

Energy Conservation in the Residential Sector: Editor's Introduction

Kenneth R. Tremblay, Jr.

Energy may well be the fundamental issue confronting the United States during the 1980s. Individuals who have attempted to understand energy concerns undoubtedly realize that there will be major changes in American society effectuated by energy shortfalls (Catton, 1980). Housing, industry, agriculture, transportation, and other sectors of our society will all be modified to enhance energy efficiency (Stobaugh and Yergin, 1979). Simply stated, we will be forced to move toward lower consumption levels of traditionally used energy resources—namely, oil and natural gas.

There exists a vast array of methods to reduce consumption of oil and gas, varying in effectiveness. Unfortunately, many of the methods having a minor impact on energy use are often propounded by educators, government officials, and representatives of oil, gas and utility companies. Suggestions such as turning off unnecessary lights, placing food in the oven without pre-heating, and parting with one's prized hairdryer can all conserve energy, but will have no major impact on energy consumption. Indeed, the implementation of such recommendations may have the

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opposite effect in the long run.

It is likely that people are being deluded into making what they perceive as substantial sacrifices that will have a trivial effect on overall energy consumption. If energy saving actions are encouraged that create inconvenience to people, such as opening the dishwasher door before the dry cycle begins, saving energy may become equated with inconvenience and frustration. This might create a psychological situation where people automatically associate saving energy with inconvenience, thereby discouraging receptivity to major changes in the areas where significant amounts of energy can be saved with little or no disturbance in people's daily lives.

Strategies to reduce national energy consumption must, therefore, be carefully developed and implemented to deliver the most productive results while having a minimal impact on societal functioning (see Griffin and Steele, 1980). Unfortunately, this will not be an easy task. There does not exist the quantity and quality of research necessary to develop meaningful energy conservation programs which people consider acceptable. With the exception of Cottrell's (1955) pioneering work on energy, little research was conducted on the societal effects of energy prior to the

1973-74 Arab oil embargo. As stated by Dunlap and Catton (1979:261), "the assumption prevailed that energy supplies could be treated as a given in analyses of social systems—until the continued availability of ever-increasing quantities of energy became conspicuously problematic in 1973." Thus, faced by an era of decreasing energy supplies coupled with escalating energy prices, we do not have access to long-term research results necessary to formulate the kinds of energy policies that are vitally needed.

In the quest to close the gap between extant knowledge and needed information regarding energy conservation, considerable research has been conducted in recent years (see Farhar et al., 1980). For example, both *Housing and Society* and the *Home Economics Research Journal* have consistently published more research-based articles concerned with energy each year. Similarly, the *Journal of Home Economics* has devoted entire issues of the journal to energy related concerns. Other social science journals have also published articles dealing with the sociological, psychological, political, and economic aspects of energy. Future research efforts should continue to provide insights which may help alleviate the present energy situation.

A crucial issue which is only now being researched is where to direct energy conservation measures. One of the major areas in which the consumption of oil and gas can be reduced through energy conservation is the modification of our housing. Presently, housing accounts for approximately one-fifth of the nation's total energy consumption (Darley and Beniger, 1981), and much of that energy is in some sense wasted. In fact, it is estimated that about half of the energy consumed in homes is lost (Executive Office of the President, 1977). This excessive loss is not surprising considering the type of housing in which many Americans live. Thus, changes in the residential sector designed to curb the use of oil and gas may significantly reduce energy consumption in the United States. Further, the residential sector is one area where energy reductions can be targeted without seriously disrupting societal functioning (Dillman et al., 1977).

Many conservation measures exist which can enhance the energy efficiency of housing. Insulation,

energy saving appliances, an automatic setback thermostat, alterations in present residential patterns, structural changes such as solar and earth sheltered homes, caulking and weatherstripping, switching from oil and natural gas to alternatives such as coal and wood, and behavioral adaptations of household members are all ways to significantly reduce residential energy consumption. Educational programs, energy audits, energy price increases, and the implementation of certain types of policies can encourage people to alter their home in the direction of increased energy efficiency.

The articles contained in this special issue address the major points presented above. First, what energy conservation strategies can significantly reduce the amount of energy consumed in the residential sector without causing major inconveniences to Americans? Second, what is the current state of energy conservation research directed at housing? The articles can further be categorized into three subject areas: 1) household energy conservation in general; 2) structural changes in housing designed to enhance energy efficiency; and 3) policies to encourage residential energy conservation.

The lead article by Dillman et al., deals with the broad issue of public support for household energy conservation efforts. Following a discussion of the role of conservation in meeting national energy needs and why housing should be targeted for conservation, the results of an eleven state survey are presented. Survey results reveal that people equally support increased production of energy resources as well as conservation. However, support for production and conservation alternatives differs greatly. Favored production strategies include increased use of solar and wind energy, while people tend to favor cutbacks in the amount of energy used in homes. It is also found that most people feel they can reduce their energy consumption if necessary. Perhaps the major finding of this article is that only minor attitudinal differences exist between residents of the eleven states. This suggests that particular energy conservation strategies to reduce residential energy consumption might be acceptable to a majority of Americans regardless of state boundaries.

The next three articles examine structural changes

to enhance the energy efficiency of housing. McCray and Weber assess the adoption process of solar and earth sheltered housing. Based on interviews with housing intermediaries, it is found that more constraints as opposed to advantages are perceived as associated with these two housing alternatives. As a result, housing intermediaries remain in the early stages of the adoption process. Solar homes are the focus of concern in the Combs and Tremblay article. Utilizing the results of a statewide survey, preferred government involvement in encouraging the use of residential solar heating systems is measured. Findings indicate that support for information-based strategies exceeds that directed toward incentive-based strategies, with support differing little according to socioeconomic characteristics. Stewart et al., focus on the second alternative—earth sheltered housing. Results derived from interviews with visitors to an earth sheltered home reveal that people are fairly positive toward the earth sheltered concept. However, several suggestions were offered regarding possible design improvements. These three articles generally suggest that Americans are becoming increasingly interested in solar and earth sheltered homes, and these housing alternatives may become more acceptable in the future. Such findings are encouraging given the arguments presented by Lovins (1977) for a shift toward soft energy technologies.

The remaining two articles are concerned with extant policies to reduce residential energy consumption, one implemented by the federal government and the other by the nation's largest utility company. Carpenter et al., address homeowners' awareness and utilization of federal energy tax credits. Based on the results of a statewide survey, it is revealed that a majority of homeowners are aware of the tax credits but only a small proportion actually utilize them. An interesting finding of the study is that most of the people who took advantage of the tax credits would have made energy improvements in their homes even without the credits. Beliefs about social control and participation in a load management program is the topic studied by Van Liere and Bronfman. Results from interviews conducted in two Tennessee communities indicate that social control mechanisms can play an important role in enforcing conformity to con-

servation programs. It is found that perception of control by a utility company over household behavior significantly influences acceptability of the load management program. Perceived advantages and social pressure to participate favorably impact program acceptability and planned participation. Both of these articles are important insofar as they shed light on public response to serious energy conservation efforts.

Resources in the Energy Field

Although a number of important issues are addressed by the articles contained in this special issue of *Housing and Society*, many more remain. To obtain further information regarding energy conservation in the residential sector, contact with the following agencies may prove useful:

American Society of Heating, Refrigeration and
Air Conditioning Engineers
345 E. 47th Street
New York, NY 10017

International Solar Energy Society
12441 Parklawn Drive
Rockville, MD 20852

National Science Foundation
Advanced Energy Research and Technology
1800 G Street, N.W.
Washington, D.C. 20550

National Solar Heating and Cooling Informa-
tion Center
P.O. Box 1607
Rockville, MD 20850

Solar Energy Research Institute
1617 Cole Boulevard
Golden, CO 80401

Tennessee Valley Authority
715 Market Street
300 Credit Union Building
Chattanooga, TN 37401

Underground Space Center
11 Mines and Metallurgy
221 Church Street, S.E.
Minneapolis, MN 20850

U.S. Department of Energy
Washington, D.C. 20545

U.S. Department of Housing and Urban De-
velopment
Washington, D.C. 20410

State solar and energy offices, utility companies, cooperative extension services, universities, local governments, and producers and distributors of energy conservation technology may also be of assistance to those searching for additional information.

There exists a wide variety of journals which publish articles concerned with home energy conservation, and they can provide needed information as well. Among the journals which should be of interest to housing specialists are:

American Economic Review
American Gas Association Monthly
American Institute of Architects Journal
American Scientist
Applied Ecology
Applied Energy
The Architect
Architect's Journal
Architectural Design
Architectural Digest
Architectural Review
Architectural Science Review
Automation in Housing
Building
Building and Environment
Building Industry Technology
California Builder
Conservationist
Consumer's Research
Current Science
Design Quarterly
Down to Earth
Earth Shelter Digest
Energy
Energy and Buildings

Energy Engineering
Energy Reporter
Energy Resources and Technology
Energy Sources
Environment and Behavior
Environment and Planning
Futurist
Home Economics Research Journal
Housing
Housing and Planning
Housing and Society
HUD Challenge
Human Ecology Forum
Interiors
International Journal of Energy
*International Journal of Housing Science and Its Ap-
plication*
Journal of the American Planning Association
Journal of Applied Behavior Analysis
Journal of Applied Psychology
Journal of Applied Social Psychology
Journal of the Community Development Society
Journal of Consumer Research
Journal of Ecology
Journal of Energy and Development
Journal of Environmental Education
Journal of Environmental Sciences
Journal of Environmental Systems
Journal of Home Economics
Journal of Housing
Journal of Social Issues
Journal of Urban Planning and Development
Oil and Gas Journal
Policy Studies Journal
Progress in Energy
The Public Interest
Public Power
Public Utilities Fortnightly
Research and Design
Rural Electrification Magazine
Science
Science of the Total Environment
Social Problems
Social Science Research Journal
Sociology and Social Research
Solar Age

Solar Energy
Solar Energy Digest
Solar Energy Intelligence Report
Solar Energy Materials
Solar Energy Update
Solar Engineering Magazine
Sunworld
Technology and Conservation
Tips and Topics in Home Economics
Town and Country Planning
Town Planning Review
Underground Space
Urban Affairs Quarterly
Urban Land
Urban and Regional Technology and Development
What's New in Home Economics
Wind Engineering
Wind Power Digest

Conclusion

As energy resources for heating, cooling, and powering homes become more scarce and expensive each passing year, increased attention must be directed at energy conservation in the residential sector. The articles contained in this issue address some of the crucial housing energy concerns, and sources for further information have also been presented. It is hoped that such information will increase the knowledge base of housing specialists interested in methods to conserve energy in this nation's residential sector. Ultimately, we may be able to solve one of the most perplexing problems facing the United States.

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