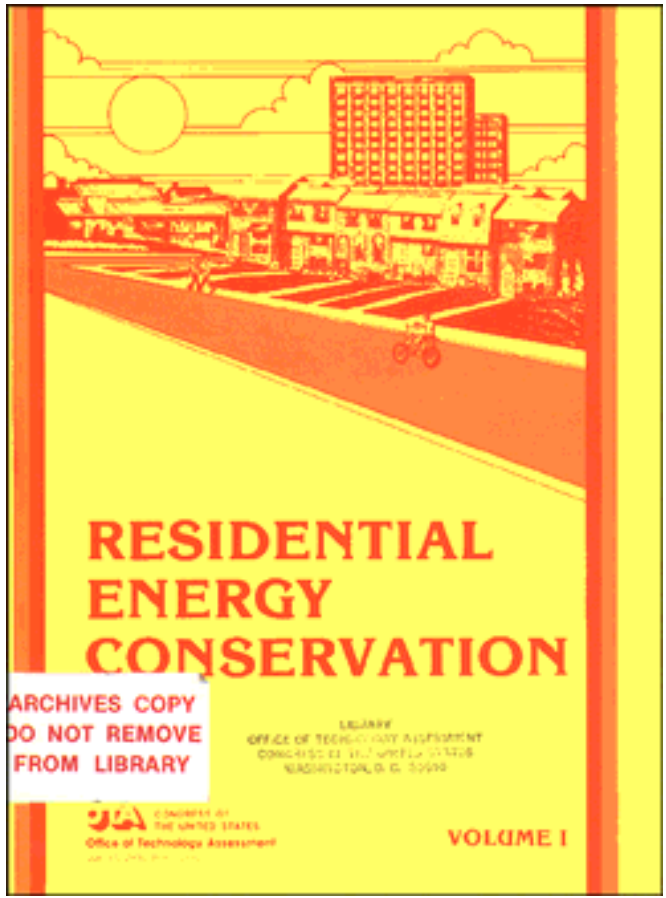
Residential Energy Conservation

July 1979

NTIS order #PB-298410



Library of Congress Catalog Card Number 79-600103

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402 Stock No. 052-003 -00691-0

Foreword

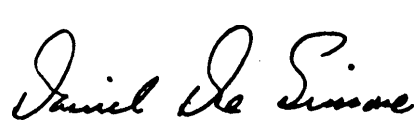
This report is the result of a request from the Technology Assessment Board that the Office of Technology Assessment (OTA) analyze the potential for conserving energy in homes in terms of energy and costs. The report reviews existing and promising technologies, and a broad set of issues affecting why these technologies are or are not used, how their level of use and effectiveness can be improved, and related Federal programs and policies.

The choices Congress makes in framing energy conservation policy reflect society's views of the present and the future, its concept of the appropriate role of Government, and its sense of urgency about the changing energy picture. The diverse nature of residential housing in this country, the many decisions involved in planning, building, buying, and operating a home, and the basic desire of consumers to be allowed the maximum freedom of choice– all of these factors make policy decisions in this area difficult.

This study focuses on the demand aspect of residential energy use, specifically those functions that consume most of a home energy budget— fuel to heat and cool space and to heat water. A number of related issues are relevant to this topic but go beyond the scope of the study: land use patterns, transportation habits, protection of residential customers as purchasers of certain types of energy, centralized versus decentralized power sources, and cogeneration. While these issues are important, this study deals only with ways to improve energy efficiency within the 80 million existing housing units and in housing to be constructed over the next two decades. Active solar systems are not included, because of the recent publication of OTA's *Application of Solar Technology to Today's Energy Needs.*

Conservation as discussed in this analysis is the substitution of capital, labor, and ingenuity for energy, in the form of products that make a home more energy efficient. This definition relies on making productive investments that provide the same level of comfort and convenience with less energy. Homeowners and renters who also choose to change their styles of living could achieve savings beyond those resulting from conservation technologies alone. This is a conservative definition of conservation that does not treat ethical arguments or other areas of debate. Although based on the technology of energy conservation, the report also addresses human factors that play such a major role in shaping energy consumption. Choices open to builders, designers, suppliers, local and State officials, lenders, utilities, owners, renters, and others are examined Thus, this work attempts to address comprehensively a problem that at first appears simple, but proves to contain many economic, behavioral, and motivational variables, many technical and human unknowns, and many possible policy paths.

As this report goes to the 96th Congress, the problems generated by an altered energy supply situation are clear and dramatic. I n addition to broad policy questions such as the contribution that conservation can make and the choice between types of policy approaches, very specific questions—such as standards for new housing–face the Nation. I believe this report can assist Congress in dealing with these vital issues.



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OTA thanks these people who took time to provide information or review part or all of the study.

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Carl Bernstein, Lawrence Berkeley Laboratory
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