . . . . . 3 STREET . . . . . 4 PARKING LOT . . . . 5 PARKING GARAGE 6 VARIES . . . . . 7 _____ 8 *208*	GARAGE . . . . . 1 CARPORT . . . . . 2 DRIVEWAY . . . . . 3 STREET . . . . . 4 PARKING LOT . . . . . 5 PARKING GARAGE . 6 VARIES . . . . . 7 _____ . 8 *284*
N-23.	YES . . . . . 1 NO–>[N-28] . . . . 0 DON'T KNOW . . . 6 *57*	YES . . . . . 1 NO–>[N-28] . . . . . 0 DON'T KNOW 6 *133*	YES . . . . . 1 NO–>[N-28] . . . . . 0 DON'T KNOW 6 *209*	YES . . . . . 1 NO–>[N-28] . . . . . 0 DON'T KNOW 6 *285*
N-24.	_____ DON'T KNOW . . 96 *58-59*	_____ DON'T KNOW . . . 96 *134-35*	_____ DON'T KNOW . . . 96 *210-11*	_____ DON'T KNOW 96 *286-87*
N-25.	YES . . . . . 1 NO–>[N-28] . . . . 0 DK–>[N-28] 6 *60*	YES . . . . . 1 NO–>[N-28] . . . . . 0 DK–>[N-28] 6 *136*	YES . . . . . 1 NO–>[N-28] . . . . . 0 DK–>[N-28] 6 *212*	YES . . . . . 1 NO–>[N-28] . . . . . 0 DK–>[N-28] 6 *288*
N-26.	POLICE/FIRE . . . . 1 OTHER GOVN . . . 2 TAXI . . . . . 3 UTIL COMPANY . . 4 SALES . . . . . 5 AUTO DEALER . . . 6 OTHR BUSINESS . 7 *61*	POLICE/FIRE . . . . . 1 OTHER GOVN . . . . 2 TAXI . . . . . 3 UTIL COMPANY . . . 4 SALES . . . . . 5 AUTO DEALER . . . . 6 OTHR BUSINESS . . 7 *137*	POLICE/FIRE . . . . . 1 OTHER GOVN . . . . 2 TAXI . . . . . 3 UTIL COMPANY . . . 4 SALES . . . . . 5 AUTO DEALER . . . . 6 OTHR BUSINESS . . 7 *213*	POLICE/FIRE . . . . . 1 OTHER GOVN . . . . . 2 TAXI . . . . . 3 UTIL COMPANY . . . . 4 SALES . . . . . 5 AUTO DEALER . . . . . 6 OTHR BUSINESS . . . 7 *289*
N-27.	YES . . . . . 1 NO . . . . . 0 DON'T KNOW . . . 6 *62*	YES . . . . . 1 NO . . . . . 0 DON'T KNOW 6 *138*	YES . . . . . 1 NO . . . . . 0 DON'T KNOW 6 *214*	YES . . . . . 1 NO . . . . . 0 DON'T KNOW 6 *290*

QUESTION	
N-28. Is the vehicle here now? (CIRCLE ANSWER, READ APPROPRIATE FOLLOW-UP QUESTION.)	YES VEHICLE HERE . . . . . 1 NO . . . . . 0->[N-29]
IF "YES," READ: I would like to get the Vehicle Identification Number and odometer reading directly from the vehicle. I'll do that at the end of the interview. Do you know what a Vehicle Identification Number or VIN is? (IF DON'T KNOW, EXPLAIN VIN BY SHOWING EXHIBIT N-30. THEN, ASK QUESTIONS N-3 THRU N-30 FOR NEXT VEHICLE.	
N-29. **ODOMETER READING** RECORD FROM OBSERVATION OR ASK IF "NO" ON N-28: Approximately what is the odometer reading for this vehicle? RECORD WHETHER ACTUAL OR ESTIMATE.	ODOMETER . . . . . . Actual Reading . . . . . 1 Estimate . . . . . 2 DON'T KNOW 6
N-30. **VEHICLE IDENTIFICATION NUMBER** I would like to get the Vehicle Identification Number or VIN Number for this vehicle. Do you know what the VIN Number is? (IF DON'T KNOW, EXPLAIN VIN BY SHOWING EXHIBIT N-30.) RECORD FROM OBSERVATION OR ASK IF "NO" ON N-28: Do you have any records that may contain the VIN Number such as an insurance card, registration, title, or bill of sale?	VIN FROM OBSERVATION . . . . . 4 VIN FROM RECORDS . . . . . 5 VIN REFUSED . . . . . 7 VIN NOT OBTAINED 8

INTERVIEWER: ASK N-3 THRU N-30 FOR NEXT VEHICLE.

	VEHICLE #5	VEHICLE #6	VEHICLE #7	VEHICLE #8
N-28.	HERE . . . . . 1 NO–>[N-29] 0 63	HERE . . . . . 1 NO–>[N-29] 0 139	HERE . . . . . 1 NO–>[N-29] 0 215	HERE . . . . . 1 NO–>[N-29] 0 291
	64-69	140-45	216-21	292-97
N-29.	(Circle One) ACTUAL . . . . . 1 ESTIMATE . . . . . 2 DON'T KNOW . . . 6 70	(Circle One) ACTUAL . . . . . 1 ESTIMATE . . . . . 2 DON'T KNOW 6 146	(Circle One) ACTUAL . . . . . 1 ESTIMATE . . . . . 2 DON'T KNOW 6 222	(Circle One) ACTUAL . . . . . 1 ESTIMATE . . . . . 2 DON'T KNOW 6 298
N-30.	OBSERVATION . . 4 RECORDS . . . . . 5 REFUSED . . . . . 7 NOT OBTAINED . . 8 GET VIN #, WRITE IN NEXT PAGE 71	OBSERVATION . . . 4 RECORDS . . . . . 5 REFUSED . . . . . 7 NOT OBTAINED . . . 8 GET VIN #, WRITE IN NEXT PAGE 147	OBSERVATION . . . 4 RECORDS . . . . . 5 REFUSED . . . . . 7 NOT OBTAINED . . . 8 GET VIN #, WRITE IN NEXT PAGE 223	OBSERVATION . . . . 4 RECORDS . . . . . 5 REFUSED . . . . . 7 NOT OBTAINED . . . . 8 GET VIN #, WRITE IN NEXT PAGE 299

Form EIA-457A (1993)

VIN #5:

72 _____ 88

VIN #6

148 _____ 164

VIN #7

224 _____ 240

VIN #8

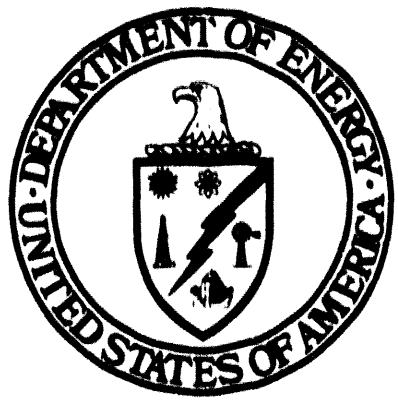
300 _____ 316

INTERVIEWER: RETURN TO PAGE 95 IN THE MAIN QUESTIONNAIRE.

Form EIA-457N (1993)

Form Approval:
OMB No.: 1905-0092
Expires: June 30, 1996

1993 RESIDENTIAL ENERGY CONSUMPTION SURVEY 1-4



HOUSEHOLD LIGHTING USAGE SUPPLEMENT

INTERVIEWER READ: In 1990, ten percent of all electricity used in homes was for lighting. Since lighting is so important, we need additional information on how lights are used in your home. Then the Department of Energy can provide more accurate information on home lighting usage and the potential for energy conservation.

Location #: _____ 10-15

Housing Unit #: _____ 16-17

Think of a typical 24-hour November weekday. For each **Indoor** light used in your home for **at least 15 minutes**, please **identify** the light, how long that light is on and what type of light it is. The exhibits will assist you in answering these questions. Please turn to Exhibit LS-1. People think about lighting in their home in three different ways: by room, by activity, or by time-of-day usage.

LS-1. Which way do you prefer to identify your home's lights? (CIRCLE ONLY ONE.) *18*
1. by room, or 2. by activity, or 3. by time-of-day usage

INTERVIEWER: IN COLUMN A, USE THE APPROPRIATE CODES BELOW FOR THE CHOSEN LIGHT IDENTIFIER.

ROOM		OR ACTIVITY	OR TIME-OF-DAY USAGE
LR - Living	DR - Den/Library	C - Cooking/Eating Food	M - Morning
DR - Dining	HS - Hallway/Stairs	R - Reading/Writing	A - Afternoon
KI - Kitchen	RR - Recreation	L - Leisure/Hobbies	E - Evening
FR - Family	LA - Laundry/Work	B - Bathing/Dressing	N - Nighttime
BR - Bedroom	OT - Other-Specify	H - Housework	
BR - Bathroom	UR - Unfinished	O - Other-Specify	

INTERVIEWER: FOR THIS AND THE FOLLOWING PAGE, READ ACROSS ALL THE COLUMNS BEFORE STARTING THE NEXT ROW.

	COLUMN A	COLUMN B	COLUMN C						
	LS-2. Please look at Exhibit LS-1 again. Describe the (ROOM/ ACTIVITY/TIME) of your home's (FIRST/NEXT) light. Start with the most used lights.	LS-3. Approximately how many hours is this light used in a typical 24-hour November weekday?	LS-4. IF DK IN COLUMN B: Please turn to Exhibit LS-4. Which range best describes this light's usage in a typical 24-hour period?						
	ENTER CODES FROM BOX ABOVE	ENTER 'LESS THAN 1 HR' OR WHOLE HRS OR CIRCLE DK FOR DON'T KNOW	15 mins - 1 hr	1-2	2-4	4-8	8-12	12+	DK
21-26		DK	01	02	03	04	05	06	96
27-32		DK	01	02	03	04	05	06	96
33-38		DK	01	02	03	04	05	06	96
39-44		DK	01	02	03	04	05	06	96
45-50		DK	01	02	03	04	05	06	96
51-56		DK	01	02	03	04	05	06	96
57-62		DK	01	02	03	04	05	06	96
63-68		DK	01	02	03	04	05	06	96
69-74		DK	01	02	03	04	05	06	96
75-80		DK	01	02	03	04	05	06	96
81-86		DK	01	02	03	04	05	06	96
87-92		DK	01	02	03	04	05	06	96
93-98		DK	01	02	03	04	05	06	96
99-104		DK	01	02	03	04	05	06	96
105-110		DK	01	02	03	04	05	06	96

INTERVIEWER: IF A LIGHT HAS MORE THAN ONE INCANDESCENT (STANDARD) BULB, THE WATTAGE OF EACH BULB MUST BE ADDED TOGETHER.

INCANDESCENT/STANDARD
- LOW = TOTAL 40 WATTS OR LESS - SMALL AMOUNT OF LIGHT
- MED = TOTAL BETWEEN 41 AND 149 WATTS - AVERAGE AMOUNT OF LIGHT
- HIGH = TOTAL OF MORE THAN 150 WATTS - LARGE AMOUNT OF LIGHT

FLUORESCENT
- LONG BULB = 24 OR MORE INCHES IN LENGTH (Include U tubes)
- SHORT BULB = LESS THAN 24 INCHES IN LENGTH (Include circular tubes)
- COMPACT = COMPACT FLUORESCENT LIGHT

HALOGEN = HALOGEN LIGHT

INTERVIEWER: AFTER COLUMN D, GO BACK TO THE NEXT ROW IN COLUMN A. CONTINUE COLUMNS A - D UNTIL YOU HAVE RECORDED ALL INDOOR LIGHTS ON FOR AT LEAST 15 MINUTES OR UNTIL THE GRID IS COMPLETELY FILLED.

COLUMN D

LS-5. Please turn to Exhibit LS-5. Please indicate the type of light.

TYPE OF LIGHT

(CIRCLE APPROPRIATE LIGHT TYPE)

INCANDESCENT (STANDARD)			FLUORESCENT			HALOGEN	OTHER (SPECIFY)	DK	
LOW	MED	HIGH	SHORT	LONG	COMPACT				
01	02	03	04	05	06	07	08	96	*111-112*
01	02	03	04	05	06	07	08	96	*113-114*
01	02	03	04	05	06	07	08	96	*115-116*
01	02	03	04	05	06	07	08	96	*117-118*
01	02	03	04	05	06	07	08	96	*119-120*
01	02	03	04	05	06	07	08	96	*121-122*
01	02	03	04	05	06	07	08	96	*123-124*
01	02	03	04	05	06	07	08	96	*125-126*
01	02	03	04	05	06	07	08	96	*127-128*
01	02	03	04	05	06	07	08	96	*129-130*
01	02	03	04	05	06	07	08	96	*131-132*
01	02	03	04	05	06	07	08	96	*133-134*
01	02	03	04	05	06	07	08	96	*135-136*
01	02	03	04	05	06	07	08	96	*137-138*
01	02	03	04	05	06	07	08	96	*139-140*

INTERVIEWER: IF THE GRID IS NOT COMPLETE, PROBE TO DETERMINE THAT YOU HAVE A COMPLETE LIST OF INDOOR LIGHTS.

IF THE GRID IS COMPLETE, ASK LS-6.

LS-6. How many **more** indoor lights does your home **use** for 15 minutes or more in a typical 24-hour November weekday?

NUMBER:_____ *169-70*

INTERVIEWER: RETURN TO SECTION O. HOUSING MEASUREMENTS ON PAGE 100.

Form EIA-457H (1993)

OFFICE USE	
Initial	
Second	
Third	
NFC	
AF	
LS	
VC	
MQ	

1993 Residential Energy Consumption Survey

HOUSING UNIT RECORD SHEET

Address (or description)_____

Post Office (city or town)_____State_____Zip_____

1. INTERVIEWER OBSERVATION OF TYPE OF BUILDING CONTAINING ASSIGNED HOUSING UNIT

CIRCLE NUMBER:

11 MOBILE HOME OR TRAILER

21 ONE-FAMILY HOUSE--DETACHED

22 ONE-FAMILY HOUSE-ATTACHED

31 HOUSE OR BUILDING WITH 2-4 HOUSING UNITS

41 BUILDING WITH 5 OR MORE HOUSING UNITS

MARK ANSWERS:
NUMBER OF HOUSING UNITS:_____

NUMBER OF FLOORS (STORIES):_____

51 OTHER--DESCRIBE IN DETAIL ANY STRUCTURE THAT DOES NOT FIT ONE OF ABOVE. (INCLUDE NUMBER OF UNITS AND FLOORS.)

_____

_____

COMPLETE RECORD OF CONTACTS AND ADDITIONAL INFORMATION ON BACK OF THIS RECORD SHEET.

2. TYPE OF OCCUPANCY OF HOUSING UNIT

CIRCLE NUMBER:

1 YEAR-ROUND UNIT
2 SEASONAL UNIT
3 MIGRATORY UNIT

} MARK ANSWER WHETHER HOUSING UNIT IS OCCUPIED OR VACANT.

3. RECORD OF VISITS TO HOUSING UNIT.

Visit Number	Time of day (include AM or PM)	Date	Day of Week	Result or Comments

4. USE THIS SPACE FOR ADDITIONAL NOTES OR COMMENTS ABOUT VISITS TO THIS HOUSEHOLD. DESCRIBE FULLY IF REFUSAL OR OTHER NONINTERVIEW.

5. NAME AND PHONE NUMBER OF HOUSEHOLDER (OR ONE OF HOUSEHOLDERS)

Name

Phone number

Area Code ( )

6. INTERVIEWER'S NAME AND I.D. NUMBER

Interviewer

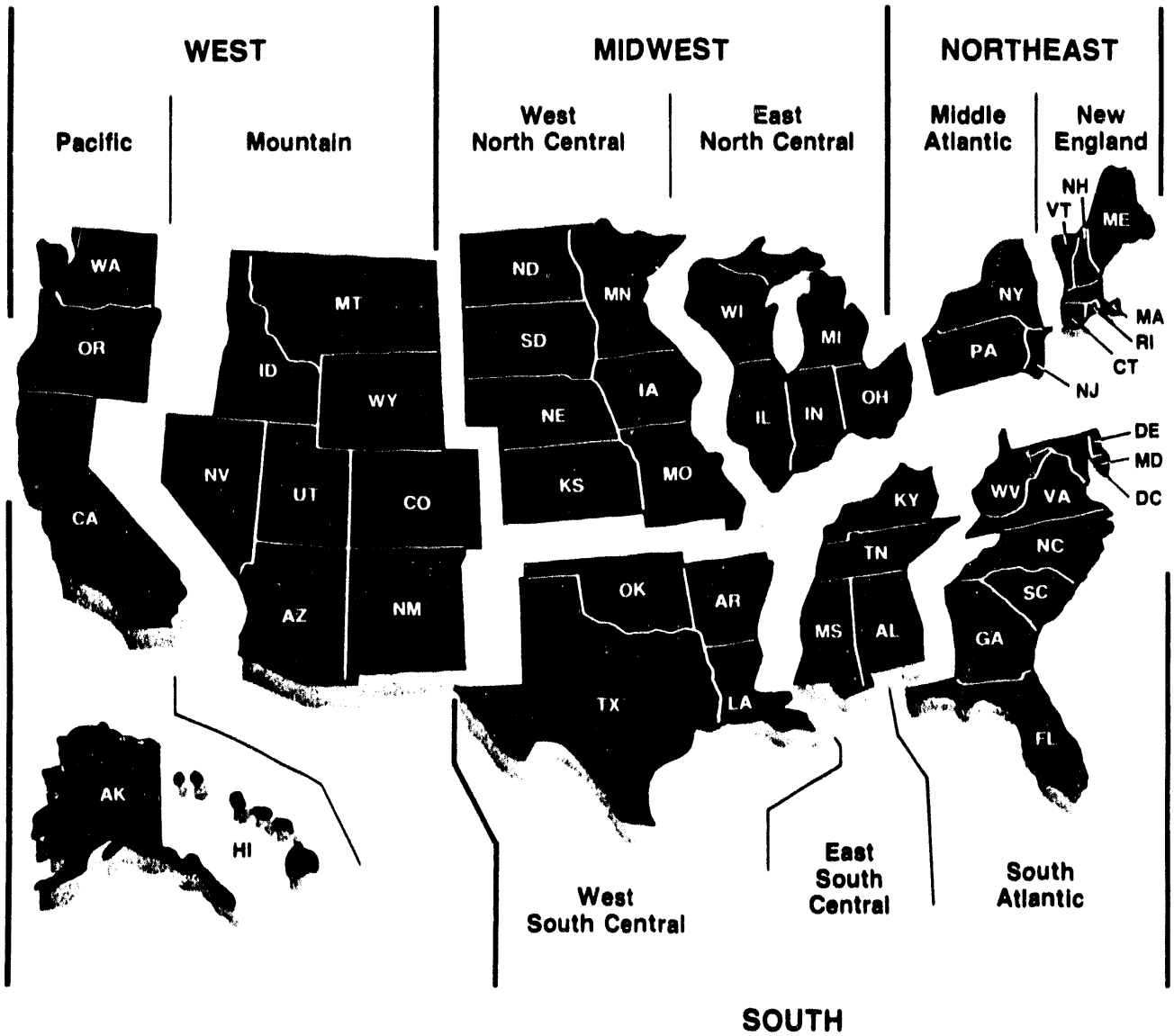
I.D. Number

Appendix F

U.S. Census Regions and Divisions Map

Appendix F

U.S. Census Regions and Divisions Map



*U.S. G.P.O.:1993-343-169:80187

END

DATE
FILMED
12/29/93