

SUPPORTING STATEMENT FOR FORMS EIA-457 A-G RESIDENTIAL ENERGY CONSUMPTION SURVEY

OMB No. 1905-0092

INTRODUCTION

The Energy Information Administration (EIA) of the U.S. Department of Energy is requesting reinstatement and three-year extension of clearance to continue the administration of the Residential Energy Consumption Survey (RECS), Forms EIA-457 A through G (OMB No. 1905-0092). These forms will be used to collect data on energy consumption and expenditures and related subjects for the household sector of the U.S. economy during the 2009 calendar year. This supporting statement covers the following forms:

- Form EIA-457A, 2009 Residential Energy Consumption Survey Household Questionnaire (CAPI)
- Form EIA-457C, Rental Agents, Landlords, and Apartment Managers (CAPI and telephone)
- Form EIA-457D, Household Bottled Gas (LPG or Propane) Usage (mail)
- Form EIA-457E, Household Electricity Usage (mail)
- Form EIA-457F, Household Natural Gas Usage (mail or telephone)
- Form EIA-457G, Household Fuel Oil or Kerosene Usage (mail or telephone)

The design for the 2009 RECS does not include use of Form EIA-457B (mailed follow-up questionnaire.) Response rates, cost, and usefulness during the 2005 RECS for this form were not sufficient to warrant its continued use.

The 2009 RECS will be the thirteenth time the survey has been conducted. First conducted in 1978, the survey was conducted annually until 1982, when it was placed on a biennial collection cycle. Beginning with the 1984 RECS, the survey was placed on a triennial data collection cycle. Beginning with the 1997 RECS, the survey was then placed on a quadrennial data collection cycle.

The information obtained in the RECS is used to produce estimates of energy usage and expenditures in U.S. households. The RECS estimates are based on a statistical sample using an area probability sampling design. The sampling unit is the housing unit, with the scope of the survey covering all occupied, primary housing units. Group quarters are excluded. Because of its comprehensiveness and flexibility, the RECS data set is widely used throughout the government and the private sector for policy analysis. The data are made available to the public in a variety of publications, data tables, analysis reports, and electronic data files which have been inoculated to protect the identity of individual households. RECS products and the micro-data sets can be viewed and downloaded through the EIA Home Page (<http://www.eia.doe.gov>) or more directly at <http://www.eia.doe.gov/emeu/recs/contents.html>. Historical publications are available on the RECS Web site.

The survey is conducted in two phases. In the first phase, the energy-related characteristics of the housing unit, household members, and data on the fuels and equipment used are collected during a personal interview with an eligible adult member of the household. The interviewer also measures the housing unit at the conclusion of the personal interview. During this phase, an additional survey is administered to rental agents or landlords, where the household pays for one or more of the energy sources in their rent. The Rental Agent survey collects information on the energy used in the building as well as building and housing unit characteristics. This first phase of RECS, including both the Household and the Rental Agent surveys, is conducted using a computer-assisted personal interview (CAPI) system. The household and rental agent phase will begin in February 2010 and continue for approximately four months, concluding in June 2010.

During the second phase, the energy supplier phase, RECS collects data on household fuel consumption and fuel expenditures from the suppliers of energy to the housing units in the RECS sample. Forms are mailed to electricity and natural gas suppliers and mail or telephone interviews are used with fuel oil, kerosene, LPG, and propane suppliers. This phase of the survey will be conducted starting in April 2010 and continue through September 2010.

For the 2009 RECS, EIA is targeting 15,400 completed interviews, a more than threefold increase from the 2005 RECS. The increased sample size will result in reduced sampling error for key statistics and allow EIA to estimate consumption and expenditures for as many as 12 states, an increase from the four state-level estimates for the 2005 RECS. In past survey cycles, the Department of Health and Human Services has funded a supplemental sample for Low Income Home Energy Assistance Program (LIHEAP) recipients. This task is no longer necessary because the increase in sample size is sufficient to capture the target number of households needed for HHS evaluations.

The National Opinion Research Center (NORC) at the University of Chicago has again been contracted to conduct data and post collection activities for the Household and Rental Agent phase. A contractor has not been selected for the Energy Supplier Survey phase.

Change in Collection Period. Historically, RECS data collection begins in late summer or fall of the survey year and continues through the end of the year. The 2009 RECS, however, will begin collection in early 2010. Two critical goals can be accomplished by moving the collection period. First, this will allow EIA to capture more households participating in the expanded government and utility energy efficiency and weatherization programs. Approximately \$20 billion has been appropriated by the Congress through the American Recovery and Reinvestment Act of 2009 for the purpose of making U.S. homes more energy efficient. This money is being granted through the Weatherization Assistance Program, the State Energy Block Grants, and the Conservation and Energy Efficiency Block Grants and will be used to fund home energy audits, replacement of inefficient appliances and heating equipment, installation of attic insulation, caulking of leaky spaces, installation of efficient windows, and numerous other energy efficient measures. Additional funds have been obligated to the 2009 RECS to increase the scope and accuracy of the survey. RECS will capture recent program participation in these energy efficiency initiatives. Many household participants taking advantage of these programs during the winter heating season would be missed if the RECS was conducted on its historical schedule.

Second, the revised schedule allows EIA to collect two winters worth of energy supplier data. With the planned onset of the energy supplier phase set to begin in April 2010, EIA can collect consumption and expenditure data for the winter of 08/09 and 09/10 without additional burden on the energy supplier. This will be valuable data for calculation of baseline estimates and future program evaluations. For example, actual billing data will be available to compare energy demand across two seasons in homes taking advantage of weatherization assistance or other financial incentives.

Change in LIHEAP Collection Methodology. As in previous surveys, the 2009 RECS will include items collected specifically for and funded by the U.S. Department of Health and Human Services Administration for Children and Families (HHS/ACF). These questions, included in Section K of the Household survey, support analysis of the Low Income Home Energy Assistance Program (LIHEAP). A different methodology from the 2005 RECS, however, will be used in advance of the LIHEAP analysis. Respondents previously participating in the LIHEAP program will no longer be pre-identified and explicitly selected for Section K. In prior RECS, these pre-identified LIHEAP recipients and all respondents falling below a specified income threshold were asked Section K questions. Because the pre-identification will no longer take place, only the income threshold will be used. The identification of LIHEAP recipients will now occur after data collection when RECS data are matched with information supplied by state LIHEAP offices.

Questionnaire Changes for the 2009 RECS. The most significant changes to the RECS questionnaires are additional weatherization, energy efficiency, and residential transportation questions on Form EIA-457A, 2009 Residential Energy Consumption Survey Household Questionnaire. Additional updates are made as a result of changes in energy usage patterns in U.S. households, as well as to address question clarity and response quality.

The weatherization and energy efficiency questions were developed from similar items on previous RECS and through consultations with DOE program experts and RECS stakeholders. These new questions are embedded within applicable sections. For example, items related to replacement of refrigerators are included in Section B of the Household instrument. These questions have also been limited to energy efficiency actions and program participation during the past four years, which clearly defines the population for this subset of questions and limits the additional questionnaire burden. Aside from identifying households participating in government or utility sponsored programs, the additional questions will also capture those implementing energy efficiency or weatherization improvements without government assistance.

The 2009 RECS will also contain basic residential transportation questions, reinstated from earlier RECS. Respondents will provide information on vehicle type and mileage. The purpose is to gather limited data needed to potentially conduct a follow-on, more detailed survey of residential transportation.

Results from the 2005 RECS indicate that home appliances, electronics, and lighting now account for 32 percent of residential consumption, an increase from 21 percent during the first years the RECS was conducted. By comparison, space heating now constitutes only 40 percent of residential consumption, down from 56 percent 25 years ago. This shift in household consumption necessitates continual revisions to the Household questionnaire, particularly those items related to electronics and appliances. The revisions, including additions, rewording, and deletions, constitute a slightly longer personal interview than the 2005 RECS. The burden is somewhat offset by deleted items and steps taken to make the interview more efficient.

Questionnaire updates are a result of internal and external data user feedback, cognitive testing, and attempts to increase the efficiency of the interview and post-collection processes. The 2009 RECS differs from the 2005 RECS in the following ways:

- Initial respondent letters and nonresponse materials are revised in an attempt to increase participation and better prepare respondents for the personal interview. The advance letter, for example, emphasizes the importance of the RECS to the respondent personally and briefly previews the scope of the interview.
- The response set for age of appliances and selected electronics is expanded. In previous RECS the response options included one choice for items that were 10 to 19 years old. Given the potential variation in appliance consumption averages during that time period, we have split this response choice into 10 to 14 and 15 to 19 categories.
- Questions about televisions and computers have been added or revised due to technological changes and the increase in the number and usage of electronics in homes. Previous RECS contained some detailed questions about televisions and computers, but these items needed updating to account for the saturation of television peripherals (DVR, game systems, etc.)
- A short series of questions is added to capture the number of rechargeable tools and personal electronic devices (cell phones, PDAs, etc).
- Weatherization and energy efficient and related program participation questions are added to study the impact of the American Recovery and Reinvestment Act of 2009 on household energy consumption.
- Wording for several items is updated to clarify questions and reduce potential confusion during the interview. For example, questions about the number and type of rooms in homes often include lengthy clarifying statements that respondents may ignore or interpret incorrectly. We have revised these questions, added short introductory statements, and reordered some items to increase their clarity and reduce response error.
- Most items funded by the EPA in 2005 are deleted, including water usage questions. We have elected to retain some EPA questions regarding programmable thermostats and computer usage due to their importance in calculating end-use consumption and expenditure estimates.
- Some items determined by EIA to be of minimal importance to household energy consumption are deleted. This includes some questions pertaining to small electric appliances, such as coffee maker usage and detailed stereo equipment categories. Additionally, a collection of items in Section H of the household questionnaire are eliminated. These questions were previously asked to capture fuel uses missed or not identified in earlier sections. We determined this to be an inefficient method for capturing this information and in its place have revised the earlier sections to account for all potential energy uses in the home.
- Items in Section K of the Household questionnaire, which are funded by HHS for LIHEAP, are revised.
- Household income questions in Section J are revised to more closely align with income definitions on other household surveys, such as the American Community Survey. Revisions are to the income screener questions which serve only to frame the respondent's calculation of household income. As in previous RECS, we do not require respondents to report income by category.

- In cases where an acceptable energy supplier bill is available and a viable scan of the bill is completed, interviewers will no longer use interviewing time to record supplier information. The RECS contractor plans to preload this information, where possible, using supplier look-up tables or enter this information during post-collection where the supplier has not been pre-identified.
- Residential transportation questions are reinstated based on the 1993 RECS. These items include type, make, model, and mileage of vehicles used by household members.
- Selected questions are added to the Rental Agent instrument to capture building data, such as building square footage and common area information. Proposed legislation includes energy efficiency policies on a building basis. By adding these questions we can ascertain whether they are feasible on an expanded basis in future surveys.
- The Electricity and Natural Gas supplier forms contain additional demand response questions similar to the Demand Side Management questions that last appeared in the 1993 RECS. These limited questions are added in response to an increase in these utility sponsored programs in recent years.

The information collection proposed in the supporting statement has been reviewed in light of applicable information quality guidelines. It has been determined that the information will be collected, maintained, and used in a manner consistent with the OMB, DOE, and EIA information quality guidelines.

A. JUSTIFICATION

A-1. Legal Authority

The 2009 RECS will be conducted under EIA's data collection authorities. The household and rental agent data collection phase of the survey will be conducted on a voluntary basis using Forms EIA-457A through C. The collection of consumption and expenditures data from energy suppliers will be conducted under EIA's mandatory authority using Forms EIA-457D through G.

The authority for the data collections are provided by the following provisions:

- (a) Section 13(b), 15 U.S.C. 772(b), of the Federal Energy Administration Act of 1974 (FEA Act), Public Law 93-275, states:

All persons owning or operating facilities or business premises who are engaged in any phase of energy supply or major energy consumption shall make available to the (Secretary) such information and periodic reports, records, documents, and other data, relating to the purposes of this Act, including full identification of all data and projections as to source, time and methodology of development; as the (Secretary) may prescribe by regulation or order as necessary or appropriate for the proper exercise of functions under this Act.

- (b) Section 5(b), 15 U.S.C. 764(b), of the FEA Act, states that to the extent authorized by Section 5(a), the (Secretary) shall:

(2) Assess the adequacy of energy resources to meet demands in the immediate and longer range future for all sectors of the economy and for the general public;...

(9) collect, evaluate, assemble, and analyze energy information on reserves, production, demand, and related economic data; . . .

(12) perform such other functions as may be prescribed by law.

- (c) As the authority for invoking Section 5(b) above, Section 5(a), 15 U.S.C. 764(a), of the FEA Act in turn states:

Subject to the provisions and procedures set forth in this Act, the (Secretary) shall be

responsible for such actions as are taken to assure that adequate provision is made to meet the energy needs of the Nation. To that end, he shall make such plans and direct and conduct such programs related to the production, conservation, use, control, distribution, rationing, and allocation of all forms of energy as are appropriate in connection with only those authorities or functions...

(a) specifically transferred to or vested in him by or pursuant to this Act;...

(c) otherwise specifically vested in the (Secretary) by the Congress.

(d) Authority for invoking Section 5(a) of the FEA Act is provided by Section 52, 15 U.S.C. 790a, of the FEA Act which states that the Administrator of the EIA:

. . . (Shall) establish a National Energy Information System which shall ... contain such information as is required to provide a description of and facilitate analysis of energy supply and consumption . . .

(b). . . the System shall contain such energy information as is necessary to carry out the Administration's statistical and forecasting activities, . . ., such energy information as is required to define and permit analysis of -

- (1) the institutional structure of the energy supply system including patterns of ownership and control of mineral fuel and non-mineral energy resources and the production, distribution, and marketing of mineral fuels and electricity;
- (2) the consumption of mineral fuels, non-mineral energy resources, and electricity by such classes, sectors, and regions as may be appropriate for the purposes of this Act;...
- (3) the sensitivity of energy resource reserves, exploration, development, production, transportation, and consumption to economic factors, environmental constraints, technological improvements, and substitutability of alternate energy sources;
- (4) the comparability of energy information and statistics that are supplied by different sources;
- (5) industrial, labor, and regional impacts of changes in patterns of energy supply and consumption."

A-2. Needs For and Uses of the Data

EIA has three energy consumption survey systems in place that address the demand for energy and the effect of that demand on the Nation's social and economic needs. In addition to the RECS, the other survey systems are:

- Commercial Buildings Energy Consumption Survey (CBECS) Forms EIA-871(A through F) (OMB No. 1905-0145)
- Manufacturing Energy Consumption Survey (MECS), Forms EIA-846(A through C) (OMB No. 1905-0169)

These three surveys cover end-use sectors that account for over 60 percent of the energy consumption in the United States. The household sector (RECS) accounts for approximately 20 percent of total U.S. energy consumption. The transportation sector, as well as agriculture, mining, and construction are not covered by these surveys, although the

additional questions on the 2009 RECS are an attempt to collect more recent data on the residential portion of the transportation sector.

The RECS is the only survey system operated by EIA that collects energy consumption and related data directly from the housing unit. Accordingly, it is the only survey system that permits the cross-tabulation of energy consumption by various descriptive variables to permit a full understanding of the manner in which energy is consumed in the household sector. These relationships between consumption and descriptive variables are the basis for the publication and analytic activities associated with the RECS data.

The desire among key stakeholders for an expanded RECS has intensified since the 2005 survey. These data users increasingly rely on quality household consumption data from EIA to determine appliance standards, impacts of new building technologies, and effects of energy policies. The demand for more detailed geographic estimates is increasing as well. The increased sample size addresses these needs, resulting in more precise estimates and state-level data for at least 12 states.

The following summarizes the key RECS stakeholders and how the RECS meets their needs:

- **National Energy Modeling System (NEMS)—Office of Integrated Analysis and Forecasting (OIAF), EIA:** NEMS is EIA's modeling system that meets a broad spectrum of Departmental needs and is used frequently to assess policy questions posed by the Department, other Executive Branch Office, and the Congress. NEMS is the modeling framework that supports EIA's *Annual Energy Outlook*. RECS data are tailored to meet the needs of this model and are used to characterize the U.S. residential sector in NEMS.
- **Low Income Home Energy Assistance Program (LIHEAP)-U.S. Department of Health and Human Services, Administration for Children and Families (HHS/ACF):** LIHEAP distributes almost two billion dollars per year to assist low-income households in meeting the costs of home heating and cooling. Specifically RECS data are used for the LIHEAP Home Energy Notebook and Annual Report to Congress. Since 1981, HHS/ACF has supported the RECS by funding a set of questions added to the household interview and, in some years, by funding additional sample cases in low-income areas. These questions allow HHS/ACF to identify LIHEAP households in the RECS data and track their use of energy and the burden of energy costs.
- **Policy Formulation and Analysis—Department of Energy (DOE):** The Office of Policy (PO) extensively uses the RECS data in a variety of analytical studies. These studies have used RECS data to arrive at national estimates of energy savings for various policy options within DOE; to assess the amount of energy used by heating and cooling equipment when setting efficiency standards; and to assess the potential for fuel switching and cogeneration.
- **Office of Energy Efficiency and Renewable Energy (EERE) Programs, DOE:**
 - EERE's Appliances and Commercial Equipment Standards Program develops test procedures and minimum efficiency standards for residential appliances and commercial equipment. As an example, the program uses the annual RECS end-use consumption estimates to determine whether efficiency improvements have an adequate payback time for consumers. The Energy Star and Building America are other EERE-sponsored programs
 - The EERE Buildings Energy Data Book provides a consistent and readily accessible set of core residential building data that are used by a wide range of energy analysts in their analysis of energy use in residential sectors. RECS data are used as key input for the consumption, expenditure, and household characteristics tables.
 - The Weatherization and Intergovernmental Program uses RECS consumption data to track the efficiencies of newly-constructed housing units, and other weatherization data track longitudinal changes in conservation measures as well as the energy burden for low-

- National Renewable Energy Laboratory (NREL) and the Residential Buildings Program within EERE developed the Building America Research Benchmark in consultation with the Building America industry teams. The RECS data are used to analyze relationships between various household characteristics and energy consumption.
 - RECS data supports the development of Building Codes. DOE works with other government agencies, state and local jurisdictions, national code organizations, and industry to promote stronger building energy codes and help states adopt, implement, and enforce those codes.
- **U.S. Census Bureau:** EIA has provided extensive analysis of RECS data to the Census Bureau as part of an investigation into the use of consumption-based measures of poverty using expenditures and other indicators of material well-being. The U.S. Census Bureau also uses the RECS data to adjust for the over reporting of electricity and gas costs by American Housing Survey respondents.
 - **Lawrence Berkeley National Laboratory (LBNL)-Appliance Standards:** RECS data are used by LBNL for analyzing impacts from possible energy efficiency standards for common household appliances, such as refrigerators and dishwashers, and emerging efficiency technologies in home electronics. LBNL relies on RECS for information about the age, size and usage of appliances and electronics.
 - **National Renewable Energy Laboratory (NREL):** NREL uses RECS data to understand the adoption rates and impact of the new technologies, building designs, and energy-efficient equipment they test and promote. The laboratory reports it needs much larger RECS sample sizes to perform necessary multivariate analyses.
 - **National Association of Home Builders (NAHB):** NAHB indicates that a larger RECS sample will improve the accuracy of estimates showing much consumption is explained by householder behavior versus that which the builder can control.
 - **U.S. Bureau of Labor Statistics (BLS)-Consumer Price Index:** The Bureau of Labor Statistics (BLS) uses RECS data in the preparation of the Consumer Price Index (CPI). BLS uses the RECS micro-data file to develop equations for imputing utility costs for renters whose utility costs are included in their rent. BLS has automated this imputation process for approximately one-fifth of the renter sample used for the CPI. As a result of this process, BLS does not have to field an additional survey to collect these important data.
 - **Environmental Protection Agency (EPA)-Energy Star:** EPA uses RECS data to support their programs and identify new products that have the potential as an Energy Star products. As an example, EPA used RECS data for Energy Star market analysis on programmable thermostats.

The data are made available to the public in a variety of reports (Appendix 1), data tables, and micro-data files. These products can be viewed and downloaded through the EIA Web site at <http://www.eia.doe.gov/emeu/recs/contents.html>. Because of its comprehensiveness and flexibility, the RECS data set is widely used throughout the government and the private sector for policy analysis. The 2005 RECS data were recently featured on the new data.gov Web site. Several areas within the Department of Energy, as well as numerous federal agencies use the RECS data for forecasting, developing industry standards, and assessing policy. Public utilities, interest groups, trade associations, state and local governments, equipment manufacturers, media, and the general public are also major users of RECS data.

A-3. Use of Automated, Electronic, Mechanical or Other Forms of Information Technology

The household questionnaire will be administered using a computer assisted personal interview (CAPI) survey instrument, which allows for more rapid data collection and extensive use of skip patterns that requires respondents to answer only questions that are pertinent to their specific situations. This, in turn, provides an abbreviated interview for many respondents and lessens the need for extensive follow-up.

The 2009 RECS will again employ portable scanning technology to produce electronic copies of respondent energy supplier bills. EIA began using this technology for the 2005 RECS to enhance the quality of supplier information, which is critical to obtaining the detailed fuel consumption and expenditure data for each respondent. The scanned bills also proved to be valuable when imputing respondent data when none were obtainable from the energy suppliers. Scanning technology will be used for the household and rental agent surveys.

Although consideration was given to designing an Internet collection presence for the 2009 RECS, EIA has determined that this mode is not yet a viable option. Resources and design implications need to be addressed in detail before a Web survey can be provided. EIA will consider an Internet option as part of a full survey redesign for the 2013 RECS.

A-4. Efforts to Identify Duplication

EIA has carefully searched for other surveys being conducted by the Department of Energy and other government agencies that might duplicate the RECS. These searches, along with the knowledge of personnel in the EIA office sponsoring RECS, resulted in the identification of six federal surveys that collect data on energy consumption in the residential sector:

- 1) Form EIA-861, *Annual Electric Power Industry Report*
- 2) Form EIA-176, *Annual Report of Natural and Supplemental Gas Supply and Disposition*
- 3) Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*
- 4) Form AHS -2, *American Housing Survey* conducted by the U.S. Census Bureau
- 5) Form ACS-1, *American Community Survey* conducted by the U.S. Census Bureau
- 6) Form CE-302, *Consumer Expenditure Survey* conducted by the U.S. Census Bureau and sponsored by the U.S. Bureau of Labor Statistics.

Each of the EIA-sponsored energy data collections identified above (Forms EIA-861, EIA-176, EIA-821) was established to collect data from energy suppliers for specific, narrowly defined purposes. They cannot be used as a substitute for the RECS energy supplier surveys due to their focus on total energy supplies to the residential (and other) sectors. The RECS must link household characteristic data collected during the personal interview with supplier data for each household. As a result consumption and expenditure estimates are produced at national, regional, and Census division levels. These estimates would not be possible using only the total energy supplied that is collected by the energy supplier surveys mentioned above.

- *Annual Electric Power Industry Report* (Form EIA-861): This is a census of electric utilities and provides information on the sale of electric energy and other financial data. Aggregate data are collected on electric sales (revenue and megawatt hours) to consumers by class of consumer, sales for resale, other revenue, depreciation, and net income. No information is collected on the characteristics of household consumers, which is a major focus of the RECS. Moreover, the definition of the consuming sectors may vary from supplier to supplier. For example, some suppliers classify apartment buildings as "commercial" while others classify them as "residential." The RECS uniformly classifies such units as residential.
- *Annual Report of Natural and Supplemental Gas Supply and Disposition* (Form EIA-176); This is a census of natural gas distributors and collects aggregate data on the volume and cost of natural

- *Annual Fuel Oil and Kerosene Sales Report (Form EIA-821)*: This statistical sample survey provides aggregate data by state on the annual sales of distillate and residual fuel oil, and kerosene to end-use sectors. Like the electricity and natural gas surveys above, no data are collected on characteristics of consumers, and the definition of end-use sectors varies between EIA-821 and the RECS.
- *American Housing Survey (Form AHS-2)*: This survey provides self-reported information on household energy costs, heating and cooling equipment, and appliances. However, these items are only collected on the AHS in order to capture the sum of a multitude of items in homes. The AHS does not have the singular focus of energy, results in potentially incomplete and inaccurate data, and makes them insufficient for a comprehensive energy consumption and expenditures survey. As noted above, the AHS uses RECS data to correct for over-reporting of energy expenditures in the AHS.
- *American Community Survey (Form ACS-1)*: The ACS collects information on expenditures for gas, electricity, and other fuels that are paid by the household directly to the suppliers of those fuels. Because these data are self-reported, they suffer from the same reporting bias as do the data reported in the American Housing Survey. Census data on heating fuels and type of housing unit are also used in designing the RECS sample.
- *Consumer Expenditures Survey (Form CE-302)*: Part of this survey collects data on the uses of fuels in the home, expenditures for these fuels, and the amounts used. The data on expenditures and amounts are taken from the households' bills when available. The data on amounts used are self-reported when bills are not available and because bills are not always used, these data are not published but used only for editing expenditure data.

A-5. Reduction of Burden on Small Businesses

EIA has designed the RECS so that small businesses are not unduly burdened. In the RECS, the small businesses are the energy suppliers and the information requested on Forms EIA-457 D through G is already maintained by most respondents. The sampling approach to data collection minimizes the burden on the industry as a whole, because only a small percentage of all suppliers are contacted and the number of customer records requested from each of the suppliers contacted is very small.

Additionally, EIA does not require the supplier to report in a single mode. In order to reduce respondent burden, EIA will accept responses in any format (such as computer printout or electronic media) as long as all the necessary information is provided.

In the 2005 RECS, billing data were collected from approximately 230 fuel oil/kerosene and 209 LPG suppliers. These suppliers typically serviced only one or two RECS sample households. Rather than ask these small businesses to transcribe the fuel records onto the forms sent to them, the information was often collected over the telephone. These same procedures will be employed in the 2009 RECS.

Finally, as already mentioned, beginning in 1997 the survey has been conducted once every four years. This change, although not planned for this purpose, has resulted in a reduction of average annual burden to one-fourth of its total when the RECS was conducted annually.

A-6. Results of Collecting Data Less Frequently

Current law requires a three year survey cycle, however, the RECS was changed to a quadrennial survey beginning with the 1997 survey, having previously been a triennial survey conducted in 1987, 1990, and 1993. Prior to 1987,

the RECS was conducted annually in 1980, 1981, 1982, and then biennially in 1984. Thus, the current scheduling is a reduction from an annual to a quadrennial cycle.

If the RECS were to be conducted less frequently, serious breaks in the continuity of the series could develop. The quadrennial cycle is based on the judgment that long-term shifts in energy markets are effectively monitored by examining energy demand. Major shifts in energy demand by households are tied to the number of households and characteristics of existing houses. If the cycle were to be extended beyond a four-year cycle, EIA would be unable to adequately monitor major shifts in energy demand and rapid adoption of new energy technologies.

A-7. Special Circumstances

There are no special circumstances that would require the 2005 RECS to be conducted in a manner inconsistent with the guidelines in 5 CFR 1320.6

A-8. Summary of Consultations Outside the Agency

EIA staff collected input from selected residential energy experts from government and private organizations while updating the 2009 RECS questionnaires. Staff conducted personal interviews and solicited input via e-mails to targeted data users. During the course of releasing 2005 RECS data, staff also received numerous unsolicited requests for updates to the survey. All of the comments and suggestions received were considered, and some improvements were made to the questionnaires as a result. Selected consultants, including all those listed below, were given an opportunity to review preliminary and final drafts of the Household questionnaire. Consultations included:

- *DOE Office of Energy Efficiency and Renewable Energy (EERE)*: EERE staff lent expert advice on home efficiency and weatherization assistance that was used to update some existing RECS items and to craft the additional weatherization and energy efficiency questions.
- *Lawrence Berkeley National Laboratory (LBNL)*: EIA conducted two formal interviews with LBNL staff to discuss uses of RECS data, home electronics trends, appliances, standards, and energy usage behaviors. In follow-up conversations, LBNL submitted a proposal for new television and computer questions. Some aspects of their proposal are used in the final draft of the 2009 RECS household questionnaire.
- *Nielsen*: RECS staff sought feedback from Nielsen staff with experience measuring television and computer saturation and usage in U.S. homes.
- *Oak Ridge National Laboratory (ORNL)*: Staff spoke on several occasions with ORNL weatherization and energy experts regarding government assistance programs.
- *Pacific Northwest National Laboratory (PNNL)*: EIA conducted an interview and received detailed feedback from PNNL staff regarding energy efficiency and weatherization questions, as well as selected electronics items.
- *National Association of Home Builders (NAHB)*: EIA staff conducted an on-site visit with research staff from NAHB. Topics included building envelope factors (windows, doors, roof material), location of HVAC systems, and weatherization.
- *American Council for an Energy-Efficient Economy (ACEEE)*: Research staff from ACEEE submitted a formal letter outlining their usage of RECS data and recommendations for future RECS. Their specific concerns include measuring appliance saturation and creating accurate state efficiency potential reports.
- *Alliance to Save Energy (ASE)*: EIA met with ASE staff to seek input on lighting questions and other RECS topics.

EIA published a notice in the Federal Register on February 23, 2009 (Vol. 74, No. 34, pp 8075-8077) announcing the 2009 RECS. An email message inviting comments via the Federal Register Notice was sent to all RECS listserv members. Following is a list of official comments and the EIA response, where applicable.

- *Lawrence Berkeley National Laboratory (LBNL)*: Selected staff from the LBNL Environmental Energy Technologies Division submitted a formal response to the Federal Register Notice containing comments on the value of RECS to their work and suggestions for updates to RECS survey scope and design.

EIA Response: EIA submitted an official response via email. Many of the LBNL recommendations, including increased sample size, more detailed appliance age ranges, and additional energy efficiency questions are being implemented for the 2009 RECS. EIA will not add items related to water usage, as requested.

- *Bureau of Economic Analysis (BEA)*: Dennis Fixler, Chief Statistician submitted a formal reply in support of the RECS and commented that the RECS is “critical in preparing the benchmark and annual estimates of personal consumption expenditures.”

EIA Response: EIA submitted a response acknowledging BEA’s use of the RECS data and thanking them for their support.

- *Nielsen*: Jonathon Stringfield, a research demographer, submitted suggestions for revised television, computer, and selected household demographic questions.

EIA Response: EIA submitted a formal reply and some suggestions are reflected in the final RECS Household questionnaire draft, including the additional television peripheral and television viewing items.

- *Federation of American Scientists*: Colin McCormick submitted comments in support of additional weatherization and energy efficiency items.

EIA Response: EIA submitted an official reply via email stating that additional weatherization and energy efficiency questions are being added to the Household questionnaire.

- *Federal Highway Administration(FHA)*: Ralph Gillman, Travel Monitor Team Leader at FHA, submitted a specific suggestion for an additional question about window treatments.

EIA Response: EIA responded that this item may not be included in the 2009 RECS, but we will consider it for future surveys.

- *Guy Zaczek*: Mr. Zaczek, from the Niagra (NY) County Community College submitted a response in support of the RECS and with comments on home efficiency measures.. Mr. Zaczek also recommended using more open-ended questions and providing a non-monetary incentive for respondents.

EIA Response: EIA submitted a formal reply with a brief explanation of our incentives and efforts to add energy efficiency items. The response also stated that EIA limits open-ended response due to the additional cost and time burden during post-collection.

A-9. Payment or Gift to Respondents

Monetary Gift.

EIA proposes using monetary incentives to promote survey participation during the household personal interview phase. EIA conducted a monetary incentive experiment during the 2005 RECS data collection in an attempt to slow the trend of declining RECS response rates. Results of this 2005 study showed that a \$10 unconditional incentive yielded higher cooperation rates in sampled housing units, as compared to a \$5 incentive or no cash incentive at all. EIA requests continued use of the \$10 unconditional cash incentive for all sampled units for the 2009 RECS. Incentives will not be used for the Rental Agent Survey or Energy Supplier Survey administration.

2005 RECS Incentive Study. Small cash incentives were used in connection with the household interviews in the 1978, 1979, and 1980 RECS. No incentives were used in the household interviews in the 1984 RECS and later surveys. Consistent with trends in similar household surveys, response rates steadily declined from 1980 to 2001. The 2001 RECS response rate for the Household survey was 72.8 percent. The slow but steady deterioration of response to the RECS reached the point in 2001 where basic data quality was threatened. It was with this concern that EIA initiated the 2005 RECS cash incentive experiment to consider ways to try to reverse this decline.

The 2005 incentive experiment examined the impact of unconditional, monetary incentives on response rates. The goal of the experiment was to study how the amount of the incentive affected response rates across income levels and across regions of the country. Three incentive levels were used: \$0, \$5, and \$10. The design of the study ensured a good mix of the three incentive levels, income levels and region. The amount of the incentive, if applicable, was mentioned, but not specified, in the initial letter sent to households. Incentives were hand-delivered to the households by the field interviewers. To allocate the segments to the three treatment groups, the segments in each income stratum were sorted by PSU, Intermediate Area, and segment and a systematic sample was selected.

A significant difference in response rates was found for the incentive groups ($p=0.045$). The \$10 group had the highest response rate of the incentive conditions. There was no statistically significant difference between the response rates of the \$0 incentive group and the \$5 group.

Table A1. 2005 RECS Response rates by incentive

<u>Incentive</u>	<u>Response Rate</u>
\$0	76.68%
\$5	76.36%
\$10	79.45%

While the group of cases receiving the \$5 incentive did not have a higher response rate than the control group, the \$10 incentive clearly had a positive impact on the completion of the questionnaire. Had the \$10 incentive been offered to all of the cases, we estimate approximately 110 more cases would have been completed and the overall response rate would have increased by almost three percent. Results also indicate reduced number of contacts were needed to finalize a case.

The incentives did not have a differential effect across income groups. It was expected that a larger increase in response rate would be seen among low-income respondents who received a monetary incentive. The \$10 incentive clearly had a positive impact on both the response rate and the number of contacts required to finalize the case. The marginal cost of additional attempts at finalizing a case would be more expensive than offering a monetary incentive.

EIA requests that we expand the \$10 incentive for all responding households in the 2009 RECS.

Non-Monetary Gifts.

EIA is proposing to provide the household with two nonmonetary gifts, a DOE Energy Savers guide and a RECS magnet. EIA provided the savings booklet and pen for the 2005 RECS.

Energy Savers Booklet. Because the RECS is a household energy consumption and expenditure survey, EIA plans on providing each household with a copy of *Energy Savers - Tips on Saving Energy and Money at Home*. A Spanish version will be provided as well to those households where English is a second language. The booklet is available online at <http://www.energysavers.gov>.

Magnet with DOE Imprint. As an additional token of appreciation, households will also receive a DOE magnet as an unconditional incentive.

A-10. Provisions for Confidentiality of Information

Data for the 2009 RECS will be collected under the Confidential Information Protection and Statistical Efficiency Act of 2002 (CIPSEA, Title 5, Subtitle A, P.L. 107-347) and the Privacy Act of 1974. Each respondent will be provided the following statement in written form:

“The information you provide will be used for statistical purposes only. In accordance with the Confidential Information Protection provisions of Title V, Subtitle A of Public Law 107-347 and other applicable Federal laws, your responses will be kept confidential and will not be disclosed in identifiable form to anyone other than employees or agents without your consent. By law, every EIA employee, as well as every agent, is subject to a jail term, a fine of up to \$250,000, or both if he or she discloses ANY identifiable information about you.”

All EIA staff and contractor employees, including RECS interviewers, having access to respondent information will have completed EIA’s CIPSEA training program. This program describes CIPSEA as well as the responsibilities of staff that have access to respondent data. The training also describes the requirements governing the use and access to respondent data and the penalties for violation of CIPSEA rules.

Both EIA and the contractor(s) will establish physical and electronic barriers to protect RECS data from unauthorized users through the use of controlled access facilities, physical barriers, and electronic security systems. Data tables prepared for publication will not include data for situations where there are too few responses to accurately convey information. Data sets that are released to the public will be inoculated so that respondents and their physical location cannot be deduced or determined. To reduce the potential for disclosure EIA deletes obvious identifiers, limits geographic detail, removes potential links between households and local weather stations, and uses top-coding where appropriate. Additional disclosure techniques may include:

- Recoding data into intervals or rounding; adding or multiplying by random numbers (noise); swapping or rank swapping (also called switching);
- Selecting records at random, blanking out selected variables, and imputing for them (also called blank and impute); and,
- Aggregating across small groups of respondents and replacing one individual's reported value with the average (also called blurring).

A-11. Justification for Sensitive Questions

No sensitive questions are proposed for the 2009 RECS.

A-12. Burden to Respondents

The total quadrennial reporting burden for the 2009 RECS is estimated to be 26,352 hours or 8,784 hours total annual reporting burden prorated over the 3 year clearance. Table A2 presents the burden for each of EIA forms that will be used for the 2009 RECS. The estimate for form EIA-457A is based on a goal of 15,400 *completed* household interviews. The remaining burden rely on 2005 RECS responses as a basis for the approximate number of rental agent or supplier surveys that will be spawned as a result of the Household survey.

Table A2. 2009 RECS Estimated Respondent Reporting Burden

Form	Number of	Burden	
		per Form	Total
RECS (1905-0092)	13		September 2009

Number	Title	Respondents	(minutes)	(hours)
EIA-457A	Household Questionnaire	15,400	52	13,347
EIA-457C	Rental Agents, Landlords, and Apartment Managers*	1,100	18	330
EIA-457D	Household Bottled Gas Usage**	1,150	30	575
EIA-457E	Household Electricity Usage**	15,400	30	7,700
EIA-457F	Household Natural Gas**	7,700	30	3,850
EIA-457G	Household Fuel Oil or Kerosene**	1,100	30	<u>550</u>
Total Survey Burden				26,352
Total Annual Burden (Prorated over the 3 year clearance)				<u>8,784</u>

*The number of rental agents will be approximately 550. However, a rental agent may be contacted and asked questions for more than one household in the building resulting.

**Many energy suppliers will receive requests for multiple households. It is estimated that 1150 electric, 450 natural gas, 750 fuel oil/kerosene, and 700 LPG suppliers will be asked to supply information for more than one household.

It is estimated that the total cost to respondents (households and energy suppliers) for completing the 2009 RECS will be \$1,647,000. An average loaded cost per hour of an EIA employee of \$62.50 was used as an estimate for the respondent cost burden.

A-13. Cost to Respondents

There are no capital start-up or operating costs to respondents beyond the time required to conduct interviews or complete survey forms.

A-14. Annualized Cost to the Federal Government

The survey costs for the 2009 RECS are estimated at \$12,500,000 over 4 years, yielding an average annual cost to the Government of \$3,125,000. These costs include: (1) necessary revisions and redesign of the questionnaire; (2) sample update and selection, (3) data collection, (4) data processing, non-response adjustments, weighting and variance estimation, (5) data analysis; (6) preparing data reports; (7) preparing public use data files; (8) updating dissemination websites (9) and survey documentation. These costs include a total of 16 full-time equivalent (FTE) government staff personnel allocated over the 4 years or 4 FTE per year. These costs are calculated on an average of \$149,000 per FTE for a total of \$2,384,600 for the survey or \$596,000 per year.

A-15. Reasons for Program Changes

As shown in Table A-2, the total quadrennial burden for the 2009 RECS is estimated to be 26,352 hours, for an annual average burden of 8,784 hours prorated over the 3 year clearance. The reason for the increase is that this is a reinstatement (Program Change) as it is a quadrennial survey, but has an approval period of only three years.

A-16. Schedule for Collecting and Publishing Data

As previously discussed, EIA plans to begin data collection in February 2010. The goal for the 2009 RECS is to begin releasing results in June 2011. Both analyses and data tables will be available through the Internet. The time schedule for data collection and distribution activities is summarized below:

Begin Household Survey Data Collection	February 2010
Complete Household Survey Data Collection.....	July 2010
Begin Energy Supplier Survey Data Collection.....	April 2010
Complete Energy Supplier Survey Data Collection.....	September 2010

Housing Characteristics Data Tables Released June 2011
Consumption and Expenditures Data Tables Released December 2011

A-17. Explanation for Need Not to Display OMB Approval Date

The OMB number and expiration date are displayed on each form.

A-18. Certification Statement

Meets all certification requirements of the “Certification for Paperwork Reduction Act Submissions,” of OMB Form 83-I.