



U.S. Energy Information Administration
Office of Energy Statistics
Office of Energy Consumption and Efficiency Statistics

Supporting Statement for Survey Clearance

Form EIA-886, *Annual Survey of Alternative Fueled Vehicles*
OMB 1905-0191

Part B: Statistical Methods

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Table of Contents

B. STATISTICAL METHODS.....2

- 1. Respondent Universe.....2
- 2. Sampling Methodology and Estimation Procedures.....3
 - 2.1. Sampling Methodology.....3
 - 2.2. Estimation Procedures.....5
- 3. Maximizing the Response Rate.....7
- 4. Testing Procedures.....8
- 5. Statistical Consultations.....8

B. STATISTICAL METHODS

1. Respondent Universe

The Form EIA-886, *Annual Survey of Alternative Fueled Vehicles*, data collection is designed to meet the statutory requirements for the Energy Information Administration (EIA) to report on specific aspects of all alternative fueled vehicles (AFVs) and alternative transportation fuels (ATFs) in use in the United States, to respond to public requests for information on AFVs and ATFs, and to provide Congress with a measure of the extent to which the objectives of the Energy Policy Act of 1992 (EPACT92) are being achieved.

EIA determined that detailed information about AFVs and ATFs could be best provided with the least amount of overall respondent burden by suppliers of AFVs and administrators of AFV fleets. These two groups can provide an overall picture of AFVs being introduced into the marketplace as well as characteristics of fleets currently in use.

The respondent frame for the *Annual Survey of Alternative Fueled Vehicles* consists of:

- Original Equipment Manufacturers (OEMs) — organizations that market and warrant new alternative fueled vehicles or other advanced technology vehicles for use in the U.S. Entities that perform conversions prior to the vehicle initially being delivered to an end user are also considered “OEMs;”
- Aftermarket Vehicle Converters — organizations that convert vehicles from operating on a traditional fuel (gasoline or petroleum-based diesel) to operate on an ATF or from one ATF to another ATF. The converted vehicle may operate exclusively on the fuel or power source to which it was converted, or the conversion may retain the original fuel source and add a new fuel source. Aftermarket conversions are generally performed after the vehicle has been delivered to an end user. Aftermarket vehicle converters may be private companies, government agencies, research institutions, etc.;
- Federal, state, and local governments, especially those involved in operating/managing fleets;
- Fuel providers whose fleets include AFVs (e.g., electric and natural gas utilities, propane marketers); and
- Industries and organizations which heavily utilize AFVs (e.g., transit agencies, private fleet management associations, and large private corporations who demonstrate a commitment to AFVs).

Potential respondents to the Form EIA-886 are identified using various resources, including industry associations, magazines, newsletters, journals, and periodicals; Internet research; industry conference and trade show proceedings; and discussions with officials from a wide variety of industries. Other EIA-sponsored surveys pertaining to electric utilities, natural gas and petroleum supply also provide potential respondents (explained in further detail under “Sampling Methodology” in Section 2). To keep the survey frame current, Form EIA-886 also requests

information on respondent ownership and operating status (i.e., whether the company was sold or merged, went out of business or changed its status for meeting the reporting criteria, etc.).

To develop a comprehensive inventory of AFVs made available, planned to be made available, and already in use, the *Annual Survey of Alternative Fueled Vehicles* collects aggregated vehicle data and categorizes the vehicles using a standard set of vehicle and fuel type codes.

Respondents can then group their vehicles by similar classifications. Respondents using AFVs are also asked to report the geographic location (state) in which the AFVs typically operate, and the amount of ATFs that their vehicles consume. If the amount of ATF consumed is unknown, respondents are asked to provide their best estimate. The amount of ATFs and the type of AFVs are distinguished by the following characteristics that are captured by the survey response codes:

- Vehicle Type
- Alternative Fuel Type
- Engine Configuration
- Primary Application

2. Sampling Methodology and Estimation Procedures

2.1. Sampling Methodology

The Form EIA-886 data collection attempts to canvass all entities that supply AFVs and advanced technology vehicles and all entities that use AFVs in the United States. For certain categories of AFV users, the universe of respondents is not known or cannot be surveyed as a census, due to EIA resource constraints. In these cases, EIA draws a sample from larger EIA-sponsored survey respondent frames.

The following table presents a description of each frame within the Form EIA-886 respondent universe and how it is derived and maintained to best capture accurate and complete AFV data:

Form EIA-886 Subgroup	How the Form EIA-886 Frame is Derived/Maintained (by Subgroup)
AFV Suppliers	The AFV suppliers in the survey frame represent a census of all original equipment manufacturers and aftermarket vehicle converters that are known to make available alternative fueled vehicles and advanced technology vehicles (e.g., hybrid and fuel cell vehicles). These types of respondents are identified through ongoing research of published vehicle production plans; industry association magazines, newsletters, journals, and periodicals; Internet research; industry conference and trade show proceedings; and discussions with officials from a wide variety of AFV-related industries.
Federal Agencies	All Federal agency fleets are required to use AFVs; therefore, the frame includes a census of all Federal agencies. Currently, the Form EIA-886 utilizes the Federal Automotive Statistical Tool (FAST), a jointly sponsored Web-based data collection between DOE, EIA, and GSA, to maintain the list of respondents of this type. At the close of each calendar year FAST cycle, data for federal AFVs are transferred into the Form EIA-886 component of FAST.

Form EIA-886 Subgroup	How the Form EIA-886 Frame is Derived/Maintained (by Subgroup)
State Agencies	State agencies are included in the frame via a census of all agencies believed to use AFVs in their fleets, identified by ongoing research of state fleet contacts. With few exceptions, all 50 states are required to use AFVs; therefore, all 50 states are surveyed on the Form EIA-886. (Details regarding the exception for the State of Texas are at http://www.afdc.energy.gov/laws/law/TX/6585 .)
Transit Agencies	Transit agencies are included in the frame via a census of all agencies believed to use AFVs in their fleets, identified by ongoing research derived from publications such as the annual reports published by the Federal Transit Authority and the American Public Transit Association. This respondent list is also maintained by ongoing research from trade association contacts, trade press articles, and review of AFV industry mailing lists.
Electric Utilities	Electric respondents are included in the frame via a census derived from the Form EIA-861, <i>Annual Electric Power Industry Report</i> , which is completed annually by large electric utilities and once every five years by all electric utilities. Form EIA-886 uses as its basic list of electric utilities all EIA-861 respondents that answer “yes” to the either part of Question 7 of Schedule 2, Part A, “Did your company operate AFVs during the year?” and “Does your company plan to operate such vehicles during the coming year?” Each year, EIA reviews the subset of those who answered “yes” and compares that list of respondents against the Form EIA-886 electric respondents list. Any new companies are added to the Form EIA-886 frame and surveyed.
Natural Gas Utilities	Natural gas respondents are included in the frame via a census derived from the Form EIA-176, <i>Annual Report of Natural and Supplemental Gas Supply and Disposition</i> , which is completed annually by natural gas utilities. Form EIA-886 uses as its basic list of natural gas utilities all Form EIA-176 respondents that answer “yes” to Question 1 of Part B Item 1: “Does your company’s vehicle fleet include vehicles powered by alternative fuels?” Each year, EIA reviews the subset of those who answered “yes” and compares that list of respondents against the Form EIA-886 natural gas respondents list. Any new companies are added to the Form EIA-886 frame and surveyed.
Propane Fuel Providers	<p>Note that at the time of this data clearance request, the Form EIA-863, from which a sample of propane respondents was derived for the Form EIA-886 frame, is temporarily suspended due to budget constraints. As a result, EIA will attempt to identify a census of propane providers as respondents on the Form EIA-886 by researching industry association magazines, newsletters, journals, and periodicals; Internet research; industry conference and trade shows; and discussions with officials from propane-related industries.</p> <p>When possible, EIA proposes to return to the previous method of identifying propane respondents for the Form EIA-886 frame via a sample derived from the Form EIA-863, <i>Petroleum Product Sales Identification Survey</i>. (Form EIA-863 is a quadrennial survey that collects information on the size, type, and geographic location of No. 2 distillate and residual fuel oil dealers, motor gasoline resellers, and propane resellers.) Due to the large quantity of propane respondents, Form EIA-886 used as its basic sub-grouping of propane fuel providers a sample of the over 24,000 respondents from the Form EIA-863 frame. To draw this sample, EIA first captured a panel sample of the 100 largest propane marketers, based on reported sales volume, and automatically included these large propane marketers in the Form EIA-886 frame. Only larger propane marketers were sampled, because of the high probability that larger propane suppliers will (1) have larger fleets such as delivery trucks; and (2) utilize AFVs in their fleet by using propane powered vehicles. The remaining respondents in the Form EIA-886 propane frame sample were derived by drawing a probability proportionate to size (PPS) sample of the Form EIA-863 respondents, based on two criteria: (1) the respondents provided sales volume data on Form EIA-863, Part 3, Petroleum Category, Item N: “Propane sold to customers for all other end uses (including propane powered motor vehicles);” and/or (2) the respondents answered in the affirmative to Question 26: “Does your company sell and/or use propane for on-highway transportation use?” Once this subset of respondents was isolated from the Form EIA-863 frame, sample weights were applied based on sales volumes, to develop a manageable size sub-grouping of propane providers for the Form EIA-886 propane category (currently 366 companies). The Form EIA-886 propane sample is usually drawn every four years.</p>

Form EIA-886 Subgroup	How the Form EIA-886 Frame is Derived/Maintained (by Subgroup)
Municipal Governments & Private Fleets	The universe of municipal governments and private organizations with fleets that utilize AFVs is unknown. Currently, EIA estimates summary-level data for these user groups using a proportional allocation model, which is further explained in detail in this section, under “Estimation Procedures.” However, a purposive sample of municipal governments and private fleets that use AFVs is maintained for the Form EIA-886 and is continually being researched and canvassed by using published vehicle production plans; industry association magazines, newsletters, journals, and periodicals; Internet research; industry conference and trade show proceedings; and discussions with officials from a wide variety of AFV-related industries. As prospective respondents are identified, they are added to the Form EIA-886 frame on an annual basis.

2.2. Estimation Procedures

Published statistics from the Form EIA-886 *Annual Survey of Alternative Fueled Vehicles* on the supply of AFVs and advanced technology vehicles represent the sum of actual counts reported by the AFV supplier respondents. Published data about AFV inventory in the United States represent the sum of actual and sample weighted counts for AFV users in the following user groups: Federal Agencies, State Agencies, Transit Agencies, Electric Fuel Providers, Natural Gas Fuel Providers, and Propane Fuel Providers.

Statistics for municipal government and private fleets represent estimates based upon the universe of AFV supplier information reported on Form EIA-886 and AFV counts reported for the selected user categories noted, above, using assumed vehicle retirement schedules. This procedure is conducted by geographic region and various vehicle and fuel characteristics using a regression model, as explained in detail, below.

The method for estimating total AFVs in use is for the reporting year (i.e., prior calendar year) is designed to use the prior reporting year's baseline estimates of AFVs in use, along with current reporting year survey data. As mentioned previously, EIA surveys both the suppliers and users of AFVs to provide information on the number, type, and geographic distribution of AFVs in use as well as regional ATF consumption by fuel type. To survey the universe of AFV suppliers (original equipment manufacturers and converters) is relatively straightforward, as the size of the category is less than 50 respondents; however, fleets that use AFVs could easily number in the tens of thousands, nationwide.

Therefore, EIA collects data from only the fleet groups described previously – federal and state governments, alternative fuel providers (electric, natural gas, and propane), and transit agencies – to determine AFV usage characteristics and fuel consumption. The gap between the number of AFVs covered by the EIA AFV supplier and user surveys (after adjusting for vehicle retirements) reflects those AFVs that are in use by municipal governments and private fleets. The number of these AFVs in the ‘gap’ are being estimated in the sense that: 1) the number is not known precisely, because while the supply of AFVs is well known, vehicle retirements must be estimated; and 2) the ‘missing’ AFVs are being assigned a geographic location, based upon the distribution of AFVs in use for which EIA collects survey data. The geographic location of these vehicles must be assigned by EIA because the

vehicle suppliers do not generally know the locations into which their vehicles are ultimately sold.

The general method to estimate AFVs in use is, as follows:

1. Estimate the U.S. total number of AFVs in use by summing the vehicles made available (as reported by suppliers) through the reporting (i.e., prior calendar) year and subtracting an annual estimate of vehicles retired.
2. Estimate the number of AFVs in use for surveyed user groups for the current year. The sources used for this number are AFVs in use by state government, alternative fuel provider, and transit fleets from the Form EIA-886 and federal AFVs in use from the Federal Automotive Statistical Tool (FAST).
3. Estimate the number of AFVs in use in market sectors other than those surveyed on the Form EIA-886 (i.e., the "Other Private and Municipal Government Sector") by subtracting estimated AFVs in use for surveyed user groups (calculated in Step 2) from the total AFVs estimated in use for the given data year (from Step 1).
4. Allocate AFVs in use in the "Other Private and Municipal Government" sector to the states. This calculation is performed by developing the percentage of AFVs in use in each state by fuel and vehicle type for all user types canvassed on the Form EIA-886 and the FAST surveys. These percentages are used to allocate the vehicles obtained in Step 3.

Separate AFV inventory estimates are made for each state within the following categories:

- Fuel type – includes propane, compressed natural gas, liquefied natural gas, ethanol (E85), electricity, and hydrogen.
- Vehicle type – a function of both a vehicle's weight and body style. Examples of distinct body types include subcompact automobile, light-duty pick-up truck, medium-duty pick-up truck, medium-duty truck, large transit bus, etc.
- Engine configuration –either a dedicated engine, meaning that it operates on a single fuel, or a non-dedicated engine. A non-dedicated engine may operate on more than one fuel at a single time, or operate on more than one fuel, but only at separate times. A flex-fueled vehicle is a type of non-dedicated engine.
- User group –the fleet classification of the vehicle owner/operator. These groups include federal and state government agencies, alternative fuel providers (electric, natural gas, and propane), and transit agencies.
- Geographic location – represents the state in which the vehicle is operated.

3. Maximizing the Response Rate

At the start of each data collection cycle, respondents to the Form EIA-886 receive a one-page letter on DOE letterhead that announces the opening of the data collection period, the form's due date, instructions on accessing the Form EIA-886 Web-based survey data collection system, the respondent's password, and instructions for completing the form. Respondents that do not have Internet capability, or who prefer to file via mail, fax, or phone, are given the paper form and instructions along with the data collection request announcement. Respondents who receive the paper form and instructions are provided with a business reply mailer; however, they are encouraged to file electronically or via fax.

Respondents are given 60 (sixty) days from receipt of the initial data collection request letter to submit electronically, or to return the form to EIA. Respondents not using electronic submission have the choice of submitting the original form via email, fax, telephone, or U.S. mail.

If an entity in the Form EIA-886 survey frame does not submit a survey during the data collection period, the entity is considered to be a "non-respondent." The unit non-response follow-up process begins after the survey due date and concludes approximately 60 days after this date, using the following schedule of activities:

- **One day after the due date:** Send an e-mail message to electronic-filers, or a postcard to those who do not file electronically, to the first level contact indicated for the responding entity
- **Two weeks after the due date:** Send a second e-mail message or postcard, as appropriate, to the first level contact
- **30 days after the due date:** Send a letter from the EIA Form EIA-886 survey Team Leader to the second level contact (supervisory)
- **60 days after the due date:** Send a letter from the Form EIA-886 Office Director to the second level contact (supervisory)

Non-respondents who have e-mail addresses on file with EIA are sent a reminder notice via e-mail message immediately after the survey cycle due date. This e-mail message restates the mandatory reporting requirement for the survey and emphasizes the importance of filing the data in a timely manner. It also contains EIA contact information if the respondent has questions about the survey. Non-respondents who do not have an e-mail address on file with EIA are sent a post card with the same information.

Non-respondents are contacted throughout the 60 day follow-up period via e-mail message or phone call to directly obtain the status of their survey submission. A prioritized list of non-respondents is sorted, based on prior year inventory or production, so that organizations with larger fleets or supply data are contacted first. Should a non-respondent state that they did not receive the original data collection announcement letter, or that they misplaced the letter, they can receive a new letter from EIA, via e-mail message, U.S. mail or fax machine. Assurances from the telephone contact for the non-responding entity should be obtained regarding

completion of the Form EIA-886 for the current and all applicable future data collection periods. If the respondent contact files data for the non-respondent via the telephone during this consultation process, these data are considered valid responses.

EIA occasionally grants to non-respondents a survey filing extension in two-week increments or a length of time deemed necessary to complete and file the survey. For example, if a respondent has misplaced the survey and needs a replacement, or a new company has been added to the frame after the initial data collection announcement, EIA may grant the respondent a filing extension of up to one month.

The 2013 Form EIA-886 data collection period closed with a response rate of 93%, with 90% of respondents using the Web-based data collection system. EIA determined through post-data-collection research that non-respondents were either (1) no longer in business; (2) did not meet the reporting criteria; or (3) did not respond to the survey because they felt their fleet was too small to warrant the time to collect and submit data.

After all escalation procedures prior to data collection publication deadlines are attempted, EIA will impute values for any Form EIA-886 data items that are non-responses, based on the previous year's survey response. For AFV supplier respondents, the following data items are subject to imputation: the quantity of AFVs made available by vehicle type, model name, alternative fuel type, and engine configuration. For AFV user respondents, the following data items are subject to imputation: the state geographic location, vehicle type, alternative fuel type, primary application, engine configuration, miles traveled, and alternative fuel consumed. For the 2013 survey year, the data imputed for non-respondents represented less than 1% of the summary-level totals reported across all respondents.

4. Testing Procedures

User pre-testing of the proposed changes to the Form EIA-886 was determined not to be necessary for this clearance request, because there are not any proposed changes to the data constructs collected. EIA has the opportunity to discuss with representatives of groups that use AFVs any user reporting issues. These one-on-one discussions have occurred at AFV-related conferences, trade shows, and fleet organization meetings.

5. Statistical Consultations

For additional information concerning this data collection, please contact Cynthia Amezcua at (202) 586-1658, or cynthia.amezcua@eia.gov.

For information concerning this request for OMB approval, please contact the agency Forms Clearance Officer, Alethea Jennings, at (202) 586-5879, or alethea.jennings@eia.gov.