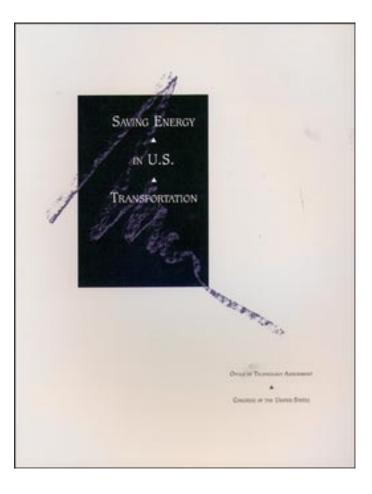
### Saving Energy in U.S. Transportation

## July 1994

## OTA-ETI-589 NTIS order #PB94-209905 GPO stock #052-003-01376-2



**Recommended Citation:** U.S. Congress, Office of Technology Assessment, *Saving Energy in U.S. Transportation*, **OTA-ETI-589** (Washington, DC: U.S. Government Printing Office, July 1994).

# Foreword

his report was prepared as the final part of an OTA assessment on U.S. Energy Efficiency: Past Trends and Future Opportunities, requested by the Senate Committees on Governmental Affairs and Energy and Natural Resources: the House Committee on Energy and Commerce; with an endorsement from the Subcommittee on Environment, Energy, and Natural Resources of the House Committee on Government Operations. Other reports in this assessment examine energy use in the Federal Government, industry, buildings, and the role of utilities in energy efficiency.

This report focuses on energy use in U.S. transportation, which accounts for over 60 percent of U.S. oil consumption. Opinions about the health of the U.S. transportation system and the efficacy of proposed measures to reduce its energy consumption are extremely polarized: some view the system as basically healthy, though in need of some "finetuning" to deal with future growth pains: others view the system as extremely wasteful in its energy use, environmentally destructive, and verging on breakdown, with the need for systemic changes. The report attempts to put these opinions into context by examining the current status of the system and evaluating critical problems such as congestion, presenting forecasts of future energy use, making some pointed comparisons with European transportation, and describing and evaluating a range of options for saving energy.

ROGER C. HERDMAN Director

# **Advisory** Panel

James F. Gibbons, Chairman Dean School of Engineering Stanford University

Dale Compton School of Industrial Engineering Purdue University

Mark Cooper Director of Research Consumer Federation of America

**Robert deHaan**<sup>'</sup> Amana Refrigeration, Inc.

Daniel A. Dreyfus Director of Civilian Radiation Waste Management U.S. Department of Energy

**Clark W. Gellings** Vice President Customer Systems Division Electric Power Research Institute

David B. Goldstein Senior Scientist Natural Resources Defense Council

**Cheryl Barrington** Director Regulatory Assistance Project Kenneth Hickman Vice President Applied Systems Division The York International Corp.

**Edward McInerney** Chief Engineer GE Appliances Division General Electric Co.

Alan Miller Executive Director Center for Global Change University of Maryland, College Park

Gary Nakarado Technical Director National Renewable Energy Laboratory

John W. Rowe President and CEO New England Electric System

Maxine L. Savitz Director Garrett Ceramic Components Garrett Processing Co.

Sherwood Smith, Jr. Chairman and President Carolina Power & Light Co. **Richard Tracey** Manager Engineering Services Ryland Homes

**B.C. Waycaster** Vice President and General Manager Hydrocarbons and Energy Dow Chemical

Irvin L. White Senior Director Laboratory Energy Programs Battelle Pacific Northwest Laboratories

Mason Willrich Pacific Gas and Electric Enterprises

James L. Wolf Vice President Energy and Environmental Markets Honeywell, Inc.

Eric R. Zausner President Strategic Performance Management

Retired.

Note: OTA appreciates and is grateful for the valuable assistance and thoughtful critiques provided by the advisory panel members. The panel does not, however, necessarily approve, disapprove, or endorse this report. OTA assumes full responsibility for the report and the accuracy of its contents,

# **Project Staff**

#### Peter D. Blair

Assistant Director Industry, Commerce, and International Security Division

#### Emilia L. Govan

Program Director Energy, Transportation, and Infrastructure Program PRINCIPAL STAFF Steven E. Plotkin Project Director

Paul Komor Senior Analyst, Freight Analysis

Andrew Moyad TDM Measures

### Jeffrey Boberg

Alternate Demand Forecasts, Telecommunications

#### ADMINISTRATIVE STAFF

Lillian Chapman Division Administrator

Marsha Fenn Office Administrator

Linda Long Administrative Secretary

Tina Aikens Administrative Secretary

Gay Jackson PC Specialist

Lynette Cooper Contractor

#### CONTRACTORS

Mark A. Delucchi University of California at Davis Social Costs of Motor *Vehicle Use* 

James L. Sweeney Stanford University Gasoline Taxes

Florence Poillon Editor

# Reviewers

Michael Arendex American Trucking Associations

Steven A. Barsony Federal Transit Administration

Norman L. Bryan Pacific Gas & Electric

Chris Calwell Natural Resources Defense Council

**Donald Chen** Rocky Mountain Institute

Cheri Davis California Energy Commission

Elizabeth Deakin University of California at Berkeley

Jack Faucett Jack Faucett Associates

Lew Fulton U.S. Department of Energy

Bernard Gelb Congressional Research service

Clark Gellings Electric Power Research Institute

John German U.S. Environmental Protection Agency

David Goldstein Natural Resources Defense Council **Deborah Gordon** Union of Concerned Scientists

David Gushee Congressional Research Service

**R.J. Kinsey** Ford Motor CO.

Marilyn Klein Federal Railroad Administration

Robert Larson U.S. Environmental Protection Agency

Charles Lave University of California, Irvine

Michael F. Lawrence Jack Faucett Associates

James Lerner California Air Resources Board

Tom MacDonald California Energy Commission

James MacKenzie World Resources Institute

**Barry McNutt** U.S. Department of Energy

Marianne Mintz Argonne National Laboratory

Sergio Ostria Jack Faucett Associates

Philip Patterson U.S. Department of Energy Marc Ross University of Michigan

Harvey M. Sachs University of Maryland

Danilo Santini Argonne National Laboratory

Maxine Savitz Allied Signal, Inc.

Lee Schipper Lawrence Berkeley Laboratories

Will Schroeer U.S. Environmental Protection Agency

Vic Suski American Trucking Associations

**Edward Thomas** Federal Transit Administration

Steve Thompson Congressional Research Service

Irvin L. White Battelle Pacific Northwest Laboratories