

## FOREWORD

Welcome to this 35<sup>th</sup> edition of the Transportation Energy Data Book. Twenty-seven editions of this Data Book have been produced by Stacy Davis; the Department of Energy is grateful for the dedication, consistency, and skill that she has brought to this effort.

I would like to bring to your attention some of the data that are new or changed for this edition:

- Figures on oil prices (**Figure 10.4**) and costs of oil dependence (**Figure 10.5**) have been moved from Chapter 1 Petroleum to Chapter 10 Transportation and the Economy.
- **Figure 2.1** on the consumption of primary energy now has United States data shown separately.
- **Table 2.6** is a new table on the production, net imports, and consumption of fuel ethanol and biodiesel. This replaces a table for which data were no longer available.
- **Table 2.7** now includes Btu of electricity used by plug-in cars. The data come from the Energy Information Administration's *Annual Energy Outlook 2016*.
- **Tables 3.12 and 3.13** show the survival rates and mileage schedules for cars and light trucks coming from the mid-term evaluation of the Light Vehicle Greenhouse Gas and Corporate Average Fuel Economy Standards. **Table 3.14** on heavy truck survival was not replaced from the previous edition due to lack of data on the subject.
- **Table 4.3** combines car and light truck data from **Tables 4.1 and 4.2** to present a picture of the light vehicle population as a whole.
- **Table 4.27** contains fuel economy by speed results from the Autonomie model to replace similar data from the PSAT model. The Autonomie results are also included in **Figure 4.2**.
- **Table 4.30** includes several international driving cycles that were not previously on the table, such as the new World Light Vehicle Test Cycle. It also includes the distance of each cycle.
- Data on demand response vehicles (**Table 7.8**) and transit buses (**Table 7.9**) were moved from Chapters 4 and 5, respectively, to Chapter 7 on fleet vehicles.
- On **Table 6.1**, the estimates on the number of alternative fuel vehicles *in use* were replaced by the number of vehicles *made available* due to changes in source data by the Energy Information Administration.
- Data on the number of alternative fuel vehicle models available over time (**Table 6.8**) and data on the number of alternative fuel refueling stations over time (**Table 6.11**) were added to Chapter 6 on alternative fuels.
- **Table 7.1** on fleet vehicle registrations was replaced by a historical table on fleet vehicles in service, due to registration data unavailability.
- Chapter 10 Transportation and the Economy now includes explanatory text on current and constant dollars – two terms used extensively in that chapter.
- **Table 11.13** shows the carbon content of transportation fuels in grams per gallon and grams per Btu from the GREET model.
- **Table 12.12** contains national emissions of sulfur dioxide by source category.

I hope you find value in this data book. Stacy and I welcome suggestions on how to improve it.



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This book would not be possible without the leadership, guidance, and vision of Phil Patterson, who began this book in the 1970's. We hope to continue this report into the future with the same level of excellence. The authors and the transportation research community will be forever grateful for his efforts.



## ABSTRACT

The *Transportation Energy Data Book: Edition 35* is a statistical compendium prepared and published by Oak Ridge National Laboratory (ORNL) under contract with the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Vehicle Technologies Office. Designed for use as a desk-top reference, the Data Book represents an assembly and display of statistics and information that characterize transportation activity, and presents data on other factors that influence transportation energy use. The purpose of this document is to present relevant statistical data in the form of tables and graphs. The latest edition of the Data Book is available to a larger audience via the Internet ([cta.ornl.gov/data](http://cta.ornl.gov/data)).

This edition of the Data Book has 12 chapters which focus on various aspects of the transportation industry. Chapter 1 focuses on petroleum; Chapter 2 – energy; Chapter 3 – highway vehicles; Chapter 4 – light vehicles; Chapter 5 – heavy vehicles; Chapter 6 – alternative fuel vehicles; Chapter 7 – fleet vehicles; Chapter 8 – household vehicles; Chapter 9 – nonhighway modes; Chapter 10 – transportation and the economy; Chapter 11 – greenhouse gas emissions; and Chapter 12 – criteria pollutant emissions. The sources used represent the latest available data. There are also three appendices which include detailed source information for some tables, measures of conversion, and the definition of Census divisions and regions. A glossary of terms and a title index are also included for the reader's convenience.



## INTRODUCTION

In January 1976, the Transportation Energy Conservation (TEC) Division of the Energy Research and Development Administration contracted with Oak Ridge National Laboratory (ORNL) to prepare a Transportation Energy Conservation Data Book to be used by TEC staff in their evaluation of current and proposed conservation strategies. The major purposes of the Data Book were to draw together, under one cover, transportation data from diverse sources, to resolve data conflicts and inconsistencies, and to produce a comprehensive document. The first edition of the TEC Data Book was published in October 1976. With the passage of the Department of Energy (DOE) Organization Act, the work being conducted by the former Transportation Energy Conservation Division fell under the purview of the DOE's Office of Transportation Programs. This work continues today in the Vehicle Technologies Office.

Policymakers and analysts need to be well-informed about activity in the transportation sector. The organization and scope of the data book reflect the need for different kinds of information. For this reason, Edition 35 updates much of the same type of data that is found in previous editions.

In any attempt to compile a comprehensive set of statistics on transportation activity, numerous instances of inadequacies and inaccuracies in the basic data are encountered. Where such problems occur, estimates are developed by ORNL. To minimize the misuse of these statistics, an appendix (Appendix A) is included to document the estimation procedures. The attempt is to provide sufficient information for the conscientious user to evaluate the estimates and to form their own opinions as to their utility. Clearly, the accuracy of the estimates cannot exceed the accuracy of the primary data, an accuracy which in most instances is unknown. In cases where data accuracy is known or substantial errors are strongly suspected in the data, the reader is alerted. In all cases it should be recognized that the estimates are not precise.

The majority of the statistics contained in the data book are taken directly from published sources, although these data may be reformatted for presentation by ORNL. Consequently, neither ORNL nor DOE endorses the validity of these data.

