



U.S. Energy Information Administration

Office of Energy Statistics

Office of Energy Consumption and Efficiency Statistics

Supporting Statement for Survey Clearance

Residential Energy Consumption Survey, EIA-457, Forms A-G

OMB No. 1905-0092

Background and Proposal

Part A

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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 characteristics, consumption, and expenditures for the household sector of the U.S. economy during the 2015 calendar year. This supporting statement covers the following forms:

- Form EIA-457A, Household Survey
- Form EIA-457C, Rental Agent Survey
- 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

The 2015 RECS will be the fourteenth 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; this frequency of data collection is prescribed in Title 42, U.S. Code, § 7135.

The information obtained in the RECS is used to produce estimates of energy characteristics, 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, RECS data are used throughout the government and the private sector for economic analysis of energy demand in the residential sector. 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.gov/>) or more directly at <http://www.eia.gov/consumption/residential/>. Historical publications are available on the RECS Web site.

Household and Rental Agent Surveys

In the first phase of RECS (the Household Survey) the energy-related characteristics of the housing unit, household members, and data on the fuels and equipment used are collected through a personal interview with an eligible adult member of the household. The interviewer also measures the housing unit at the conclusion of the interview. For rental units, EIA also conducts a supplemental data collection (the Rental Agent Survey) to collect subset of energy characteristics about the apartment building and housing unit characteristics from the rental agent or landlord. The Household Survey is conducted via a computer-assisted personal interview (CAPI) system; the Rental Agent Survey is conducted using CAPI or computer assisted telephone interview (CATI) for nonresponse follow-up. Data collection for the Household and Rental Agent Surveys will begin in August 2015 and continue for approximately six months, concluding in January 2016.

For the 2015 RECS, EIA is anticipating 4,000 completed Household Survey interviews from a sample of 5,000 housing units, and 1,100 completed Rental Agent Survey responses. The sample size will allow EIA to estimate household characteristics, consumption, and expenditures at the national, Census region, and Census division levels.

Energy Supplier Surveys

During the second phase of RECS, EIA conducts the Energy Supplier Survey (ESS). In the ESS, we ask energy suppliers to report fuel consumption and expenditures billing data for housing units of Household Survey respondents. Data are collected electronically through a survey Website. Suppliers can choose to upload a single data file for all units or input information into individual Web forms for each unit. The ESS will be conducted starting in May 2016 and continue through September 2016.

In addition to the billing data collection for 2015 RECS housing units, EIA will also collect billing data for household records in the RECS National Pilot study. In order to perform a comprehensive analysis of the National Pilot, EIA will conduct response analysis with the billing records conducted under the same authority for the 2015 RECS billing collection. Because the National Pilot sample design is similar to the 2015 RECS, EIA expects most energy suppliers will already be in sample for the National Pilot data collection and have small caseloads.

Contractor Support

IMG-Crown/RTI International has 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.

EIA support for the Low Income Home Energy Assistance Program (LIHEAP) analysis

As in previous cycles, the 2015 RECS will include Household Survey 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 support analysis of the Low Income Home Energy Assistance Program (LIHEAP).

Questionnaire Updates for the 2015 RECS

Based on lessons learned from the 2009 RECS, market changes, and stakeholder feedback, several questionnaire updates were made to the 2015 RECS.

Household Survey:

- New questions were added for apartment units including: floor location of the apartment unit, whether the apartment opens to the inside or outside, and if the apartment building has central heating or water heating.
- A question was added to capture periods of vacancy in the previous year, which will mainly be used to explain any gaps in energy bills received from suppliers.
- A question was added to capture room additions that were made to the housing unit since it was originally constructed that would impact energy efficiency.
- The dishwasher section was updated to collect more detail to account for higher frequency usage. A question was also added asking the most used dishwasher cycle preference.
- The electronics section was updated to collect the latest technologies including smart phones, tablets, and internet streaming devices. The collection of television peripherals was changed to collect the total number of each peripheral, not which television they are attached to.
- The heat pump section was expanded to capture geothermal systems and information on the usage of back-up or auxiliary heat.
- The heating and air conditioning usage questions were expanded to allow all respondents with any heating or air conditioning equipment to report how they use their equipment. In prior RECS, these questions only applied to respondents with programmable thermostats.
- Questions were added to capture the use of floor, whole house, and attic fans.
- The lighting section was updated to capture the total number of light bulbs, and proportion of bulbs by type (incandescent, CFL, and LED).
- Questions were added about the use of smart thermostats.

- Questions were added to ask respondents if they have a smart meter and if they access their interval level electricity usage data.
- A question was added for any respondent with on-site solar generation to report the capacity of the system.
- A question was added to capture use of back-up generators.
- Transportation section items were added in 2009 RECS as a means for developing a residential transportation study frame. Currently, there are no plans to develop this study within in EIA, so most items were removed. Questions about alternative fuel vehicles will still be asked.
- More detail was added to the questions about wood purchases, including specific items for wood pellets
- The number of questions included to support LIHEAP analysis was reduced. Items with low rates of occurrence, and thus not usable for analysis, were removed.

Rental Agent Survey

- A question was added to determine whether the housing unit in question is sub-metered.

A. JUSTIFICATION

A- 1. Legal Authority

The 2015 RECS will be conducted under EIA's data collection authorities. The Household Survey and Rental Agent Survey data collections will be conducted on a voluntary basis using Forms EIA-457A and 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 conducts a series of data collections to describe the demand for energy within consuming units in the United States and the effect of that demand on the nation's social and economic needs. These collections are the: Residential Energy Consumption Survey (Forms EIA-457A-G); Manufacturing Energy Consumption Survey (Forms EIA-846A-C); and Commercial Buildings Energy Consumption Survey (Forms EIA-871A-J). Each of these surveys is congressionally mandated to be conducted on a quadrennial basis (Title 42, U.S. Code, § 7135). The three programs span end-use sectors that account for over 70 percent of the energy consumed in the United States. Not included in these surveys are the agriculture, mining, construction, and transportation sectors.

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

- **National Energy Modeling System (NEMS)—Office of Energy Analysis, EIA:** NEMS is EIA’s modeling system that meets a broad spectrum of Departmental needs and is used frequently to assess evaluation 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.
- **Short Term Energy Outlook - Office of Energy Analysis, EIA:** RECS consumption and cost data are used as benchmark input estimates for near-term energy demand forecasts within EIA. This includes the annual Winter Fuels Outlook, which forecasts heating fuel prices and expected household energy costs for October to March each year.
- **Low Income Home Energy Assistance Program (LIHEAP)-U.S. Department of Health and Human Services, Administration for Children and Families (HHS/ACF):** LIHEAP distributes energy assistance to more than 8 million low-income households per year to assist in meeting the costs of home heating and cooling. Since 1981, HHS/ACF has supported the RECS by funding a set of questions added to the household interview. These and other RECS data are used for analysis included in the LIHEAP Home Energy Notebook and Annual Report to Congress.
- **Economic 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 energy program investments and evaluations 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 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-income households.
 - 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 the 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.
- **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 Energy Star products.
- **American Council for an Energy-Efficient Economy (ACEEE):** ACEEE uses RECS data to help develop recommended appliance and other product standards for their recommendations to DOE. RECS data show the market saturation and age of various products and are used to develop the estimated savings from any new standard. ACEEE also uses RECS data to influence recommendations for work on national and state building codes. ACEEE has also developed a cities scorecard which includes some inputs from RECS.
- **Alliance to Save Energy (ASE):** ASE uses RECS data to set recommendations for energy efficient appliance and equipment standards. RECS data are also used to determine the economic impacts of specific projects, for example, a campaign to increase cold water laundry.
- **Joint Center for Housing Studies and National Multifamily Housing Council –** Both organizations use RECS data to help develop a profile of rental housing. RECS is used to characterize the landscape of energy efficiency in apartments and to determine where energy efficiency improvements would be most effective.
- **National Association of State Energy Officials (NASEO):** NASEO uses RECS data to influence residential appliance standard recommendations. NASEO also uses RECS data for specific state initiatives where the data allow. They have also used RECS data for specific energy research topics, such as the availability of liquid fuels.

- **U.S. Department of Housing and Urban Development (HUD):** HUDs Office of Community Planning and Development uses RECS data to evaluate its energy efficiency portfolio - from energy efficiency mortgages, to weatherization and retrofits, to utility incentive programs.

The data are made available to the public in a variety of reports, data tables, and micro-data files. These products can be viewed and downloaded through the EIA Web site at <http://www.eia.gov/consumption/residential/index.cfm>. Because of its comprehensiveness and flexibility, the RECS data set is widely used throughout the government and the private sector for analysis of residential energy demand. Several areas within the Department of Energy, as well as numerous federal agencies use the RECS data for forecasting, developing industry standards, and assessing program and technology initiatives. 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 Survey 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 so that respondents only answer 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 Rental Agent Survey will be administered using CAPI and computer assisted telephone interview (CATI).

The 2015 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 from energy suppliers for sampled housing units. In order to test the viability of a Web collection presence for the RECS, EIA is conducting pilot studies to test whether alternative modes can replace or supplement the in-person data collection for future RECS.

As a survey best practice, EIA will utilize Computer Assisted Recorded Interviewing (CARI) in the 2015 RECS. CARI is a standard quality control tool incorporated in CAPI software used in federal and academic survey collections. CARI enables the data collector to record specific portions of the interview to monitor interviewer and question performance. This is similar to the standard practice of monitoring telephone interviewers in centralized telephone facilities. As

required by OMB, the survey firm requires the interviewer inform respondents of CARI, and to obtain and document explicit consent to use CARI in the survey interview. Should a respondent decline, the CARI function is disabled for that particular interview. As with telephone interview monitoring, the interviewer and respondent are blind to which questions are recorded. For the 2015 RECS, CARI will be used as the primary method for falsification detection. Using CARI will reduce the need for full interview validation, which would require re-contacting respondents and added burden. Because the digital recordings target specific questions, CARI recordings are also used to review question performance and response quality. Using CARI brings EIA up to an industry survey production standard and enables us to produce cleaner, higher-quality data.

The Energy Supplier Surveys will again employ a respondent Website where suppliers can submit individual Web forms or Excel spreadsheets. EIA expects all respondents to report via these electronic modes.

A-4. Efforts to Identify Duplication and the Inadequacies of Similar Data

EIA has carefully searched for other surveys being conducted by the Department of Energy and other government agencies that might overlap with the RECS mandate. 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 use on the residential sector, but none specifically about individual energy consumers at the level of detail or analysis value required in the RECS program:

- Form EIA-861, *Annual Electric Power Industry Report*
- Form EIA-176, *Annual Report of Natural and Supplemental Gas Supply and Disposition*
- Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*
- Form AHS -2, *American Housing Survey* conducted by the U.S. Census Bureau
- Form ACS-1, *American Community Survey* conducted by the U.S. Census Bureau
- 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 aggregate data from energy suppliers for specific macroeconomic analyses of the residential sector. Those results describe supply and demand chains to and within the residential sector and other sectors as a whole. Because the RECS links energy characteristics data from the household interview with energy consumption data from

their suppliers, only the RECS supports microeconomic analyses of groups of energy consumers within the residential sector and changes in their end use consumption. RECS produces consumption and expenditures estimates of energy demand about residential energy consumers for the U.S., Census regions and 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 gas delivered to residential, commercial, and industrial consumers. Data are not collected on the characteristics of the household consumers.
- *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)*: The AHS provides limited heating and cooling equipment, appliances and self-reported energy cost data for a large sample of households. AHS respondents are asked to provide expenditures for a few specific months, which allows for modeling energy costs estimates as a share of the total cost of housing. That approach is sufficient for the AHS but because respondents are poor informants on their energy costs and the AHS collects no consumption data, that approach is inadequate for the RECS program. RECS requires the accuracy and detail of monthly energy consumption and expenditures provided by energy suppliers for estimating current and future energy demand. As noted above, the AHS uses RECS data to correct for data quality errors self-reported energy cost data in the AHS.
- *American Community Survey (Form ACS-1)*: The ACS collects information on annual 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 biases in the American Housing Survey. Because they are available at the census block level, ACS data on main space heating fuels and type of housing unit are critical inputs 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, but most of the CE data are self-reported and subject to similar biases in the AHS and ACS. These data are not published but used only for editing expenditure data as a component of total household expenditures.

A-5. Reduction of the Burden on Small Businesses and Other Small Entities

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 utilizes information already maintained by most respondents to produce customer bills. 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 a small fraction of their customer base. Additionally, EIA offers flexibility in how respondents report in the EIA-457 D-G; either by a web form or prefilled Excel templates.

A-6. Consequences of Less-Frequent Reporting

If the RECS were to be conducted less frequently, serious breaks in the continuity of the series could develop. Congress requires EIA conduct the RECS every four years. 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. The 2015 RECS will be the first RECS in six years thus beyond the Congressional mandate.

A-7. Compliance with 5 CFR 1320.5

There are no special circumstances that would require the 2015 RECS to be conducted in a manner inconsistent with the guidelines in 5 CFR 1320.5.

A-8. Summary of Consultations Outside the Agency

EIA conducted an extensive outreach effort with RECS stakeholders to seek input on the 2015 questionnaire. EIA met with various groups, solicited and received written comments, and published a Federal Register Notice. Further details about these outreach efforts are outlined below.

- On June 3, 2014, EIA met with several members of the EIA Office of Energy Analysis responsible for generating economic projections of long term energy demand for the residential sector. With them, plans for the 2015 RECS were reviewed and specific survey content needs and question wording changes were discussed. The coordination of RECS timing with the National Energy Modeling System (NEMS) was also discussed.
- On June 20, 2014, EIA met with members of the American Council for an Energy-Efficient Economy (ACEEE) to provide an update on RECS and solicit feedback on specific areas for improvement and that are most important to ACEEE. Topics discussed included state specific data, transportation, and miscellaneous end-uses.
- On August 18, 2014, EIA hosted an informal session at the ACEEE Summer Study on Buildings in Pacific Grove, CA to provide an update on RECS and gather feedback through a large seminar on uses of RECS data and its coverage of topics and questions valued by the efficiency community.
- On two occasions in 2014, EIA provided a RECS update and solicited input on planned program research and changes from members of the American Statistical Association Subcommittee on Energy Statistics. These meetings included the Spring 2014 meeting on April 3, 2014 and the Fall 2014 meeting on November 6, 2014.
- On December 1, 2014, EIA hosted a meeting with 16 stakeholders representing the Building Technologies Office at the U.S. Department of Energy, the U.S. Environmental Protection Agency, the National Renewable Energy Laboratory, the Lawrence Berkeley National Laboratory, Pacific Northwest National Laboratory, and the Office of Management and Budget. After an overview of the proposed project plan and schedule, specific proposed changes were discussed in the areas of structural characteristics, square footage measurement, appliances, and lighting.
- On December 5, 2014, EIA met with representatives from the American Council for Energy-Efficient Economy, the National Resources Defense Council, Resources for the Future, and the Building Codes Assistance Project. After an overview of the proposed project plan and schedule, specific proposed changes were discussed in the areas of structural characteristics, electronics and entertainment, appliances, and air conditioning.
- On December 11, 2014, EIA met with representatives of the National Association of State Energy Officials and the Alliance to Save Energy. Topics discussed included electronics, appliances, heating, cooling, fuels used, and miscellaneous end uses.

- On December 12, 2014, EIA met with representatives of each of the U.S. Environmental Protection Agency’s ENERGY STAR program covering the areas of home electronics, heating and cooling, homes, appliances, and lighting.
- On December 22, 2014, EIA met with Navigant Consulting to discuss areas of the RECS that are used as inputs for DOE Federal standards, test procedures, and ENERGY STAR criteria. Specific areas discussed included the ENERGY STAR questions, lighting, appliances, energy efficiency programs, air conditioning, and miscellaneous end-uses.
- On January 9, 2015, EIA met with another stakeholder from Navigant Consulting to discuss the lighting questions.
- On January 9, 2015, EIA met with stakeholders from the Harvard Joint Center for Housing Studies and the National Multifamily Housing Council. Specific areas discussed included structural characteristics, heating, energy efficiency programs, ENERGY STAR, and the rental agent survey.
- In January 2015, RTI evaluated the RECS instrument using their Question Appraisal System (QAS), a structured, standardized instrument review methodology that assists a survey design expert in evaluating questions.
- In January and February 2015, RTI conducted two rounds of cognitive testing in multiple cities. Specific areas were tested including cooking, energy efficiency, televisions, heating, cooling, lighting, and energy bills.
- On February 20, 2015, EIA received a letter of support for RECS from the Bureau of Economic Analysis (BEA).

A-9. Remuneration

Monetary Gift

Similar to prior rounds of RECS, EIA proposes using monetary incentives to promote survey participation during the Household Survey. 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. The 2015 RECS will use the same incentive as was used for the 2009 RECS where all households will receive an unconditional \$10 incentive at the point of first contact.

Incentives will not be used for the Rental Agent Survey or Energy Supplier Survey administration.

Non-Monetary Gift

EIA also proposes to again provide a DOE energy saver booklet or fact sheet as an unconditional, non-monetary token of appreciation. This official DOE material was used for the 2005 and 2009 RECS Household Survey.

A-10. Provisions for Confidentiality of Information

Data for the 2015 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.

EIA contractors are also required to submit detailed Data Security and Confidentiality Plans, which include methods for establishing physical and electronic barriers to protect RECS data from unauthorized users, descriptions of electronic security systems, and procedures for securing information stored in stolen or lost laptops or other field hardware.

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 2015 RECS.

A-12. Reporting Burden Estimates

Total Annual Responses and Burden

The total quadrennial reporting burden, as shown in Table A2, is estimated to be 6,788 hours or 1,697 hours annual reporting burden prorated over the 4 year RECS cycle. Table A2 presents the response burden for each of EIA forms that will be used for the 2015 RECS Household Survey, the 2015 RECS Rental Agent Survey, and the RECS Energy Supplier Surveys. The estimate for the 2015 RECS Household Survey (EIA-457A) is based on a goal of 4,000 completed household interviews. The 2015 RECS Rental Agent Survey (EIA-457C) burden reflects the increase in scope from the 2009 RECS, which is based on the percentage of 2009 RECS respondents who were renters or were not responsible for paying some or all of their energy bills. The Energy Supplier Surveys estimates (EIA-457D, E, F, and G) rely on 2009 RECS percentages of fuel use by Household Survey respondents as the basis for total respondent cases that will be spawned. These shares are applied to billing collections associated with the 2015 RECS and the RECS National Pilot. The Energy Supplier Surveys estimates for the RECS National Pilot are based on similar household completes in similar sampled areas as the 2015 RECS.

Table A2. Estimated Response Reporting Burden

Form Number	Title	Number of Responses	per Form (minutes)	Total (hours)
EIA-457A	2015 RECS Household Survey	4,000	50	3,333

EIA-457C	2015 RECS Rental Agent Survey	1,100	15	275
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2015 RECS Energy Supplier Surveys

EIA-457D	Household Bottled Gas (LPG or Propane) Usage	330	15	82.5
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EIA-457E	Household Electricity Usage	3,600	15	900
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EIA-457F	Household Natural Gas Usage	2,100	15	525
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EIA-457G	Household Fuel Oil or Kerosene Usage	330	15	82.5
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National Pilot Energy Supplier Surveys

EIA-457D	Household Bottled Gas (LPG or Propane) Usage	330	15	82.5
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EIA-457E	Household Electricity Usage	3,600	15	900
----------	-----------------------------	-------	----	-----

EIA-457F	Household Natural Gas Usage	2,100	15	525
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EIA-457G	Household Fuel Oil or Kerosene Usage	330	15	82.5
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	Total Response Burden	17,820		6,788
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	Annual Response Burden	4,455¹		1,697²
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¹Shown on form 83i, Line 13b

²Shown on form 83i, Line 13c

Number of Respondents

Table A3 shows the household and establishment (rental agent and energy supplier) respondents by form. The four Energy Supplier Surveys estimates account for both the 2015 RECS and National Pilot data collections. Because the National Pilot will be conducted in similar geographic areas as the 2015 RECS, EIA does not expect to contact more suppliers than what is expected for the 2015 RECS.

Table A3. Household, Rental Agent Establishment, and Energy Supplier Surveys Establishment Respondent Estimates

Form		Total
Number	Title	Respondents
EIA-457A	2015 RECS Household Survey	4,000
EIA-457C	2015 RECS Rental Agent Survey	550
<i>2015 RECS and National Pilot Energy Supplier Surveys</i>		
EIA-457D	Household Bottled Gas Usage	165
EIA-457E	Household Electricity Usage	360
EIA-457F	Household Natural Gas Usage	165
EIA-457G	Household Fuel Oil or Kerosene Usage	165
Total Respondents		5,405
Annual Respondents¹		<u>1,351</u>

¹Shown on form 83i, Line 13a

The cost of burden hours to the respondents is estimated to be \$488,532 (6,788 burden hours times \$71.97 per hour.) Therefore, other than the cost of burden hours, EIA estimates that there are no additional costs for generating, maintaining and providing the information.

A-13. Total Annual Cost Burden 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 Costs to the Federal Government

Total government staff and contractor costs for the 2015 RECS are estimated at \$9,395,162 over 4 years, yielding an average annual cost to the Government of \$2,348,791. 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. EIA estimates 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 per FTE for a total of \$2,395,162 for the survey or \$598,790 per year.

A-15. Reasons for Changes in Burden

Because this is a reinstatement, the overall total change in hours is the annual burden hours proposed. Therefore, an increase due to agency discretion (program change) is 1,697 annual hours. However, since the expected sample size is only one-third of the 2009 sample size, the annual burden on respondents is much less than it was for the 2009 RECS. The 2009 RECS had a total year burden estimate of 23,405 hours compared to 6,788 for this iteration of the RECS.

A-16. Schedule for Collecting and Publishing Data

The results of the RECS will be published by EIA at <http://www.eia.gov/consumption/residential/index.cfm>. All data will be prepared in accordance with EIA publication standards. Detailed tables will contain energy characteristics, consumption, and expenditures for electricity, natural gas, fuel oil, propane, kerosene, and wood by numerous energy-related housing characteristics. Public use data that have been masked to maintain confidentiality will also be available on the EIA web site.

As previously discussed in this document, EIA plans to begin data collection in August 2015. The goal for the 2015 RECS is to begin releasing results in October 2016. The timeline for data collection and distribution activities is summarized below:

- Begin Household Survey Data Collection..... August 2015
- Complete Household Survey Data Collection.....January 2016
- Begin Energy Supplier Survey Data Collection.....May 2016
- Complete Energy Supplier Survey Data Collection.....September 2016
- Housing Characteristics Data Tables Released.....October 2016
- Consumption and Expenditures Data Tables Released.....June 2017

A-17. Approval to Not Display Expiration Date

The expiration date will be displayed on the form.

A-18. Certification Statement

There will be no exceptions to the Certification for Paperwork Reduction Act Submissions of OMB Form 83-I.