



Alternative Fuel Vehicle Data

Definitions, Sources, and Explanatory Notes

Definitions

<i>Key terms</i>	<i>Definitions</i>
Aftermarket vehicle converter	An entity (company or organization) that converts vehicles from operating on a traditional fuel (gasoline or petroleum-based diesel) to an alternative fuel. They can also convert vehicles from operating on one alternative fuel to another alternative fuel. The converted vehicle may operate exclusively on the new fuel or power source or it may use the original fuel source and new fuel source interchangeably. 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.
AFV supplier	An entity (company or organization) that <i>makes available</i> alternative fuel vehicles. These suppliers include original equipment manufacturers and aftermarket vehicle converters. The term <i>made available</i> means the vehicle either was delivered for the first time to a dealer, leasing company, or end user; was available for delivery to a dealer, leasing company, or end user; or was otherwise placed <i>in use</i> during the reporting period.
AFV user	Any entity (company or organization) that operates an on-road vehicle capable of consuming alternative fuel
Alternative fuel	Alternative fuels, for transportation applications, include the following <ul style="list-style-type: none">• Methanol• Denatured ethanol and other alcohols• Fuel mixtures containing 85% or more by volume of methanol, denatured ethanol, and other alcohols with gasoline or other fuels• Natural gas (including compressed and liquefied natural gas)• Liquefied petroleum gas (propane)

- Hydrogen
- Coal-derived liquid fuels
- Fuels (other than alcohol) derived from biological materials (biofuels such as soy diesel fuel)
- Electricity (battery and plug-in hybrids)

Alternative fuel vehicle (AFV)

A vehicle designed to operate on an alternative fuel (e.g., compressed natural gas, propane, electricity). The vehicle can be either a dedicated vehicle designed to operate exclusively on alternative fuel or a non-dedicated vehicle designed to operate on alternative fuel and/or traditional fuel. Plug-in hybrid electric vehicles are included as alternative fuel vehicles because the primary input fuel is electricity. Gasoline-electric and diesel-electric hybrids are not considered alternative fuel vehicles because the primary input fuel is not an alternative fuel.

Energy Policy Act of 1992 (EPAct)

The Energy Policy Act of 1992 set goals, created requirements, and amended utility laws to increase clean energy use and improve overall energy efficiency in the United States. The Act consists of 27 titles detailing various measures designed to lessen the nation's dependence on imported energy, provide incentives for clean and renewable energy, and promote energy conservation in buildings. Title V of the Energy Policy Act of 1992 (Public Law 102-468), Section 503 requires information on

1. The number of each type of alternative fuel vehicle (AFV) likely to be in use in the United States
2. The probable geographic distribution of such vehicles
3. The amount and distribution of each type of replacement fuel

The Congress gave EAI the responsibility for collecting these data in 1994. The data are used to satisfy public requests for information on AFVs and alternative transportation fuels and to provide Congress with a measure of the effectiveness of the Act.

Executive Order 13693

“Planning for Sustainability in the Next Decade,” issued in March 2015, requires federal agencies with 20 vehicles or more to improve fleet and vehicle efficiency by eliminating non-essential vehicles and reducing GHG fleets by 30% relative to fiscal year (FY) 2014 emissions by FY 2025. Covered agencies must also

- Install telematics systems on certain new vehicles
- Submit annual vehicle acquisition data

- Ensure that by December 31, 2020, 20% of light-duty vehicle acquisitions are zero emission vehicles (ZEVs) or plug-in hybrid electric vehicles (PHEVs)
- Ensure that by December 31, 2025, 50% of light-duty vehicle acquisitions are zero emission vehicles (ZEVs) or plug-in hybrid electric vehicles (PHEVs)
- Plan to install charging and other infrastructure to support new ZEV and PHEV acquisitions.

Engine configuration Refers to whether the vehicle operates exclusively on alternative fuel (dedicated) or on a combination of alternative fuel and traditional fuel (e.g., bi-fuel, flexible fuel). EIA publishes data as either dedicated or non-dedicated.

Federal Automotive Statistical Tool (FAST) FAST is a jointly sponsored database between the U.S. Energy Information Administration, the General Services Administration (GSA), and the U.S. Department of Energy’s Federal Energy Management Program. FAST captures information on the federal fleet.

Form EIA-886 Form EIA-886, *Annual Survey of Alternative Fueled Vehicles*, collects information on:

- The number and type of alternative fuel vehicles (AFVs) and other advanced technology vehicles (e.g., gasoline-electric or diesel-electric hybrid vehicles) that vehicle suppliers made available in a calendar year and plan to make available in the following calendar year
- The number, type, and location of AFVs in use in a calendar year
- The amount and distribution of each type of alternative transportation fuel (ATF) consumed
- The number of miles traveled by AFVs and the retirement of AFVs

The data from this form are used to satisfy public requests for information on AFVs and ATFs and to provide Congress with a measure of the effectiveness of the Energy Policy Act of 1992.

Fuel provider An entity (company or organization) whose main business is to provide an energy product (i.e., electricity, natural gas, propane.) Fuel providers are required to use alternative fuel vehicles in their fleets if the fuel they market has been identified under EPA Act as an alternative fuel.

Heavy duty vehicle	An on-road vehicle with a gross vehicle weight rating equal to or greater than 26,001 pounds. Transit buses and large delivery trucks fall into this category.
Gasoline-equivalent gallons	Fuel consumption quantities are expressed in a common base unit of gasoline-equivalent gallons to allow comparisons of different fuel types. Gasoline-equivalent gallons do not represent gasoline displacement. Gasoline equivalent is computed by dividing the gross heat content of the replacement fuel by the gross heat content of gasoline (using an approximate heat content of 122,619 British thermal units per gallon) and multiplying the result by the replacement fuel consumption value.
Hybrid electric vehicles	Standard hybrids are powered by an internal combustion engine that runs on gasoline or diesel and an electric motor that uses energy stored in a battery. Rather than using a plug to charge the battery, they use regenerative braking and the internal combustion engine to charge and capture energy normally lost during braking. Plug-in hybrids use the electric battery as the primary energy source by relying on battery power for propulsion for a limited range (15–40 miles) before switching to internal combustion propulsion (thus reducing gasoline consumption). Generally, a plug-in hybrid could operate without gasoline as long as the battery remains charged, but standard hybrids would require gasoline or another primary fuel source to generate electricity for the battery. As of calendar year 2012, plug-in hybrid electric vehicles are captured as AFVs on the Form EIA-886 and will be published as electric vehicles.
Light duty vehicle	An on-road vehicle with a gross vehicle weight rating equal to or less than 8,500 pounds. Automobiles, motorcycles, minivans, SUVs, and other small pickups fall into this category.
Made available	A vehicle is considered <i>made available</i> if it is available for delivery to dealers or end users. A made available-vehicle is warranted by the original equipment manufacturer or aftermarket converter as a complete vehicle before end use. Made available AFVs do not represent sales of AFVs.
Medium duty vehicle	An on-road vehicle with a gross vehicle weight rating between 8,501 and 26,000 pounds. Some larger cargo vans, pickup trucks and maintenance trucks fall into this category.

Original equipment manufacturer	An entity (company or organization) that markets and warrants new alternative fuel vehicles or other advanced technology vehicles (i.e., hybrids) for use in the United States. These entities sometimes perform conversions before the vehicle is delivered to an end user.
Plug-in hybrid electric vehicle	Plug-in hybrid electric vehicles have an internal combustion engine and electric motor. These vehicles are powered by an alternative fuel or a conventional fuel (such as gasoline) and a battery, which plugs in to charge.
Traditional fuels	Includes gasoline and diesel.
User group	Describes the fleet’s ownership. User groups include <ul style="list-style-type: none"> • Federal agencies • State agencies • Electric fuel providers • Natural gas fuel providers • Propane fuel providers • Transit agencies • Other private and municipal governments
Vehicle type	Describes the type and size of the on-road vehicle (i.e., compact autos, pickup trucks, vans).
Weight class	Includes light duty, medium duty, and heavy duty

Sources

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

U.S. Energy Information Administration, Form EIA-886, [Annual Survey of Alternative Fueled Vehicles](#).

DOE/GSA/EIA Federal Automotive Statistical Tool (FAST)

Explanatory Notes

The Energy Policy Act of 1992 requires EIA to collect data each year on AFVs made available by suppliers and to estimate the number of AFVs in use in the United States. EIA collects data specifically on

- The number of alternative fuel vehicles (AFVs) supplied each year, i.e., new AFVs and conventional fuel vehicles converted to operate on an alternate fuel
- The number and type of advanced technology vehicles supplied each year, i.e., gasoline-electric hybrids and diesel-electric hybrids
- The number of AFVs in use and the amount of alternative transportation fuel consumed for a limited set of fleet user groups

AFV suppliers currently surveyed include original equipment manufacturers and aftermarket vehicle converters. In addition, EIA collects supplier data on advanced technology vehicles, which include gasoline-electric hybrids and diesel-electric hybrids. Although these data are presented separately under the AFV Supplier Interactive Data Viewer for information purposes only, they are not included in the AFV User Interactive Data Viewer because they are not considered alternative fuel vehicles as defined in the Energy Policy Act of 1992.

AFV user groups currently surveyed include federal and state governments, alternative fuel providers, and transit companies. Alternative fuel providers include organizations whose energy product is an EPCA92 defined alternative fuel (i.e., electricity, natural gas, and propane). EIA uses the data collected from AFV users in federal and state fleets and other eligible respondents in Form EIA-886, along with the data provided by the AFV suppliers, to estimate the total number of AFVs in use. That total includes AFVs in municipal governments and private fleets.

AFV supplier data versus AFV user data: EIA's supplier data include all AFVs made available during a given year. The term *made available* means the vehicle either was delivered for the first time to a dealer, leasing company, or end user; was available for delivery to a dealer, leasing company, or end user; or was otherwise placed *in use* during the reporting period. All vehicles *capable* of operating on an alternative fuel are considered AFVs. For example, in 1997, some vehicle manufacturers began including E85 fueling capability in certain model lines of vehicles.

Since that time, EIA estimates the total number of E85 flexible fuel vehicles that are capable of operating on E85 or gasoline is approximately 10 million. However, the data presented in the AFV user data show the total estimated AFV inventory by fleets and excludes vehicles in use by private citizens, non-fleet users, and those E85 flexible fuel vehicles estimated to be using only traditional fuel (gasoline or diesel).

Electric vehicles are battery-powered vehicles and do not include standard hybrid electric vehicles. In EIA's AFV supplier data, electric vehicles are published separately from standard hybrid electric vehicles from 2004 forward. Before 2004, EIA captured hybrids within the electric fuel type category. Standard hybrids are powered by an internal combustion engine that runs on gasoline or diesel and an electric motor that uses energy stored in a battery. Rather than using a plug to charge the battery, they use regenerative braking and the internal combustion engine to charge and capture energy normally lost during braking. Plug-in hybrids use the electric battery as the primary energy source by relying on battery power for propulsion for a limited range (15–40 miles) before switching to internal combustion propulsion (thus reducing gasoline consumption). Generally, a plug-in hybrid could operate without gasoline as long as the battery remains charged, but standard hybrids would require gasoline or another primary fuel source to generate electricity for the battery. Beginning in 2012, the Form EIA-886 published inventory and supplier data on plug-in hybrids because they are AFVs.