

1. Introduction

The purpose of this report is to provide information on the use of energy in residential vehicles in the 50 States and the District of Columbia. Included are data about: the number and type of vehicles in the residential sector, the characteristics of those vehicles, the total annual Vehicle Miles Traveled (VMT), the per household and per vehicle VMT, the vehicle fuel consumption and expenditures, and vehicle fuel efficiencies.

The Energy Information Administration (EIA) is mandated by Congress to collect, analyze, and disseminate impartial, comprehensive data about energy--how much is produced, who uses it, and the purposes for which it is used. To comply with this mandate, EIA collects energy data from a variety of sources covering a range of topics¹.

Background

The data for this report are based on the household telephone interviews from the 1991 RTECS, conducted during 1991 and early 1992. The 1991 RTECS represents 94.6 million households, of which 84.6 million own or have access to 151.2 million household motor vehicles in the 50 States and the District of Columbia.

The RTECS is a national multistage probability sample survey conducted on a triennial basis. The 1991 RTECS was the fourth RTECS covering a calendar year. Previous RTECS were conducted monthly from June 1979 to September 1981, 1983, then every 3 years beginning in 1985. The next RTECS, scheduled for 1994, will continue the 3-year cycle. The RTECS, a subsample of the Residential Energy Consumption Survey (RECS), is an integral part of a series of surveys designed by the EIA to collect data on energy use in the residential sector. The EIA also conducts energy consumption surveys in the commercial and manufacturing sectors.

Baseline information about the RTECS household and vehicle stock was collected during the RECS personal interview in the fall of 1990. In 1991, further data about the vehicle stock and vehicle miles traveled (VMT) were collected via telephone interviews. Mail questionnaires were used for households that could not be contacted by telephone. Data were collected three times during the calendar years 1991 and 1992. The beginning-of-year data collection was scheduled for January 1991, but was delayed until March because of the onset of the Persian Gulf conflict. The subsequent mid-year data collection scheduled for May and June was, therefore, delayed until July and August of 1991. The primary purpose of this data collection was to identify vehicles acquired or disposed of during the first half of the year and to obtain estimated beginning or final odometer readings on these vehicles. The end-of-year data collection took place as originally scheduled, during January and February of 1992. (See Appendix A, "How the Survey Was Conducted.")

The RTECS was designed to collect actual VMT for each vehicle in the household by obtaining the odometer reading at two points in time. The vehicle characteristic information was collected directly from the respondents and the decoded Vehicle Identification Number (VIN). Vehicle fuel consumption and expenditures were estimated using vehicle fuel efficiencies, presented in miles per gallon (MPG) from the Environmental Protection Agency, and motor

¹EIA conducts numerous energy-related surveys. In general, the surveys can be divided into two broad groups. One group of surveys is directed to the suppliers and marketers of specific sources. These surveys--called supply surveys--measure the quantities of specific fuels produced and/or supplied to the market. The results of the supply surveys are combined and published in the *Monthly Energy Review* and other EIA publications. The second group--the consumption surveys--gathers information on the types of energy used by the end users along with the characteristics of those end users that can be associated with energy use. The RTECS belongs to the consumption group because it collects information directly from the end user--the household.

fuel prices from the Bureau of Labor Statistics. (See Appendix B, "Estimation Methodologies," for detailed information about the procedures used to estimate the MPG and the consumption and expenditures.)

The statistics published in this report are based on a sample from the population of all residential housing units in the 50 States and the District of Columbia as of November 1990. As a result, all the values are estimates rather than exact measures for the population. As described in Appendix C, "Quality of the Data," the accuracy of each estimate is indicated by its relative standard error (RSE). For tables showing household counts, no estimates were published that were based on fewer than 10 sample households. For tables showing vehicle counts, no estimates were published that were based on fewer than 18 sample vehicles. In addition, data were suppressed when the RSE for the estimate exceeded 50 percent. Each table of estimates in the section titled "Detailed Statistics" includes row and column RSE factors, to be used in calculating RSE's for individual table entries.

Unless stated otherwise, all comparisons reported in the text are statistically significant, based on a standard test made at the 0.05 significance level. No adjustments were made for simultaneous inference. See Appendix C for further details.

EIA gratefully acknowledges the cooperation of the respondents in supplying the information used to produce the estimates presented here.

Other Data Sources

This report also presents data from other sources that collect similar types of data. The two primary sources are the Federal Highway Administration's publication, *Nationwide Personal Transportation Survey (NPTS)* and the publication, *Highway Statistics 1991*. The NPTS is a survey of personal travel that is conducted about every 7 years. The *Highway Statistics 1991* is part of an annual series that is a compilation of transportation data provided by State and local governments. R. L. Polk and Company also collects data on vehicle registrations for vehicles in the 50 States and the District of Columbia.

Organization of the Report

A detailed discussion of the highlights presented in the Executive Summary follows this section. The major sections are on "Vehicle Miles Traveled," "Trends in Household Vehicle Stock," and "Vehicle Fuel Efficiency and Consumption." Tables and figures interspersed throughout the text highlight information of special interest or summarize a finer breakdown given in the detailed tables.

The detailed statistics that appear in the "Detailed Tables" section following the main text contain extensive crosstabulations of household characteristics, vehicle characteristics, and vehicle fuel consumption and expenditures. Appendix A, "How the Survey Was Conducted," contains information about how the data were collected and processed. The estimation procedures used are described in Appendix B, "Estimation Methodologies." Appendix C, "Quality of the Data," includes information on how to calculate RSE's for data in the tables.

The data for the RTECS are collected on Forms EIA-457A, EIA-457B and EIA-876A through D found in Appendix D, "Survey Forms." The Climate Zones and Census Regions and Divisions Maps are located in Appendix E. A list of related EIA publications on energy consumption is found in Appendix F. Definitions of the terms used in this report are located in the "Glossary."

1991 RTECS Survey Design

There were no major changes in the survey design and the data collection procedures between the 1988 and 1991 RTECS. In the 1985 and previous RTECS, the on-road vehicle fuel efficiencies and vehicle fuel prices were obtained by asking the respondents to maintain fuel purchase diaries for a 1-month period. The respondents were randomly assigned to a 1-month panel covering a calendar year. Fuel efficiencies, in terms of MPG, were then calculated directly using the monthly recorded vehicle fuel consumption and the recorded monthly VMT. In the 1988 and 1991 RTECS, the MPG were estimated using the Environmental Protection Agency's (EPA) certification files of test laboratory MPG estimates adjusted for on-road use. The vehicle-fuel price was estimated using the Bureau of Labor Statistics (BLS) price data. A data file from the Highway Loss Data Institute was used to decode the Vehicle Identification Number (VIN). The VIN was used to enhance the accuracy of vehicle characteristics that were used for matching the RTECS vehicles to EPA's certification files. (See Appendix A, "How the Survey was Conducted," for a detailed discussion of the changes in the survey design and Appendix B, "Estimation Methodologies," for a discussion of the procedures used for calculating the fuel efficiencies, adjusting the MPG for on-road efficiency shortfall, and the motor fuel consumption and expenditures data.)