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## **An Annotated Bibliography of Completed and In-Progress Behavioral Research for the Office of Buildings and Community Systems**

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May 1988

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AN ANNOTATED BIBLIOGRAPHY OF COMPLETED  
AND IN-PROGRESS BEHAVIORAL RESEARCH  
FOR THE OFFICE OF BUILDINGS AND  
COMMUNITY SYSTEMS

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Richland, Washington 99352



## EXECUTIVE SUMMARY

This report provides an annotated bibliography of completed and in-progress consumer decision research useful for technology transfer and commercialization planning by the U.S. Department of Energy's (DOE) Office of Buildings and Community Systems (OBCS).

This report attempts to integrate the consumer research studies conducted across several public and private organizations over the last four to five years. Some of the sources of studies included in this annotated bibliography are DOE National Laboratories, public and private utilities, trade associations, states, and nonprofit organizations.

This study divides the articles identified in this annotated bibliography into sections that are consistent with or similar to the system of organization used by OBCS.



## CONTENTS

EXECUTIVE SUMMARY . . . . .	iii
1.0 INTRODUCTION . . . . .	1.1
1.1 PURPOSE OF THIS REPORT . . . . .	1.1
1.2 BUILDINGS TOPICS INCLUDED IN BIBLIOGRAPHY . . . . .	1.1
1.3 INFORMATION INCLUDED IN EACH CITATION . . . . .	1.2
2.0 BUILDING MATERIALS AND SUBSYSTEMS . . . . .	2.1
3.0 NEW HOME CONSTRUCTION AND BUILDINGS SYSTEMS INTEGRATION . . . . .	3.1
4.0 STANDARDS AND GUIDELINES . . . . .	4.1
5.0 RETROFIT OF EXISTING BUILDINGS . . . . .	5.1
6.0 DISTRICT HEATING AND COOLING . . . . .	6.1
7.0 COMMUNITY ENERGY SYSTEMS . . . . .	7.1
8.0 ADVANCED HVAC SYSTEMS . . . . .	8.1
9.0 ADVANCED WATER HEATERS . . . . .	9.1
10.0 ADVANCED REFRIGERATION SYSTEMS . . . . .	10.1
11.0 COMBUSTION AND THERMAL DISTRIBUTION . . . . .	11.1
12.0 LIGHTING EQUIPMENT . . . . .	12.1
13.0 APPLIANCE STANDARDS . . . . .	13.1
14.0 TECHNOLOGY TRANSFER AND COMMERCIALIZATION . . . . .	14.1





## 1.0 INTRODUCTION

### 1.1 PURPOSE OF THIS REPORT

The purpose of this report is to provide an annotated bibliography of completed and in-progress consumer decision research useful for planning the technology transfer and commercialization activities conducted by the U.S. Department of Energy's (DOE) Office of Buildings and Community Systems (OBCS).

This report attempts to integrate the studies conducted across several public and private organizations over the last four to five years. Many types of organizations are involved in conducting behavioral research that is of value to the OBCS. Trade associations such as the Electric Power Research Institute, the American Gas Association, and the Gas Research Institute have published studies that provide insights into the decision-making process used to purchase building equipment and components. Several of the large public and private utilities have reports included in this annotated bibliography. These include such sources as the Bonneville Power Administration, Tennessee Valley Authority, Pacific Gas & Electric, Seattle City Light, Northern States Power Company, and many others. Recent studies that are in progress or have recently been completed at DOE National Laboratories for OBCS are also included. Many of these studies were conducted by Oak Ridge National Laboratory, Lawrence Berkeley Laboratory, Brookhaven National Laboratory, and Pacific Northwest Laboratory.

### 1.2 BUILDINGS TOPICS INCLUDED IN THE ANNOTATED BIBLIOGRAPHY

Approximately 600 articles were identified and included in an annotated bibliography developed for OBCS. Approximately one-half of the identified articles included discussion of the consumer decision-making process for buildings technology. These articles and reports are included in this annotated bibliography. The remaining articles identified in this bibliographic search primarily involved 1) policy discussion, 2) economic assessments, and 3) marketing program development, implementation, and evaluation.

This study divides the articles identified in this annotated bibliography into sections that are similar to the system used by OBCS to organize its research programs. The articles are organized into the sections listed below:

- building materials and subsystems
- new home construction and building systems integration
- standards and guidelines
- retrofit of existing buildings
- district heating and cooling
- community energy systems
- advanced heating, ventilating, and air conditioning (HVAC) systems
- advanced water heaters
- advanced refrigeration systems
- combustion and thermal distribution
- lighting equipment
- appliance standards
- technology transfer and commercialization.

### 1.3 INFORMATION INCLUDED IN EACH CITATION

Exhibit 1.1 provides a complete description of the types of information that were collected for each article included in this annotated bibliography. This information was stored in a computerized database created by the dBASE III + computer program. Each citation includes information on the author(s), report title, journal title, publisher, year of publication, whether the report is sponsored by OBCS (yes or no), and the markets that are discussed in each report (residential, commercial, industrial, public, and international). Some of the citations also include a report abstract.

The body of this report is organized around the research programs listed above.

EXHIBIT 1.1. Information Collection Form  
OBCS MARKET AND BEHAVIORAL RESEARCH

Updated      /      /      ID Num.      Division     

Research: Area      Inprogress      Subarea     

Document Type (DOCTYPE)      BCS Sponsored (BCS)     

Title     

Author 1      Author 2     

Author 3      Author 4     

Journal/Proceedings Title (Proceeding)     

Publisher     

Date      /      /      Volume      Pages      Abstract     

Doc. Number     

St. Address     

City      State      Zip     

Markets:

Residential      Commercial      Industrial      Public      International     

Residential Description (RES. DSC.)      Commercial Description (COMM. DSC)     

Market/Behavioral Findings:

Private Sector/Policy Input (PSPI)     

Energy Savings Estimates (ESE)     

Market Assessment (MA)     

End-users Studies (EUS)     

Decision Participants Studied (DPS)      Description (DPS.DSC)     

Product Concept Developed (PCD)     

Barriers to Adoption Identified (BTAI)     

Program Tools/Strategies Presented (PTSP)     

Marketing Transfer Plan Developed (MTPD)     

Estimated Market Penetration (EMP)     

Field Results/Findings (FRF)     

Library Order Code (LIBRARY)      Storage Medium (STORAGE)



## 2.0 BUILDING MATERIALS AND SUBSYSTEMS

### ID NUMBER 653

Lawrence Berkeley Laboratory. IN-PROGRESS. Fenestration Subsystems Research.  
Lawrence Berkeley Laboratory, Berkeley, California.

Abstract - This ongoing project assesses the impact of fenestration design on the following: occupant satisfaction, productivity, and thermal/visual comfort.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

### ID NUMBER 642

Wilde, M., and S. Selkowitz. IN-PROGRESS. Windows and Daylighting. Lawrence Berkeley Laboratory, Berkeley, California.

Abstract - The objectives of this ongoing study are to 1) determine the effects of fenestration on thermal and visual comfort, and 2) determine how occupant behavior influences energy-related performance of fenestration.

OBCS Study	Yes	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	No	International	No

### ID NUMBER 641

Berman, S. IN-PROGRESS. Video Display Studies. Lawrence Berkeley Laboratory, Berkeley, California.

Abstract - The numerous reports of visual symptoms experienced by video display terminal operators led to the question of whether there are critical differences between the nature of text on a video display and text on paper. In this project, a technical evaluation of the different characteristics of the visual stimulus presented in two situations is provided. A study is also conducted to show whether the video display has the unique potential to reduce visual performance.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 670

Ivey, D. L., and S. A. Smith. 1987. The Role of Market Research in the Commercialization of Technology. Pacific Northwest Laboratory, Richland, Washington.

Abstract - This report provides information on available empirical work that describes criteria used by the residential consumer market in selecting energy and energy-related products. The consumer decision-making process is described and post-purchase behavior and its implications to the Department of Energy's Office of Building and Community Services and to commercial marketing research are discussed. Four case studies are presented which illustrate the importance of marketing research in fenestration, lighting, water heating, and refrigeration.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 564

Shaw, W. 1987. "Consumer Poll: Give 'Em a House to Be Proud of." RSI.

Abstract - This survey reveals that customers in the process of doing exterior remodeling care about (and are the best promoters of) quality products and work.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 574

Corporate Research Center (CRC). 1987. CRC Report on Commercial Roofing in the U.S. CRC, Union, New Jersey.

Abstract - 1. This report discusses economic factors and summarizes business trends, BUR/bituminous materials, single ply, inverted roofs, vapor retarders, manufacturing company ratings, warranties, and industry problems and solutions. 2. The report also summarizes the results of surveys of contractors, consultants, users, manufacturers, and trade associations.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 573

Corporate Research Center (CRC). 1987. CRC Report on Metal Roofing in the U.S. 1986/87. CRC, Union, New Jersey.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 575

Corporate Research Center (CRC). 1987. CRC Report on Sloped/Residential/Inclined Roofing in U.S. CRC, Union, New Jersey.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 582

Contractor's Guide. 1986. "Insulation Contractor Survey." Contractor's Guide. 12:14.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 335

Lubliner, M., W. Kingrey, and R. Byers. 1986. "Experience With Air-to-Air Heat Exchangers in the Residential Standards Demonstration Program in Washington State." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - The Residential Standards Demonstration Program introduced a major new housing construction technology to participating builders and homeowners; this new technology was the air-to-air heat exchanger (AAHX). This paper summarizes the authors' experiences in the design, installation, cost, operation, and performance of AAHX systems. Specific problems encountered by both builders and occupants are described and analyzed.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 152

Brown, M. A., D. W. Jones, J. O. Kolb, and S. A. Snell. 1986. Technology Transfer for DOE's Office of Building and Community Systems: Assessment and Strategy. DE 86013367, ORNL/CON--202, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - This study describes a variety of strategies for transferring Office of Buildings and Community Systems technologies to the public and private sectors. One section of this report identifies and evaluates the communication network of various trade and professional associations involved in the roofing industry.

OBCS Study	Yes	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	Yes	International	No

ID NUMBER 583

Contractor's Guide. 1986. "Roofing Contractor's Survey." Contractor's Guide. 11:18.

Abstract - This article contains an actual survey of roofing contractors, and includes a brief discussion of the survey methodology, the results, and a copy of the questionnaire.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0276

American Council for an Energy-Efficient Economy (ACEEE). 1986. Federal R&D on Energy Efficiency, A \$50 Billion Contribution to the U.S. Economy. Part B: Case Studies of R&D on Energy Efficiency in the Building Sector. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - These case studies of successfully commercialized Office of Buildings and Community Systems technologies include a section describing the history of advances in high-performance windows, particularly the successful development of low-E windows.

OBCS Study	Yes	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	Yes	International	Yes



ID NUMBER 581

Contractor's Guide. 1986. "Siding/Sheathing Survey." Contractor's Guide. 9.

Abstract - This article concerns a three part survey, and contains a brief discussion of the survey methodology, a summary of results, and a copy of the questionnaire.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 580

Contractor's Guide. 1986. "Building Owner/Facilities Management Survey." Contractor's Guide. 8.

Abstract - This article contains a brief discussion of the survey methodology, a summary of results, and a copy of the questionnaire.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 579

Miller, P. C. 1985. "Residential Roofing Survey." Contractor's Guide. 7.

Abstract - This report contains an actual survey of roofing contractors and includes a brief discussion of the survey methodology and results, and a copy of the questionnaire.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 584

Contractor's Guide. 1985. "Roofing Contractor's Survey." Contractor's Guide. 13.

Abstract - This roofing contractor's survey contains a brief discussion of the survey methodology and results.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 619

Kaufman, J., G. Baker, and M. Anderson. 1984. Marketing Strategy for Daylighting in Commercial Buildings. Oregon Department of Energy, Salem, Oregon.

Abstract - Daylighting in commercial buildings was identified as one of the technologies to be marketed by the Oregon Department of Energy's, Marketing Task Force. The purposes of this report are to present the findings of two focus group interviews and to present the marketing strategy that was developed for marketing daylighting to commercial buildings in Oregon.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 578

Sumner Rider & Associates, Inc. 1985. Research Report - Tile Roofing. Sumner Rider & Associates, New York, New York.

Abstract - This report contains actual marketing surveys of builders and architects and also includes survey results. The questionnaire shows their roofing material preferences.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

### 3.0 NEW HOME CONSTRUCTION AND BUILDINGS SYSTEMS INTEGRATION

ID NUMBER 638

Crawley, D. B. IN-PROGRESS. Study of Design Process Factors Affecting Energy-Related Decisions. Pacific Northwest Laboratory, Richland, Washington.

Abstract - Knowledge about strategies for reducing energy consumption in commercial buildings has increased significantly in the past 10 years. However, in order to significantly impact energy use in new commercial buildings, it is necessary to consider these strategies in the context of the design process. Decisions made during the stages of feasibility studies, architectural programming, or schematic design all affect options for conservation strategies. This study examines the typical decision-making process for commercial building design and identifies which decisions are made that affect energy use, the implications of those decisions, and when the decisions are made. Project efforts are focused in three areas: 1) understanding the design process, 2) integrating decisions about energy conservation strategies into the design process in appropriate ways, and 3) developing approaches to deliver this knowledge to the building design community.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 643

Jones, R. F. IN-PROGRESS. Small-Building Field Validation Research. Brookhaven National Laboratory, Upton, New York.

Abstract - This project is directed toward reducing energy use in small buildings through understanding how individual energy-efficient strategies interact and work in actual buildings under varying field conditions, in total building context, and in conjunction with other component energy conservation measures. Emphasis is on integrating all elements of a building (through architectural and engineering designs) in ways that are architecturally acceptable and technically and economically sound.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 622

Harkreader, S. A., A. D. Lee, and M. P. Sherman. 1987. Current Construction Practice in Pacific Northwest Manufacturing Homes and Upgrade Possibilities. Bonneville Power Administration, Portland, Oregon.

Abstract - To assess what energy conservation upgrades are feasible and necessary to achieve given energy efficiency levels, it is important to understand current construction characteristics of manufactured, or U.S. Department of Housing and Urban Development [(HUD)-code] homes in the Pacific Northwest. Manufactured homes constitute a significant share of new housing in the region, but their preemptive regulation by HUD prevents local regulatory control of their construction and energy conservation characteristics. To develop programs aimed at improving the energy conservation characteristics of manufactured homes, it is necessary to characterize the homes currently being built by the industry and to determine the factors that affect conservation upgrades and their implications.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 538

Scalora, J. 1987. "Energy Technology XIV: Building Systems Integration Strategy and Execution." In Proceedings of the Fourteenth Energy Technology Conference, 14:548-554. ISBN 0-86587-015-2, Government Institutes, Inc., Rockville, Maryland.

Abstract - The problems in producing a totally integrated building do not always stem from available building systems technology. Many problems are due to a void in the project management/design effort. The design of a technologically advanced architectural project is usually executed with numerous specialized consultants and building system vendors. Each of these fill a specific niche in the total project.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 248

Harkreader, S. A. 1987. The Energy Investment Decision in the Non-Residential Building Sector: Research into the Areas of Influence. PNL-6118, Pacific Northwest Laboratory, Richland, Washington.

Abstract - This report examines the energy investment market in terms of the areas which influence it. It discusses the physical characteristics of non-residential buildings, legal environment for non-residential buildings, demographic trends, economic trends, organizational decision processes, and the role of decision-making attitudes.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

#### ID NUMBER 264

Davis, L. J., C. L. Bruneau, and D. L. Ivey. 1987. Technology Diffusion of Energy-Related Products in Residential Markets. Pacific Northwest Laboratory, Richland, Washington.

Abstract - Pacific Northwest Laboratory reviewed the available information on technology adoption, diffusion, and decision-making processes to provide the OBCS with an understanding of the type of research that had previously been conducted on this topic.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 666

Sterling Habe Corporation. 1987. Innovations in Residential Housing Technology. Sterling Habe Corporation, Washington, D.C.

Abstract - This study provides trends for space-heating energy and discusses new building technologies, design methods, and building materials. In the study, the use of insulation to reduce heating loads and the use of efficient lights and appliances, as well as other methods to reduce cooling energy loads, are discussed. The report also addresses architectural energy saving measures.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 249

Professional Builder. 1987. National Builder Survey on Housing - 1987 Market Trends. Cahnners Publishing Company, Des Plaines, Illinois.

Abstract - This report presents results from a builder's survey on housing. The purpose of the survey was to determine specific consumer attitudes, opinions, and preferences regarding new housing and to relate them to current builder practices and to the features builders are including in their new homes.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 75

ID NUMBER 75

Holt, D. 1987. Superinsulated Houses: The Importance of Resale Value. Energy Efficiency: Perspectives on Individual Behavior, pp. 93-100. ISBN 0918249-058, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - Extensive analyses, backed up by accurate field measurements, have shown persuasively that superinsulated homes provide a "least-cost" solution to indoor thermal comfort. Additional mortgage costs for insulation, glazing, and ventilation control may be more than offset by reduced fuel bills. Further, the investment receives favorable tax treatment through the deductibility of mortgage interest, and superinsulation techniques are easily adaptable to a wide range of climates and architectural styles.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0250

Professional Builder. 1987. National Consumer Survey on Housing - 1987 Market Trends. Cahners Publishing Company, Des Plaines, Illinois.

Abstract - This report presents results from a consumer survey on housing. The purpose of this study was to determine specific consumer attitudes, opinions, and preferences regarding new housing and to relate them to current builder practices and to the features builders are including in their new homes.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0251

Pihas, Schmidt, and Westerdahl Co. 1986. Super Good Cents Home Program Telemarketing Survey. Bonneville Power Administration, Portland, Oregon.

Abstract - This is a report of the results from a survey of individuals who responded to a toll-free number for the "super good cents" program. Respondents' attitudes toward the program's features are given.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 364

Norford, L., A. Rabi, L. Ryan, and J. Spadaro. 1986. "Energy Use in the Enerplex Office Buildings: A Progress Report." In Proceedings From the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 3:145-159. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report presents a full year of energy-use data for two new heavily instrumented office buildings, which incorporate a variety of technologies designed to reduce energy consumption. Modifications that the superintendent has made to the controls are identified. In some cases these modifications have reduced energy use, and in others have greatly increased energy use. The superintendent's need for more information in adjusting the controls is highlighted.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 339

Conlin, F., and S. K. Paulos. 1986. "Options for Reducing Energy Use in Manufactured Housing." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, pp. 31-32. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - The mobile home industry was born out of a need to supply inexpensive mobile residences for soldiers during World War II, and has become a legitimate housing alternative. Manufactured housing is one of the most significant contributors to the growth of the residential electric demand.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 349

Nelson, G. D. 1986. "Results of Construction Quality Inspections of 25 Low-Energy Minnesota Homes." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 2:207-209. American Council for an Energy Efficient Economy, Washington, D.C.

Abstract - This paper summarizes a more detailed presentation given at the Santa Cruz Summer Study, August 1986. The many photographs, thermograms, graphs, and tables that were presented there are omitted here for brevity. Detailed, highly-instrumented inspections were performed of 25 of the original 144 houses in an Oak Ridge National Laboratory report. Instrumentation included a blower door, infrared scanner, wood moisture meter, sling psychrometer, flue gas testing equipment, and digital thermometers. The purpose was to document construction quality problems that would affect the energy performance of energy efficient houses.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 401

Vories, R. 1986. "Marketing the Austin Energy Star Program." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 5:166-177. American Council for an Energy Efficient Economy, Washington, D.C.

Abstract - The purpose of this paper is to outline the marketing approach used to simplify this program so that it is easily understandable to potential home buyers, builders, realtors, and lenders. The paper will be divided into the following three parts: 1) marketing theory and the role played in the marketing program, 2) use of building industry techniques and professions as the direct consumer contact, and 3) discussion of specific types of communication and approaches used to reach out to these audiences.

OBCE Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 354

Watson, R. H., D. Silver, S. King, and J. Burman. 1986. "Thermabilt Energy Efficient Residential Construction Research, Demonstration and Technology Transfer." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 2:289-301. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - Thermabilt is Washington State's component of the Bonneville Power Administration's funded Residential Standards Demonstration Program. Under this program, 228 single-family homes and 148 units in 19 multi-family buildings were constructed to high levels of energy efficiency in Washington State during 1984, corresponding to the Northwest Power Planning Council's Model Conservation Standards. Thermabilt had the following multiple objectives: technology transfer, demonstration, and research.

OBCE Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 355

Bales, E. and D. Hawk. 1986. "Improved Building Energy Efficiency Through Integrated Architecture and Engineering Research and Education." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 3:7-19. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - Constructing energy efficient buildings is important to both architects and engineers. Areas of overlap exist in how each profession works toward this common objective, but there are differences that lead to tensions and lost opportunities. One major opportunity is the achievement of total building performance. Each profession has different responsibilities,



to building-design cooperation is outlined in this paper.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

#### ID NUMBER 313

Albrand, P., I. Turiel, R. Ritschard, and D. Wilson. 1986. "Survey of Low-Rise Multi-family Building Practices." In FY 1985 Annual Report - Energy Analysis Program, 5:6-9. LBL-20205, Lawrence Berkeley Laboratory, Berkeley, California.

Abstract - Survey results are given in this report. The objectives of the survey were to 1) gain a better understanding of the major determinants of energy use and power demand in multi-family residences, 2) evaluate the cost-effectiveness of conservation measures in various climates, and 3) transfer this information to builders of such housing and to other interested parties. The research included the collection of data on energy use and building characteristics of new multi-family buildings, development of prototype buildings, computer simulation, and energy and economic analyses.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 529

Mohler, B. L. 1986. "Energy Technology XIII: Approaching the Market With New Technologies." In Proceedings of the Thirteenth Energy Technology Conference, 8:1484-1495. ISBN 0-86587-014-4, Government Institutes, Inc., Rockville, Maryland.

Abstract - This report discusses the following major reasons for failure of new products/technologies:

- lack of uniqueness or technical superiority
- poor or inadequate market research
- technical problems associated with the product.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 523

Lukas, G. P. 1986. "Energy Technology XIII: After the Warranty." In Proceedings of the Thirteenth Energy Technology Conference, 8:1157-1163. ISBN 0-86587-014-4, Government Institutes, Inc., Rockville, Maryland.

Abstract - This report discusses the potential problems facing the new purchaser

Abstract - This report discusses the potential problems facing the new purchaser of an energy monitoring and control system. The report suggests that the buyer should be properly prepared for the purchase.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 0257

Wagner, Weicks, Smith, and Lapel. 1986. Situation Analysis - Lending Institutions and Appraisers. DE-AC79-85, BP24499, Bonneville Power Administration (BPA), Portland, Oregon.

Abstract - Results from 37 personal interviews from the Northwest Banking Community are presented in this report. The report provides information on the lending situation as it now exists with respect to energy efficient new housing. Included are recommendations to BPA to gain support of the Banking Community for the "Good Cents Program."

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0255

Mohler, B. L., and S. A. Smith. 1986. Marketing Manufactured Housing Under the "Super Good Cents" Program. PNL-5743, Pacific Northwest Laboratory, Richland, Washington.

Abstract - The objective of this study is to propose a strategy for including manufactured housing (MH) in Bonneville Power Administration's Super Good Cents (SGC) Program. This report presents information on the site-built SGC program, the characterization of MH consumers, and the options and recommendations for including MH in the SGC program.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 301

Hirst, E., J. Clinton, H. Geller, and H. Kroner. 1986. Energy Efficiency in Buildings. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This book contains very complete past data on energy efficiency in buildings, progress to date on energy efficiency in buildings, and research and program developments. This is a good source for a general background on what has been done and what needs to be done.

Residential    Yes                      Industrial    No                      International    No

ID NUMBER 0260

Pihas, Schmidt, and Westerdahl. 1985. BPA Focus Group Report: Prospective Home Buyers, Builders, and Realtors. Bonneville Power Administration (BPA), Portland, Oregon.

Abstract - This report is an analysis of the findings of a series of five focus groups held in cities throughout BPA's service territories, (Eugene, Seattle, Missoula, Idaho Falls, and Everett.) The focus groups consisted of builders, realtors, and prospective home buyers. The report includes key references in the home buying process, perceptions of the importance of energy efficiency, and the buyers' awareness of the Super Good Cents Program. It also contains a profile of the typical buyer, and the importance of energy efficiency to the buyer as seen by builders and realtors.

OBCS Study    No                      Commercial    No                      Public            No  
Residential    Yes                      Industrial    No                      International    No

ID NUMBER 0254

Market Decisions Corporation. 1985. Super Good Cents Home Program Consumer Attitudes and Awareness Study. Bonneville Power Administration (BPA), Portland, Oregon.

Abstract - The report presents the findings of a consumer attitude and awareness study for the BPA. The study was designed to investigate awareness and perceptions of the Super Good Cents Home Program and to serve as a baseline measure of Program advertising, awareness, and recall. The report also measures the size of the current home buying market, estimates future market sizes, determines factors potential home buyers deem important in the home selection process, and determines the type of home that buyers intend to purchase.

OBCS Study    No                      Commercial    No                      Public            No  
Residential    No                      Industrial    No                      International    No

ID NUMBER 0256

Hendrickson, P. O., B. L. Mohler, Z. T. Taylor, and A. D. Lee. 1985. Marketing Energy Conservation Options to Northwest Manufactured Home Buyers. PNL-5496, Pacific Northwest Laboratory, Richland, Washington.

Abstract - This study relies on extensive existing survey data and new analyses to develop information for achieving energy conservation in new manufactured homes. The objective of the study is to assist the Bonneville Power Administration in the development of a regional approach in which numerous organizations and parties would participate to achieve conservation in new manufactured homes.

Administration in the development of a regional approach in which numerous organizations and parties would participate to achieve conservation in new manufactured homes.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0156

Watts, R. L., D. R. Johnson, S. A. Smith, and E. J. Westergard. 1985.  
Research Utilization in the Building Industry: Decision Model and Preliminary Assessment. DE86001682, National Technical Information Service, Springfield, Virginia.

Abstract - This report presents a far-reaching means for managing the interactions of the private sector and the federal research sector as they deal with energy conservation in buildings. The report emphasizes a private-public partnership in planning a research agenda and in applying the results of ongoing and completed research. The results of this task support the hypothesis that the transfer of research and development results to the buildings industry can be accomplished more efficiently and quickly by a systematic approach to technology transfer. The purpose of this report is to introduce elements of a market-oriented knowledge base. These elements would be useful to the Building Systems Division, the Office of Buildings and Community Systems, and their associated laboratories in managing a private-public research partnership on a rational systematic basis.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 316

Hendrickson, P. L., B. L. Mohler, Z. T. Taylor, and A. D. Lee. 1985.  
Marketing Energy Conservation Options to Northwest Manufactured Home Buyers. PNL-5496-REV 1, Pacific Northwest Laboratory, Richland, Washington.

Abstract - This is a revision of a study done earlier (June 1985). It contains statistics not available for the original publication date.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0050

Johnson, R. J. 1985. "Energy Efficiency in Home Construction." In Proceedings: Buildings and Their Energy Systems - Technical and Planning Strategies, 4:1-13. EPRI EA/EM-4197, Electric Power Research Institute, Research Reports Center, Palo Alto, California.

Abstract - On average, today's new homes use only half as much energy for heating and cooling as they did a decade ago. Taking all trends into account and assuming the continuation of recent rates of price increases for energy, it is reasonable to predict that energy use per dwelling unit will decline another 25%-50% in another decade.

Yet, energy efficiency is no longer a first order priority for most of today's new home buyers. Why is this so? What are the housing issues, characteristics, and builder needs and opinions that effect residential energy use? What are some of the retrofit and remodeling opportunities for increased energy efficiency in existing housing? What are some of the short- and long-term issues and trends that will have an important bearing on future residential use?

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0049

Leary, N. R. 1985. "The Office Building Industry of the 1980s." In Proceedings: Buildings and Their Energy Systems - Technical and Planning Strategies, 3:1-8. EPRI EA/EM-4197, Electric Power Research Institute, Research Reports Center, Palo Alto, California.

Abstract - In past years BOMA International's Research and Public Affairs Office initiated a review of significant changes in the office building industry. The conclusion of the research that was begun with leading developers, owners, managers, financiers, and leasing agents has been that these continuing changes include both national and local phenomena. While shifts in the structures of the economy and property ownership can best be viewed within a national (or international) perspective, predicting how these forces impact a local community requires a detailed understanding of each community's economic, political, and real estate cultures.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 0190

Butler, J. E. 1985. "Use of Building Energy Simulation From the Building Owner's Perspective." In Proceedings of the Building Energy Simulation Conference, pp. 41-44. DE86005274, National Technical Information Service, Springfield, Virginia.

Abstract - This report presents a brief outline of some of the concerns (from the businessman's perspective) about the Energy Simulation Program.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 0192

Fazio, P., and R. Zmeureanu. 1985. "Meeting the Research Needs in Building Energy Simulation." Paper presented at the Building Energy Simulation Conference, Seattle, Washington. DE86005274, National Technical Information Service, Springfield, Virginia.

Abstract - The building researcher is concerned with increasing the knowledge to provide cheaper and better buildings. Energy simulation software can be a useful vehicle to transfer this knowledge to those responsible for the design, construction, operation, and use of the facility. This software must lend itself to revisions, upgrading, and verification by the researchers. The available software is not generally accessible for these activities. Future provisions to accommodate these revisions are outlined.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0193

Ayres, J. M., and H. Lau. 1985. "Building Energy Simulation in the Engineer's Office - A Useful Tool." Paper presented at the Building Energy Simulation Conference, Seattle, Washington. DE86005274, National Technical Information Service, Springfield, Virginia.

Abstract - Building energy simulation programs are used by practicing mechanical engineers to perform feasibility studies, systems designs, development of operating strategies, and code-required energy budget compliances. The technical and economic reasons for selecting programs for different applications are discussed. An energy analysis (including daylighting, off-peak cooling using DOE-2, and peak load calculations using a microcomputer program on an engineering and computer science building) is presented.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0194

Miles, J. R. 1985. "Building Energy Simulation From the Manufacturer's Perspective." Paper presented at the Building Energy Simulation Conference, Seattle, Washington, pp. 62-65. DE86005274, National Technical Information Service, Springfield, Virginia.

Abstract - Trane has been involved in the ongoing development of energy analysis methods since the early 1970's. Current development work includes not only new system simulations, but also new financial reports. Highlights of an alternative method for presenting financial information to a building developer are presented.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	Yes	International	No

#### ID NUMBER 0191

Nall, D. H. 1985. "Building Energy Simulation and the Architect." Paper presented at the Building Energy Simulation Conference, Seattle, Washington, pp. 45-48. DE86005274, National Technical Information Service, Springfield, Virginia.

Abstract - The relationship of building energy simulation programs to architectural practices is discussed. Some procedures are proposed by which the detailed input requirements of such programs may be alleviated during conceptual design. This report discusses the means for procuring energy conservation products through the use of simulation techniques during detailed design. Finally, the use of simulation during code compliance and in architectural research is discussed.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 0195

Berauek, D. A. 1985. "Arguing for Energy Analysis - Experience of the U.S. Army Corps of Engineers With Energy Analysis During Design." Paper presented at the Building Energy Simulation Conference, Seattle, Washington, pp. 229-236. DE86005274, National Technical Information Service, Springfield, Virginia.

Abstract - Although building design criteria continue to control energy conservation, in practice this thrust is often blunted by decision makers with different orientations. The experiences the U.S. Army Corps has had in energy conservation adaption measures (to both new and existing construction) are discussed, and these experiences in forecasting the future of such attempts are analyzed.

OBCS Study	No	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No

#### ID NUMBER 0207

Coutier, J. P., R. C. Kammerud, and J. W. Place. 1985. "Thermal Comfort of Building Occupants: A Preliminary Impact Assessment of Passive Strategies." In Transactions of the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE), 91:72 - 74. Atlanta, Georgia.

Abstract - The importance of comfort problems in passive buildings is underlined by the growing feeling that total energy analysis for buildings should take into account occupants' response to their environment. Occupant comfort issues are

OBCS Study	No	Commercial	No	Public	No
Residential	No	Industrial	Yes	International	No

ID NUMBER 323

Hendrickson, P. L. 1984. Review of Survey Data on the Importance of Energy Efficiency to New Home Buyers. Pacific Northwest Laboratory, Richland, Washington.

Abstract - The principal objective of this report was to review available survey information on the importance of energy efficiency to buyers of newly constructed homes. The importance of energy efficiency to buyers of existing homes was of secondary importance. Highlights of documents reviewed for the study are included in the appendix. A companion report to this document, prepared by the Portland, Oregon firm of Bardsley and Haslacher, Inc., reviews the results of six focus groups that convened in the Northwest to obtain energy efficiency preference information from recent buyers of newly constructed homes.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0253

Bardsley and Haslacher, Inc. 1984. Northwest New Home Buyers. Bonneville Power Administration, Portland, Oregon.

Abstract - This is a report on attitudes toward conservation in newly constructed residential buildings. Objectives of the study are to 1) gain insight into the purchasing process, 2) explore the importance of factors considered when buying a home, 3) test awareness of energy features and efficiency, 4) identify sources of information on new home buying, and 5) profile prospective home buyers.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 428

Oberg, B. W., and T. R. Jacob. 1984. "Two Energy Conserving Demonstration House Case Histories." In Proceedings From the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, B:221-234. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - Case histories of houses constructed in Madison, Wisconsin, and Dallas, Texas, are presented. A popular mid-market plan for each participating builder was selected and modified to yield a substantial change in predicted



Abstract - Case histories of houses constructed in Madison, Wisconsin, and Dallas, Texas, are presented. A popular mid-market plan for each participating builder was selected and modified to yield a substantial change in predicted annual heating and cooling energy consumptions, but with a minimum of change to the appearance.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0013

Schade, J. R. 1984. Introduction of Passive Hybrid Design into a Corporate Building Program; Design, Construction and Initial Monitoring, pp. 281-291. ISBN 0-918249-01-5, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - The passive design process and the resulting building described in this paper demonstrate how technical, economic, and organizational objectives intermingle to affect the final building. Although the design and construction program plan of a large, profit-oriented corporation can effectively incorporate passive solar measures in small branch offices; the passive design is secondary, even if cost effective, to the goals and operating characteristics of the organization.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 0182

King, J. L. 1983. "Building Use and Occupancy Considerations as Design Parameters for Reducing Building Operating Costs." Paper presented at the World Energy Engineering Congress, Atlanta, Georgia, pp. 259-260. TI85011238, National Technical Information Service, Springfield, Virginia.

Abstract - Design parameters for reducing building operating costs are discussed. With the technology available today, a designer has the opportunity to have a major impact upon the operating costs of the building by applying an organized, thorough, and creative approach to building use and occupancy considerations as suggested by the model presented, and then by applying the appropriate technology.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 312

Honeywell, Inc. 1978. Automated Energy Management Systems for Small Buildings. BNL 50970, Brookhaven National Laboratory, Brookhaven, New York.

Abstract - Both technical and marketing issues related to implementing automation systems in small commercial building are explored. The functional requirements for the systems are identified and the determination of system costs and energy savings potential are made. Market analyses identify cost and payback requirements as well and use potential offices and apartments as analyses models. An AEMS concept is defined, which embodies the necessary functional requirements within a framework of applied strategy to energy conservation in buildings.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

#### 4.0 STANDARDS AND GUIDELINES

ID NUMBER 0144

Hendrickson, P. L. 1986. Review of Existing Residential Energy Efficiency Certification and Rating Programs. PNL-6080, Pacific Northwest Laboratory, Richland, Washington.

Abstract - The principal objectives of this report are to 1) present information on existing Home Energy Rating Systems (HERS) and their features, 2) qualitatively examine the benefits and costs of HERS programs, 3) review survey results on the attitudes of various user groups toward the programs, and 4) discuss selected design and implementation issues.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0259

Vine, E., and B. K. Barnes. 1986. The Residential Standards Demonstration Program Occupant Survey Analysis. LBL-22409, Lawrence Berkeley Laboratory, Berkeley, California.

Abstract - This report compares occupants of model conservation standard ("super" energy-efficient) houses to occupants of "control" houses to see whether the two groups are similar with respect to energy-related behavior, attitudes, characteristics of the houses, and demographics.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 405

Hammarland, J. 1986. "Searching for an Implementation Strategy for the Model Conservation Standards: A Utility Perspective." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 6:39-51. American Council for an Energy-efficient Economy, Washington, D.C.

Abstract - This paper chronicles the interplay among the Council, Bonneville Power Administration, and the utilities as they searched in vain for a mutually acceptable model conservation standard (MCS) implementation strategy. Secondary attention is given to other important factors such as the state and local governments, builders associations, and the environmental community. The paper concludes with a mildly positive assessment of the future prospects of MCS.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 409

Strom, S., and I. Natnanson. 1986. "Overcoming Market Resistance to Energy Conservation in Rental Housing Reaching Owners of Tenant-metered Buildings." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 6:8-81. American Council for an Energy-efficient Economy, Washington, D.C.

Abstract - Because owners of tenant-metered buildings lack strong financial incentives to make energy improvements, the City of Minneapolis has developed a comprehensive strategy that makes use of a "carrot and stick" approach. The "carrot" is a package of financial incentives and contracting services available through the City's Energy Bank and its Operation Insulation Program. The "stick" is a mandatory rental energy standard.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 408

Sebald, A. V., et al. 1986. "New Building Energy Standards for UCSD: Institutional Barriers, Current Impacts and Future Pitfalls." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 6:69-79. American Council for an Energy-efficient Economy, Washington, D.C.

Abstract - This paper surveys energy standards for other universities. It compares the UCSD energy design situation before and after implementation of the standard. The process by which the standard is imbedded in the actual design/construction process is described. The paper discusses the financial and institutional barriers to energy efficient design in university buildings and to the implementation of a standard.

OBCS Study	No	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No

ID NUMBER 346

Hewett, M. J., et al. 1986. "Heating Cost Allocation in Centrally Heated Rental Housing: Energy Conservation and Standards Issues." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 2:142-161. American Council for an Energy-efficient Economy, Washington, D.C.

Abstract - This report contains findings that suggest there is a role for heat metering in energy conservation, but regulation may be needed to protect tenants and the public interest. The following five key areas have been identified and must be addressed: 1) require that buildings meet an energy code, 2) regulate the metering equipment, 3) set standards for the equitable distribution of non-metered costs, 4) require that owners disclose past bills to prospective tenants and provide clear information on how the allocation

system works and how they can reduce their energy expenses, 5) require that billing provisions include prohibiting profit from resale, and 6) require owners to offer budget billing.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 402

Baker, W. S. 1986. "Lighting Code Compliance Training Through the Use of Interactive Video Tapes." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 6:7-11. American Council for an Energy-efficient Economy, Washington, D.C.

Abstract - Lighting codes are a cost effective and logical approach to reducing commercial energy and power requirements, and they also encourage the use of daylight. However, codes are only as good as their enforcement, and training plays a key role in enforcement. The training of code officials through the use of a technical reference manual that is coupled with a video tape is an innovative and cost effective way of providing the training.

OBCS Study	No	Commercial	Yes	Public	Yes
Residential	No	Industrial	No	International	No

#### ID NUMBER 407

Rowan, S. S. 1986. "Model Conservation Standards-Lessons Learned in Providing Technical Support to the "Building Code Industry"." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 6:55-65. American Council for an Energy-efficient Economy, Washington, D.C.

Abstract - This paper will focus on lessons learned as a result of working toward adoption of energy codes equivalent to the model conservation standards. Lessons learned will be presented from the perspective of providing technical support for code officials and the code development industry. The focus will be one of practical application, including a description of problems and obstacles encountered and alternative approaches pursued.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 403

Crossman, P. L. 1986. "Model Conservation Standards - Lessons Learned from the Perspectives of Designing and Managing Building Code Enforced Programs." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 6:12-24. American Council for an Energy-efficient Economy, Washington, D.C.

Abstract - This paper focuses on the Northwest region's experience and progress toward implementing mandatory energy-efficiency standards, and discusses the institutional lessons that have been learned along the way.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 362

Miller, K. 1986. "Overview of the Energy Edge Project Design-Upgrading Efficiency in Commercial Construction Practice." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 3:13-132. American Council for an Energy-efficient Economy, Washington, D.C.

Abstract - Bonneville Power Administration is conducting a research project entitled the Energy Edge. Limited information is available on the economic value of designing and constructing commercial buildings which exceed code requirements. The project will examine costs and performance of highly efficient new commercial buildings. Due to design stage opportunities, new buildings are considered a first choice conservation resource. Commercial buildings which are not built efficiently today will be expensive to retrofit later.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 461

Burt, B. J., and M. Neiman. 1984. "Support for Local Government Regulation to Promote Solar Energy." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, F:39-51. American Council for an Energy-efficient Economy, Washington, D.C.

Abstract - This study addresses, in an exploratory fashion, the issue of citizen support for public policies (designed by local governments) to require increased use of solar energy. Energy program options continue to be analyzed by technical and economic criteria. The study is an effort to identify and assess the importance of political attitudes and social values in citizen support for solar energy.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0024

Richardson, B. C., and G. W. Haddow. 1984. The Development, Implementation, and Evaluation of the Energy Conservation Home Program, pp.403-417. ISBN 0-918249-01-5, American Council for an Energy-efficient Economy, Washington, D.C.

Abstract - The Energy Conservation Home (ECHome) Program was introduced to encourage the installation of energy saving features (in new homes) beyond building code requirements. In return for participation, Pacific Gas & Electric Company offered builders a variety of incentives including signs, brochures, and advertising to promote the benefits of an ECHome.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No





## 5.0 RETROFIT OF EXISTING BUILDINGS

ID NUMBER 0664

Farhar, B. C. IN-PROGRESS. Innovative State and Local Energy Conservation Programs. Solar Energy Research Institute.

Abstract - This project includes identifying innovative energy conservation programs being conducted at the state and local level, and also includes providing them with technical and financial assistance.

OBCS Study	No	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	No	International	No

ID NUMBER 0657

Mixon, B., and M. MacDonald. IN-PROGRESS. Commercial Retrofit Research. Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - This project includes studies of early adopters (in the context of the previous work on linking retrofit technologies with investment decision makers) and includes research information on understanding how to motivate people to install efficient retrofit technologies.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 0656

Mixon, B., and M. Karnitz. IN-PROGRESS. Single-Family Retrofit Research. Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - The objectives of this project are 1) to understand user/occupant behavior, and 2) to determine and monitor the impact of potential measures for saving energy and dollars in single-family homes.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0637

Gladhart, P. M. IN-PROGRESS. Berr: Single-Family Retrofit Research. Michigan State University, Lansing, Michigan.

Abstract - This study will evaluate the effects of occupant behavior on the results of a weatherization program. Ten houses in a low-income weatherization program will be monitored for two heating seasons.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0635

Sherman, M., and R. Diamond. IN-PROGRESS. Multi-family Retrofit Monitoring. Lawrence Berkeley Laboratory, Berkeley, California.

Abstract - This project is to design and conduct experiments for understanding the adoption, performance, and evaluation of retrofits in multi-family buildings. In cooperation with local groups and agencies, work is performed to instrument buildings that are planned for retrofit work. Detailed information on retrofit performance is collected following the guidelines in the monitoring protocol. Emphasis is on retrofits to the mechanical systems.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0634

Sherman, M. IN-PROGRESS. Hot Water Retrofit. Lawrence Berkeley Laboratory, Berkeley, California.

Abstract - This project involves the measurement and analysis of domestic hot water use in four public housing buildings that have received active-solar retrofits. Work includes 1) monitoring the energy and water usage in these buildings, 2) interviewing residents about their usage patterns, and 3) developing an end-use model to predict consumption.

OBCS Study	Yes	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

ID NUMBER 674

Tonn, B., and D. L. White. 1987. Use of Wood for Space Heating: Analysis of Hood River Conservation Project Submetered Homes. ORNL/CON-234, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - This report analyzes wood use in the 100 homes that had wood channel submeters installed as part of the Hood River Conservation project (HRCP). It complements previous work by Tonn and White (1986) on wood use for residential space heating in the Pacific Northwest and current research by other analysts on other aspects of HRCP. Specifically, this report develops profiles of wood users and assesses the magnitude of electricity displaced by wood, patterns of wood and electricity use, and determinants of wood use.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 675

Brown, M. A., D. L. White, and S. L. Purucker. 1987. Impact of the Hood River Conservation Project on Electricity Use for Residential Water Heating. ORNL/CON-238, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - This report builds on earlier work concerning determinants of electricity use for residential water heating in the Hood River Conservation Project (HRCP).

The HCRP was intended to test the reasonable upper limits of a residential retrofit program.

This report evaluates the electricity savings and demand benefits of the HRCP water-heating retrofits. In addition, it attempts to estimate the benefits of each conservation measure and to assess the impact of varying household characteristics upon electricity savings.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 376

Dinan, T. M. 1987. An Analysis of the Impact of Residential Retrofits on Indoor Temperature Choice. ORNL/CON-236, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - The purpose of this study is to provide a better understanding of the factors that affect a household's choices of indoor temperature levels. Of particular interest is whether or not households choose higher indoor temperature levels after a weatherization.

In this analysis, a theoretical model based on household production function theory is developed to determine what factors might affect household temperature choices. This model is then estimated using monitored indoor temperature data on 252 homes that were weatherized through the Hood River Conservation Project. Three alternative econometric models are used to sort out the factors that explain variations in average temperature levels among the sample homes and the factors that explain changes in temperature levels within individual households over time.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 626

Bailey, B. M., M. P. Hattrup, R. T. Nordi, and S. A. Shankle. 1987. Consumer Segmentation: Assessment of the Market for Conservation in the Northwest. PNL-6111, Pacific Northwest Laboratory, Richland, Washington.

Abstract - This report presents information on consumer attitudes toward conservation, past and future conservation behaviors, and levels of participation in a utility-sponsored conservation program. The information was collected by random telephone surveys of households in Idaho, Oregon, Washington, and Western Montana. Pacific Northwest Laboratory conducted an analysis of the survey results for the Bonneville Power Administration to obtain a better understanding of consumer attitudes and behaviors and to facilitate conservation program planning, design, and marketing.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 628

Hattrup, M. P., and R. T. Nordi. 1987. 1985 Primary Heating Fuel Use and Switching. PNL-5881, Pacific Northwest Laboratory, Richland, Washington.

Abstract - This report presents information on the types of primary heating fuels used in residences in the Pacific Northwest region and how the heating fuels affect the level of investment in energy conservation measures by occupants of the residences. The types of heating fuel switching that occurred during the past two years (1983-1985) are also presented. The information was collected from random telephone surveys of households in Idaho, Oregon, Washington, and Western Montana. Pacific Northwest Laboratory conducted an analysis of the survey results for the Bonneville Power Administration to obtain a better understanding of consumer attitudes and behaviors and to facilitate conservation program planning, design, and marketing.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 629

Fang, F. M., M. P. Hattrup, and R. T. Nordi. 1987. Financing Residential Energy Conservation Investment in the Northwest. PNL-5905, Pacific Northwest Laboratory, Richland, Washington.

Abstract - Pacific Northwest Laboratory (PNL) has analyzed how households in the Pacific Northwest financed their investments in energy conservation measures during the 1983-1985 period, how they would finance their likely future investments, and has also analyzed related topics regarding conservation investments and financing. The information was collected through a stratified random telephone survey of households (conducted in October/November 1985) in the Bonneville Power Administration (BPA) service area in Idaho, Oregon,

Washington, and Western Montana. This information will be used by BPA to facilitate the planning, design, and implementation of relevant conservation programs, such as the Residential Weatherization Program, and of the potential programs of bank and utility loans.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 0627

Fang, J. M., M. P. Hattrup, R. T. Nordi, and S. A. Shankle. 1987. Household Energy Conservation Attitudes and Behaviors in the Northwest: Tracking Changes Between 1983 and 1985. PNL-5892, Pacific Northwest Laboratory, Richland, Washington.

Abstract - Pacific Northwest Laboratory (PNL) has analyzed the changes in consumer energy conservation attitudes and behaviors (between 1983 and 1985) in the Pacific Northwest. The information was collected through stratified random telephone surveys of 2,000 and 1,058 households, respectively, for 1983 and 1985 in the Bonneville Power Administration (BPA) service area in Idaho, Oregon, Washington and Western Montana. This information will be used by BPA to facilitate better conservation program planning, design, and marketing.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 542

Bozich, H. T., A. Bassett, and S. L. Gallaher. 1987. "Performance Contracting for Energy Services: Important Considerations for the Evaluation Process." In Proceedings of the Fourteenth Energy Technology Conference, 14:1239-1282. ISBN 0-86587-015-2, Government Institutes, Inc., Rockville, Maryland.

Abstract - This paper discusses methods to evaluate client needs and contractor responses to those needs. The following three sections are discussed: 1) qualitative and quantitative assessment of the client's energy services needs, 2) the right questions to ask the client, and 3) the evaluation process, including assessing and quantifying the benefits each performance contractor has to offer.

OBCS Study	No	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No

#### ID NUMBER 543

Baylon, D., G. Katz, J. Heller, and J. Callahan. 1987. Marketing to Centralized Decision-makers for the Bonneville Power Administration: Executive Summary. Bonneville Power Administration, Portland, Oregon.

Abstract - The objectives of this study were to 1) identify and interview persons with decision making authority in facility management; 2) establish the nature of the decision-making process concerning energy conservation, facility planning, remodeling and renovating, and budgeting authority; 3) assess the attitudes (within the firm's operations) toward energy consumption and conservation; and 4) assess the attitude of decision makers toward existing and future Bonneville Power Administration programs, and toward specific program components (technical assistance, financial incentives, rebates, etc.).

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 557

Bailey, M., C. Fevold, and T. Diangson. 1987. Building Owner and Manager Attitudes About the Multifamily Conservation Program. Seattle City Light, Seattle, Washington.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0078

Erickson, R. J. 1987. "Household Energy Use in Sweden and Minnesota: Individual Behavior in Cultural Context." In Energy Efficiency: Perspectives on Individual Behavior, pp. 213-228. ISBN 0-918249-05-8, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - From various reports came the finding that the Swedish used only 60% as much energy per capita as Americans. How was this remarkable efficiency achieved while maintaining the high Swedish standard of living? Did the Swedish use less energy because their daily lives were markedly different from those of Americans, or were Sweden's superbly constructed houses and appliances primarily responsible for the lower consumption?

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	Yes

ID NUMBER 0083

Hackett, B. 1987. "Energy Consumption and Energy Billing in Apartments." Energy Efficiency: Perspectives on Individual Behavior, pp. 305-316. ISBN 0-918249-05-8, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This document reports the most recent findings of a continuing study of electrical energy consumption in apartments in Davis, California. The research interprets the drop in consumption as having followed a change

from master to individual metering and billing of electricity. The research also includes the investigation of the relationship between energy use and the structural and social aspects of apartments.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0071

Feldman, S. 1987. "Why Is It So Hard to Sell "Savings" as a Reason for Energy Conservation." In Energy Efficiency: Perspectives on Individual Behavior, pp. 27-40. ISBN 0-918249-05-8, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report points out that it is inappropriate to depend heavily on an attitudinal model in demand-side planning. Education toward energy conservation is only one of several demand-side strategies. Other strategies include hardware-based strategies, behavior strategies, and economic strategies.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0076

Vine, E. 1987. "Saving Energy the Easy Way: An Analysis of Thermostat Management." In Energy Efficiency: Perspectives on Individual Behavior, pp. 121-134. ISBN 0-918249-05-8, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report indicates that one of the most effective, least expensive, and commonly used means of reducing household energy use is to maintain low thermostat settings during the winter and high thermostat settings during the summer. If people believe the energy shortage has ended, they may start to keep their homes warmer in winter and cooler in summer, therefore, reducing or eliminating the annual savings. Studying thermostat management helps to determine how much energy savings this "rebound effect" may have already eliminated.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0073

Wilke, R. R., and H. Wilhite. 1987. "Why Don't People Weatherize Their Homes?: An Ethnographic Solution." In Energy Efficiency: Perspectives on Individual Behavior, pp. 51-68. ISBN 0-918249-05-8, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper reveals that most studies of energy use and conservation in this country over the last decade have assumed a relatively straightforward relationship between changes in the energy environment and consumer behavior. The underlying assumption is that, given the proper incentives and adequate dissemination of the facts, consumers will react appropriately in a "rational" economic fashion.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0081

Weihl, J. S. 1987. "Family Schedules and Energy Consumption Behavior." In Energy Efficiency: Perspectives on Individual Behavior, pp. 262-280. ISBN 0-918249-05-8, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report focuses on the occurrence and patterns of measurable behavior rather than on the effects of this behavior on energy units consumed. For that reason, the data presented deals with patterns of thermostat adjustments and hot water use rather than with the exact values of thermostat settings and hot water consumption by volume.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0082

Diamond, R. C. 1987. "Energy Use Among the Low-Income Elderly: A Closer Look." In Energy Efficiency: Perspectives on Individual Behavior, pp. 287-304. ISBN 0-918249-05-8, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - A study was conducted of how occupant behavior affects energy consumption, specifically to find out how energy use is affected by actions taken during the design, construction, and occupancy of a building.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0074

Archer, D., T. Pettigrew, M. Costanza, and B. Tritani. 1987. "Energy Conservation and Public Policy: The Mediation of Individual Behavior." In Energy Efficiency: Perspectives on Individual Behavior. ISBN 0-918249-05-8, American Council for an Energy-Efficient Economy, Washington, D.C.



Abstract - This report indicates that energy conservation constitutes an important puzzle for public policy. Broad analyses of the persistent "energy crisis" have concluded that conservation is indispensable to any solution, and studies of public opinion indicate pervasive concern about energy and widespread support conservation. Despite these concerns of the public, energy conservation remains an area in which concrete accomplishments have been somewhat disappointing.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0080

Kempton, W., and S. Krabacher. 1987. "Thermostat Management: Intensive Interviewing Used to Interpret Instrumented Data." In Energy Efficiency: Perspectives on Individual Behavior. ISBN 0-918249-05-8, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - Consumers choose thermostat management as a primary energy conservation strategy, and this strategy is proving effective. To understand this management, we must recognize that it is a conscious and deliberate behavior resulting from complex household decisions. Many families consciously develop policies for setting the thermostat.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 306

Gladhart, P. M., B. M. Morrison, and J. J. Zuiches. 1987. Energy and Families. ISBN 87012-247-4, Institute for Family and Child Study, Michigan State University, Lansing, Michigan.

Abstract - This is a study of the patterns of energy use and the lifestyles of the families in one community over a five year period (1973-1978). The major objective of the research was to study the relationship of family lifestyle and energy. The concept of lifestyle is developed within this chapter in the following ways; 1) through a review of the energy problem in general, including the introduction of the notion of lifestyle and its relationship to energy; 2) through a discussion of the concept of lifestyle and its various definitions; and 3) through the presentation of a multidimensional model of family lifestyle and energy, parts of which became the specific lifestyle variables that were analyzed and discussed within this research.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0281

Consumers Energy Council of AA. 1987. A Comparative Analysis of Utility - and Non-Utility-Based Energy Service Companies: A Case Study Approach. ORNL/SUB/84-19701/1, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - Numerous studies over the past decade have documented the potential for household energy savings. Few studies, however, have explored energy service companies (ESCO), which are new residential conservation delivery systems that have the potential for increasing residential conservation by assuming responsibility for the major elements of "one stop shopping" - technology choice, auditing, financing, installation, inspection and monitoring. Nor have studies analyzed the differences between ESCOs operating in the residential and commercial and industrial markets. In order to fill this need, the Consumer Energy Council of America Research Foundation has launched a project, with support from Oak Ridge National Laboratory and the U.S. Department of Energy, to explore how ESCOs are addressing barriers to widespread conservation in the residential market.

Six ESCOs specializing in the residential sector were selected as case studies.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	Yes	Industrial	Yes	International	No

ID NUMBER 670

Goeltz, R., and E. Hirst. 1986. Residential Retrofit Measures in the Hood River Conservation Project: Recommendations, Installations, and Barriers. ORNL/CON-208, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - This report documents the extent to which measures included in the Hood River Conservation project (HRCF) were recommended to be installed in participant homes. The report also examines the reasons for noninstallation of measures, and the barriers between potential and practice. These analyses are based on data from the 3249 homes that had some contact with HRCF (of which 3189 received home energy audits). This represents more than 90% of the eligible electrically-heated homes in Hood River.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 671

Hirst, E., and R. Goeltz. 1986. Dynamics of Participation and Supply of Services in the Hood River Conservation Project. ORNL/CON-210, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - This report documents the extent to which households participated in the Hood River Conservation Project (HRCF). Differences between participants and eligible nonparticipants are examined. Similarly, differences among par-

ticipants as a function of when they signed up for HRCF are analyzed. The report also examines the dynamics of program services (i.e., times between audit requests and audit, and between audit and installation of measures). These analyses are based on data from the roughly 3500 Hood River homes eligible for HRCF, 3189 of which received free home energy audits and 2988 of which received HRCF-financed retrofit measures.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 672

Tonn, B., and D. White. 1986. Residential Wood-Use in the Pacific Northwest: 1979-1985. ORNL/CON-216, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - This report analyzes wood use for residential space heating in the Pacific Northwest. The issues that are addressed are the levels, trends, and determinants of wood use, as well as relationships of wood use to conservation program planning and evaluation. Six data sets were used in the analysis. Three contain data on representative samples of housing units in the Bonneville Power Administration's (BPA) service area. These data bases were collected starting in 1979 and extending to 1985. The other three are products of Oak Ridge National Laboratory evaluations of BPA's residential conservation programs' energy savings. The former data sets are used to provide insights into the extent and trends of wood use and into problems in accounting for program energy savings.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 544

Whitney, C., and F. Gordon. 1986. The Evolution of Commercial Market Research at Bonneville Power Administration. Bonneville Power Administration (BPA), Portland, Oregon.

Abstract - This paper is intended to serve the following four purposes: 1) to give the audience an overview of the needs which are served by market research within BPA, 2) to share experiences which might help others develop market research more effectively and efficiently, 3) to provide a small number of highlights of the results from the studies, and 4) to provide a topical guide to literature concerning the commercial market, which is available from BPA, and an idea of what future products to expect.

This paper reviews Bonneville's research on the major commercial market segments, decision makers, decision-making processes, and ways of influencing decisions about commercial sector energy equipment investments. Bonneville integrates end use data collection and market analysis.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	Yes	International	No

ID NUMBER 553

Shaffer, J. 1986. Investigation of Factors Affecting Conservation Investment Decisions by Owner-Occupants of Single-Family Homes. Conservation and Solar Division, Seattle City Light, Seattle, Washington.

Abstract - The purpose of this study is to better understand the factors which influence decision making in regard to energy conservation by owners of single-family homes. The results of this study can be used to improve conservation programs and increase the effectiveness of conservation marketing.

The study includes the following: 1) a review of recent research studies on conservation investment decisions and marketing, 2) three focus-group interviews, 3) a telephone survey of 800 homeowners, and 4) a workshop with Seattle City Light staff to analyze the research implications.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0632

Marini, M. O. 1986. Rochester Gas and Electric Corporation - 1986 Residential Conservation Survey. Rochester Gas and Electric, Rochester, New York.

Abstract - In September 1985, a Rochester Gas and Electric Corporation (RG&E) housing and appliance survey was conducted by Applied Management Sciences, Inc., a private research and consulting firm. The in-person survey and site inspection involved 350 households in RG&E's service territory. As a means of expressing appreciation for the customers' participation in the survey, RG&E distributed to each participating household a packet of conservation materials and devices.

A follow-up energy conservation mail survey was distributed in September 1986 to each of the 350 households. The primary purposes of the survey were to 1) collect data on customer usage of and satisfaction with the conservation materials, 2) obtain information on customers' water usage, and 3) determine the degree of customer interest in an analysis of energy use by major appliances.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0243

Ritschard, R., C. Goldman, E. Vine, and E. Mills. 1986. Cutting Energy Costs in Public Housing: Technical Issues, Institutional Barriers, and Research Needs. DE87003618, National Technical Information Service, Springfield, Virginia.

Abstract - As part of a U.S. Department of Energy (DOE) program on multi-family retrofit performance, Lawrence Berkeley Laboratory initiated an effort to learn what is known about energy use and conservation in the public housing sector. In this report, a summary of that information is provided, including a profile of the existing data on energy use patterns and conservation potential in public housing drawn from two major reports, from a survey of 40 large public housing authorities, from a 1983 Conference, and from contacts with various Department of Housing and Urban Development (HUD) staff. This report presents the physical characteristics of existing public housing buildings, their energy use patterns, and the potential for conservation. The report also describes technical, informational, economic, behavioral, and institutional barriers that hinder the efforts of local housing authorities and HUD to promote energy conservation.

OBCS Study	Yes	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

ID NUMBER 0146

McDonald, J. M., H. P. Misurielle, D. Goldenberg, and M. P. Ternes. 1986. Commercial Retrofit Research Multi-Year Plan. CON-218 DE87001588, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - This report details a framework for a coordinated national research and development program aimed at improving the effectiveness of public and private efforts to conserve energy in the existing commercial building sector. It summarizes the project areas that are most important to the goal of achieving the energy savings potential in commercial buildings.

OBCS Study	Yes	Commercial	Yes	Public	Yes
Residential	No	Industrial	No	International	No

ID NUMBER 0136

Electric Power Research Institute. 1986. "Understanding the Consumer." Communication Services, EPRI Journal. pp. 4-11.

Abstract - This article discusses the fact that behavioral models, based on new understanding of consumer preference and interest, are providing insights and sharpening marketing approaches for utility demand-side management concepts.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 317

Cambridge Systematics, Inc. 1986. Households' Discount Rates for Weatherization Measures. Bonneville Power Administration (BPA), Portland, Oregon.

Abstract - Households' discount rates reflect the willingness and ability of households to invest in energy saving measures. By definition, a household will take a measure that offers a rate of return in excess of its discount rate and will not take a measure that offers a lower rate of return. Estimates of households' discount rates are used by BPA and energy utilities to forecast the market penetration of new energy technologies and the energy savings from conservation programs.

This report describes estimates of households' discount rates for weatherization measures. Rather than estimating one discount rate for all households, as in most previous research, the results in this report explicitly incorporate the fact that different households have different discount rates. Consequently, the distribution of discount rates across households is estimated and described in this report.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 613

Bonneville Power Administration. 1986. Low Income Weatherization Program Process Evaluation. Bonneville Power Administration (BPA), Portland, Oregon.

Abstract - This report presents the results of an evaluation of the BPA's Low Income Residential Weatherization Program (LI Program). The LI Program was initiated in 1983 in order to ensure that the Residential Weatherization Program reached the low income portion of the population - a group that needed the benefits the program could provide and offered significant future energy savings for BPA.

The overall objective of the evaluation was to determine how the LI Program is being implemented in practice, and to provide insight into how the Program might be improved.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 359

Holt, E. A., and D. Moore. 1986. "A Utility Incentives Program for the Retrofit of Commercial Buildings." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 3:91-102. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - Seattle City Light has designed and is operating a pilot program offering financial incentives to its commercial customers. Seattle will offer two types of incentives, 1) a rebate covering 65% of the cost of pre-specified measures, and 2) an "investment incentive" that will cover the difference between the cost of audit-determined measures and the value of two-and-a-half years of savings. The rebates will be available only to small commercial customers, while the investment incentives will be available to medium and large commercial customers.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 388

Berry, L. G., and M. A. Brown. 1986. "Participation of the Elderly in Utility-Sponsored Residential Conservation Programs." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 5:5-19. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper reviews research on the participation of the elderly in utility programs. It contains a literature review, and descriptions of program participation levels among the elderly. It also contains a discussion of discrete choice model results, which show that the association between age and nonparticipation persists, even after the effects of other predictors such as income, education, dwelling age, and the need for retrofit are removed.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 387

Smith, A. E. 1986. "Leveraging Private Sector Investment for Multi-Family Energy Conservation: New Approaches to Corporate/Community Financing." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 4:148-161. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper reviews financing mechanisms employed throughout the country for energy conservation improvements to multi-family buildings, highlights their relative benefits and constraints for this type of market, and provides detailed guidelines on how to develop and market creative financing programs.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 381

Kerwin, J. J., and S. E. Thompson. 1986. "Energy Management Service-Shared Savings Financing is it Worth all the Hassle?" In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 4:101-103. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - The program discussed in this report was designed to overcome the traditional barriers to conservation investment in rental property: financial, technical, and tenant/landlord incentives. Now that our investment portfolio has operated through at least one complete heating season, we are prepared to evaluate our success and to comment on the complications and additional costs incurred to overcome the barriers.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 360

Kolb, J. O. 1986. "Energy Conservation Opportunities in Commercial Buildings-Training and Services for Improved O/M." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 3:103-105. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - The implementation of proper operation and maintenance (O/M) procedures in commercial buildings has been recognized as not only cost-effective, but also as an essential prelude to additional and more costly conservation retrofit actions.

#### Objectives:

- determine the scope and nature of resources of O/M training and services for commercial building heating, ventilating, and air conditioning systems
- determine the types of barriers that prevent or reduce the application of appropriate O/M procedures
- assess the potential for increased penetration of O/M services in the commercial building sector
- propose efforts that integrate and leverage program elements of the Department of Energy's Commercial Building Energy Retrofit Research Program with private sector initiatives.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No



ID NUMBER 391

Dreyfuss, P. M. 1986. "Community Partnerships for Energy Conservation." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 5:50-59. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper was prepared for the 1986 summer study on an effective program that was developed in Kansas City, Missouri using private contributions and volunteers working in cooperation with community based not-for-profit organizations. The program weatherized 65 houses over 3 weekends using volunteer labor to complete all of the infiltration work.

OBCS Study	No	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No

ID NUMBER 394

Gee, P. S., et al. 1986. "Marketing Energy Efficiency in North Carolina Public Housing: Lessons Learned from Field Experience." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 5:75-92. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - The North Carolina AEC has over two years of experience in developing a comprehensive program to improve energy efficiency in public housing. Elements of the program include the following: 1) creating incentives to motivate public housing authorities (PHA) to pursue energy efficiency, 2) comparing alternative strategies for achieving energy efficiency in multi-family housing, 3) demonstrating creative multi-participant financing options to fund energy improvements, and 5) analyzing results to provide PHAs with feedback on energy efficiency efforts for multi-family housing.

OBCS Study	No	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

ID NUMBER 416

Dubester, I. 1986. "Conducting a Residential Energy Financing Program." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 10:182-190. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - The Center for Ecological Technology (CET) is a non-profit community based organization working since 1976 in the fields of energy conservation and renewable resources. During the past ten years, CET has provided education, training, technical assistance, programs, and services to individuals, businesses, non-profit agencies, cities, and towns. CET's strength has been in its ability to develop and deliver energy conservation programs to the community.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 389

Clinton, J. M. 1986. "Achieving Commercial/Industrial Energy Efficiency in a Market Environment." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 5:2-36. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper outlines the importance of the marketplace in which individual, commercial, and industrial energy users make decisions about energy management measures. These decisions are carried out with the support of an infrastructure composed of energy service providers and product manufacturers. This paper summarizes important lessons learned in the last few years about energy management marketing and decision making, and offers several additional insights gained from recent research.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	Yes	International	No

ID Number 390

Dinan, T. M. 1986. "Understanding the Market for Conservation Technologies in the Commercial Sector." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 5:37-49. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - The purpose of this paper is to further the understanding of the decision process associated with conservation retrofit investments in the commercial sector. It includes discussions on the following: 1) the stages involved in a decision to undertake conservation retrofit activities, 2) the participants that might be involved in such decisions, 3) the decision criteria used by different types of organizations, 4) barriers to implementing conservation, and 5) the impact that the attributes of conservation investments might have on the decision outcome. A five-step plan is recommended for improving the effectiveness of policies designed to promote conservation in the commercial sector.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 386

Schick, H., and R. Broillett. 1986. "The Purchase of Energy Savings Pilot Program's Role within Bonneville Power Administration's Commercial Buildings Program Strategy." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 4:145-147. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - The Purchase of Energy Savings (PES) effort is designed to test private entrepreneurs as deliverers of commercial sector energy savings. These sponsors are responsible for marketing the program to attract participation, auditing commercial buildings to identify potential energy savings, and coordinating the financing, installation, and maintenance of the energy conservation measures on behalf of the building owners. In return, sponsors receive incentive payments from the Bonneville Power Administration over a number of years based on either estimated or measured energy savings from the building retrofits.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 415

Moen, J. 1986. "Results from Oslo Electricity Works' Energy Conservation Program." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 10:118-120. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - Oslo Electricity Works is an energy works that supplies electricity and district heating for the city of Oslo (capital of Norway), and is also responsible for the city's energy conservation program. In 1985, Oslo Electricity Works supplied roughly 7 TWh in electricity and 500 GWh in district heating. Electricity totalling about 100TWh was generated in Norway during the year, all at hydro-electric power stations.

OBCS Study	No	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	No	International	Yes

ID NUMBER 353

Wagner, B. S., and R. C. Diamond. 1986. "Keeping Warm: Findings from the Kansas City Warm Room Retrofit Project." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report concerns the use of warm rooms as the prospect of significant energy savings at costs at or below current levels. But a number of questions require answers before there is a widespread installation of warm rooms. Can the theoretical savings actually be achieved? What about health and building safety? What are the social consequences?

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 374

Brown, I. 1986. "The Development of a European Market for Third Party Finance." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 4:5-16. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - The research discussed in this report was done to answer several questions, 1) Is there a market for third party finance in Europe and how big is that market? 2) Why has the concept not developed as fast in Europe as in North America? 3) What are the barriers preventing the growth of third party financing? 4) What actions can be taken to overcome these barriers?

OBCS Study	No	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	Yes	International	Yes

ID NUMBER 399

McRae, M. R., et al. 1986. "Marketing Energy Investments to Parties of Commercial Short-term Leases: Barriers and Opportunities." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 5:130. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper discusses the opportunities that utility companies have to successfully market conservation investments to commercial landlords and tenants who are party to short-term leases. The conclusions are based upon an understanding of the factors that make the sort-term lease sector unique, the motivations of tenants and landlords in the sector, and the factors that each group describes as barriers to the investment.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 375

Codina, R. 1986. "Utility Marketing of State Conservation Loans." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 4:17-28. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper details the results of a collaborative effort by the Sacramento Municipal Utility District and the California Energy Commission to market state conservation loans. The program provided loans at an interest rate of 8.89% to schools, local governments, hospitals and special districts for energy conservation projects.

OBCS Study	No	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No

ID NUMBER 392

Dupont, P. T., and L. R. Macfarland. 1986. "Energy Auditor and Retrofitter: Practical Information for Practitioners." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 5:6-61. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This non-profit organization [Energy Auditor and Retrofitter (EA&R)] disseminates practical information on residential energy conservation. Its main product is a bi-monthly magazine (EA&R) that will service the needs of workers in the residential conservation industry. This task involved three major activities, 1) identifying the potential market for the reader, 2) transferring information from a variety of sources and in the magazine format, and 3) serving as an open forum for those in the industry.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 384

Mills, F., et al. 1986. "Financial Impacts of Energy Conservation Investment in Public Housing." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 4:119-131. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - In this study the relative financial impact [on the U.S. Department of Housing and Urban Development (HUD) and the Public Housing Authorities (PHA)] of four funding strategies are examined based on case studies of actual retrofit efforts by two local housing authorities. The local PHAs can fund conservation measures by the following strategies: 1) HUD comprehensive Improvement Assistance Program (CIAP) funds, 2) general operating subsidies, 3) utility-sponsored conservation financing programs, and 4) third-party investments.

OBCS Study	Yes	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

ID NUMBER 417

Lambert, F. S. 1986. "Innovative Financing for Energy Conservation in Building." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - The Department of Energy has undertaken four types of activities designed to encourage the use of innovative financing for energy conservation projects: demonstration projects, analyses of innovative financing in various applications, grants to states for services related to innovative financing, and efforts to eliminate legal and regulatory barriers.

OBCS Study	No	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 356

Blumstein, C., and P. Keilch. 1986. "On the Administration of Small Energy Conservation Projects in Commercial Buildings." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 3:20-30. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report describes Berkeley's strategy for project administration and discusses some of the problems associated with this strategy. A central feature of this strategy was the use of combined audit-design-construct-maintain contracts. We conclude that contracts of this type can be used successfully, provided that an independent technical review is conducted in each phase of the contract. We also report some of the savings obtained in the few months since the completion of the projects.

OBCS Study	No	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No

#### ID NUMBER 342

Esterberg, E. 1986. "End-use Loads in Multifamily Buildings: Some Preliminary Findings." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 2:76-87. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper presents the preliminary analyses conducted on the size and shape of the end-use loads in one building with thirteen apartment units. The winter load for the entire building was three times the average summer months' consumption, and there were no outstanding differences between weekday and weekend levels of consumption in either season.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 377

Emmett, M., and P. S. Gee. 1986. "Achieving Energy Efficiency in Government Operations: The Local Energy Officer Project." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 4:39-51. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper focuses on the use of salary guarantee for encouraging officials to develop an internal energy management program for local government operations. It has been determined that the salary guarantee is an extremely effective marketing tool and risk reducer for local governments. Discussions will focus on the original design of the program, the changes

made to the program as a result of the first field test, and the future directions of the project.

OBCS Study	No	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No

#### ID NUMBER 378

Ferrey, S. 1986. "Financing Energy Efficiency in Public Housing: Innovative Regulatory Opportunities." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 4:52-64. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper reviews the important points of the recent change in energy regulations and introduces the reader to the complicated environment of public housing energy regulations. It reviews the energy saving potential in public housing, buildings, and appliances, and charts a six-phase implementation of the strategy, illustrating impacts on energy efficiency, cash flow, and funding allocations from the U.S. Department of Housing and Urban Development.

OBCS Study	No	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 380

Harris, J. P. 1986. "Energy Performance Contracting for Building Operation and Retrofit: Lessons from the French Experience." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper takes a closer look at the actual experience with heating service contractors in France, and suggests that there is a possible lesson for the United States. Of course, direct comparisons between France and the United States should be made with caution, considering the differences in institutional structure, building ownership patterns, and levels of building energy use and cost.

OBCS Study	Yes	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	No	International	Yes

#### ID NUMBER 393

Feldman, S., et al. 1986. "Residential Segmentation for Marketing Utility Programs: General or Specific." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 5:62-74. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - To assist electric utility managers in the design, implementation, and marketing of demand-side programs through improved understanding of customers, the Electric Power Research Institute is sponsoring development of a database on customer preferences and behavior. This study was designed to identify factors that could be used in the segmentation of a database, based upon the needs and benefits associated with the purchase and use of electric energy and appliances.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 383

Miller, R. M. 1986. "The Energy Efficient Mortgage: New Policies to Boost Bank Acceptance." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 4:108-118. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper describes the preliminary findings of a demonstration project the Alliance to Save Energy is conducting in Hartford, Connecticut to promote adoption of a mortgage financing option.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 0289

Oak Ridge National Laboratory. 1986. Single-family Building Retrofit Research Multi-year Plan. ORNL/CON-207, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 0263

Dinan, T. M. 1986. A Method for Analyzing the Market for Conservation Retrofit Technologies in the Commercial Sector. Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - The purpose of this report is to further the understanding of the decision process associated with conservation retrofit investments in the commercial sector. It includes a discussion on, 1) the stages involved in a decision to undertake conservation retrofit activities and the participants involved in such decisions, 2) decision criteria used by different organizations; the relative importance of individual, organizational, and environmental characteristics in motivating conservation behavior, and 3) the impact which the attributes of conservation investments might have on the decision outcome.



OBCS Study	Yes	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 0665

Alliance to Save Energy. 1986. Performance Contracting for Energy Efficient Improvements. Alliance to Save Energy, Washington, D.C.

Abstract - This is a workbook which focuses on the use and potential benefits of performance contracting in government buildings, schools, hospitals, etc. It explains the principle forms of performance contracting and outlines a recommended procedure for arranging a performance contract.

OBCS Study	No	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No

ID NUMBER 518

Freysinger, C. 1986. "Tapping the Federal Market: Prospects for Energy Services Contracting with Federal Agencies." In Proceedings of the Thirteenth Energy Technology Conference, 8:937-942. ISBN 0-86587-014-4, Government Institutes, Inc., Rockville, Maryland.

Abstract - The major features of federal energy savings legislation currently under consideration by the 99th Congress are outlined below. Following this discussion, some considerations are outlined for energy services contractors who intend to enter the federal market.

OBCS Study	No	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No

ID NUMBER 520

Boothe, T. 1986. "Third Party and Shared Savings Contracting in the Navy." In Proceedings of the Thirteenth Energy Technology Conference, 8:953-959. ISBN 0-86587-014-4, Government Institutes, Inc., Rockville, Maryland.

Abstract - The Navy continues to be interested in reducing shore facilities energy costs, and has many programs to do so. The Navy is starting to use third party and shared savings contracting to augment these programs. This paper summarizes the Navy's experience with these innovative programs.

OBCS Study	No	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No

ID NUMBER 519

Petrolati, V. P. 1986. "Third-Party/Shared Savings Initiatives at DOE's Government-Owned/Contractor-Operated Sites." In Proceedings of the Thirteenth Energy Technology Conference, 8:943-952. ISBN 0-86587-014-4, Government Institutes, Inc., Rockville, Maryland.

Abstract - To promote energy conservation at its government-owned contractor-operated (GOCO) facilities, the Department of Energy (DOE) implemented the In-house Energy Managements (IHEM) Program. Major elements of the IHEM program include energy audits, energy surveys, improved operations and maintenance procedures, building/process retrofit projects, improved new building design, central heating plant projects, and energy conservation awareness and training programs.

OBCS Study	Yes	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No

ID NUMBER 302

Hirst, E., et al. 1986. Energy Efficiency in Buildings. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This book provides a complete description of what progress has been made in energy conservation, and what has been learned about building energy efficiency. It also provides suggestions for research and program developments in the future.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 612

Keane & Co. 1986. Ed: A Marketer's View of the Rebate/Dipstick Test. Bonneville Power Administration, Portland, Oregon.

Abstract - This report is intended to augment Evaluation of the Elmhurst No-Audit Weatherization Program. It includes an overview of Keane & Co.'s involvement with the Elmhurst Mutual Rebate Program, an analysis of subsequent shifts in program results, comments on other program elements, and conclusions, including ideas for future program design and operation.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0154

Office of Building & Community Systems. 1985. Building Energy Retrofit Research: Multi-family Sector. Multi-year Plan, FY 1986-1991. DE86006321, National Technical Information Service, Springfield, Virginia.

Abstract - This report sets out a multi-year plan for research and development activities to accelerate, complement, and support private sector efforts to improve the energy efficiency of the existing multi-family housing stock. The plan was developed after an extensive review of ongoing and planned activities in the Department of Energy (DOE) and the private sector, and after consideration of the potential for improved energy efficiency of this building stock. The plan will be revised periodically as a result of changes in private sector activity and needs, as well as changes in planning assumptions.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0288

Lawrence Berkeley Laboratory. 1985. Building Energy Retrofit Research - Multi-family Sector Multi-year Plan. U.S. Department of Energy, Washington, D.C.

Abstract - This document sets out a multi-year plan for research and development activities to accelerate, complement, and support private sector efforts to improve the energy efficiency of the existing multi-family housing stock. It includes sections on, 1) sector characteristics and the importance of the multi-family sector, 2) private sector activity, 3) government activity, 4) barriers, 5) federal role, and 6) research programs.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 607

Wehking, K. 1985. Process Evaluation Bonneville Power Administration's Institutional Buildings Program. Bonneville Power Administration (BPA), Portland, Oregon.

Abstract - This process evaluation describes and analyzes how BPA's Institutional Building Program has been carried out and makes recommendations for program improvement. The evaluation is based upon interviews with program participants including BPA staff, state energy office staff, institutional representatives, architects, and engineers.

OBCS Study	No	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No

ID NUMBER 600

Nieves, L. A., and J. M. Fang. 1985. Literature Review on Energy Conservation in Non-residential Buildings. DE-AC06-76RLO 1830, Pacific Northwest Laboratory, Richland, Washington.

Abstract - Underlying the overall purpose of this review are several objectives, 1) to characterize the nonresidential building sector along dimensions that are important for marketing conservation in this sector, 2) to describe theories of business investment and innovation diffusion, 3) to compare results from previous surveys with propositions derived from theories of business investment decision making and the diffusion of innovations, 4) to develop testable hypotheses concerning conservation investment and the diffusion of conservation technologies, and 5) to assess the costs and risks of employing various data sources and data collection techniques.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 0258

Fang, J. M. 1985. Household Attitudes Toward Energy Conservation in the Pacific Northwest: Overview and Comparisons. PNL-5405, Pacific Northwest Laboratory, Richland, Washington.

Abstract - This report presents an overview of a baseline residential energy conservation study for the Pacific Northwest. It compares study results with data from other surveys to provide a better perspective for interpreting and using the study results. The focus of the study is conservation marketing and so it assesses the attitudes, perceptions, and past conservation actions of the region's residents and provides market segmentation.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 609

Keane & Co. 1985. Marketing the Bonneville Power Administration's Community Audit Programs: Interviews with Contractors & Staff. Bonneville Power Administration, Portland, Oregon.

Abstract - This report is based on opinions and reports of community audit program (CAP) contractors. It is a discussion of marketing issues raised in the involvement with the CAP. It contains a review of CAP's aims and design, a description of the marketing perspective, and a statement about the purposes of the program. It also includes a discussion of the potential for commercial audits and conservation, non-marketing issues, and recommendations.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

#### ID NUMBER 549

Temple, Barker, & Sloane, Inc. 1985. Market Analysis of Conservation Programs for Commercial Customers. Bonneville Power Administration, Portland, Oregon.

Abstract - This report presents a market analysis of conservation and load management programs in the commercial sector. The study's four objectives were as follows: 1) assess customers' interest in selected programs, 2) identify attitudes that motivate customer preferences among programs, 3) identify observable demographic characteristics that are linked to program preferences, and 4) evaluate the usefulness of attitudinal market research in program planning.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

#### ID NUMBER 551

Leland and Hobson. 1984. Commercial Occupancy Patterns. Bonneville Power Administration, Portland, Oregon.

Abstract - This study develops a preliminary information base that defines and segments the real estate market in a way that enables the Bonneville Power Administration (BPA) to make intelligent decisions with respect to effectively targeting the energy conservation marketing program.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

#### ID NUMBER 546

Merchant, P. D., and Dornbusch. 1984. Ownership Patterns Among Five Commercial Sectors in the Pacific N.W. Bonneville Power Administration, Portland, Oregon.

Abstract - This report focuses on ownership patterns in the Pacific Northwest, and how they relate to central decision making. The ownership types investigated are single establishments, chains, franchises, and leased departments. Five commercial sectors were split into ownership types and each of these is split into ownership patterns by state, by number of establishments, by sales, and by energy consumption.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 545

D. Dornbusch & Company, Inc. 1984. Centralized Decision-making Processes.  
David M. Dornbusch & Company, Inc. for Bonneville Power Administration,  
Portland, Oregon.

Abstract - This report contains an analysis of the centralized nature of decision making for energy conservation investments in companies operating multiple buildings in Bonneville's service area. The report identifies who the decision makers are and what decision-making process is used.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 435

Haun, C.R. 1984. "Seven Keys to Energy Conservation in Multi-family Buildings: Citizens Conservation Corporation's Approach to Energy Conservation in Multi-family Buildings Housing Low-income and Elderly Residents." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, C:53-67. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - Citizens Conservation Corporation (CCC) has sought to lessen the burden of high space heating costs on low-income apartment dwellers. A secondary purpose has been to design a model non-profit business that can be replicated by other governments, utilities, and organizations. To achieve these purposes, CCC has developed a multi-faceted approach to energy conservation, including building-specific audits, tenant participation, financing, construction supervision, energy savings guarantees, and fuel consumption monitoring.

DBCS Study	No	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

ID NUMBER 434

Haugen, S. E. 1984. "Minnesota's Energy Improvement Loan Insurance Program: Encouraging Private Lenders to Finance Energy Improvements in Single and Multi-family Rental Residences." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, C:40-52. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper will describe the Program and discuss how it may be used in cooperation with existing or proposed energy conservation programs. With a minimal amount of alterations, the Minnesota Energy Improvement Loan Insurance (EILI) Program could be adopted by other states to encourage private lenders to make funds available to owners of residential rental property to finance energy improvements.

OBCS Study	No	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 432

Fay, B. K. 1984. "Voluntary Rental Living Unit Program." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, C:18-29. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - The program's focus has been to persuade owners to qualify for the Seal and Certificate and to persuade renters to look for it. Owner acceptance has depended on the company's ability to "sell" the standard as a rational, only-saving tool for property management.

OBCS Study	No	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 433

Griffin, T., et al. 1984. "An Energy Management Service for Multi-family Rental Property in St. Paul, Minnesota." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, C:30-39. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper explains briefly how the Energy Resource Center was formed; how it is financed and administered; main elements of the business that include marketing, preliminary audits, underwriting the investments, detailed audits, Shared Savings Investment Analysis, general contracting, and final inspections; an example of a project; and summary and prospects.

OBCS Study	No	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 422

Gallagher, J. T., et al. 1984. "Pennsylvania Housing Stock and Energy Conservation Survey." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, B:73-93. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report contains the following information that was collected through the survey:

1. physical characteristics of single family housing stock, including all energy related features

2. energy use data for the statewide sample, and "before and after" energy use data for a sample of homes weatherized through the Department of Energy's Low-Income Weatherization Program
3. attitudes and opinions of homeowners and renters on a wide range of energy related issues
4. demographic characteristics of all households surveyed.

OBCS Study	No	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 494

Schick, H., and M. Michaelson. 1984. "Learning About Commercial Program Design Bonneville Power Administration's Purchase of Energy Savings." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, pp. 1202-1213. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - The Bonneville Power Administration is conducting a commercial buildings retrofit field test to examine the feasibility of stimulating conservation in the Pacific Northwest by making payments to a sponsor, such as an energy service company or equipment manufacturer, for energy savings which actually occur in a commercial building.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

#### ID NUMBER 504

Breed, D. P., and M. L. Michaelson. 1984. "Guidelines for the Public Sector: Implementing a Third-Party Financed Energy Services Transaction." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, L:4-15. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper provides an orderly approach to identifying and selecting among the many options available to a public entity for an energy service company. The paper begins by describing the factors a public entity will want to consider in making the initial decision whether to pursue third-party financing for energy efficiency projects.

OBCS Study	No	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	No	International	No



ID NUMBER 493

Mahany-Braithwait, S. 1984. "Michael: The Energy Mastermind." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, I:174-192. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper describes the nature of and lessons from a program undertaken by the Palo Alto Utilities Department to increase community energy savings by using an inter-active micro-computer, for gaining access to customer markets that have been difficult to reach. Two of these markets were the traditional "hard to reach" customer markets - residential customers and hardware stores.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 508

Fenster, L. 1984. "Financing Alternatives for Energy Management Retrofits." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, L:50-64. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This article concerns three general issues that should be carefully considered. First is the technical consideration. Can energy actually be saved by a specific package of energy management retrofits? Second is the economic or cost/benefit consideration. Can an adequate simple payback or return on investment be achieved with the retrofit package? The third issue is the source of capital funding. Should the owner fund the project with cash, debt, lease, or a less traditional method of financing such as shared savings?

OBCS Study	No	Commercial	No	Public	No
Residential	No	Industrial	Yes	International	No

ID NUMBER 475

Hirst, E. 1984. "Evaluation of Utility Home Energy Audit (RCS) Programs." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, G:28-40. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper reviews the findings of evaluations conducted in the Pacific Northwest, California, Wisconsin, Minnesota, Michigan, and Connecticut concerning the energy savings that can be attributed to these programs. The key feature of these evaluations is their reliance on actual fuel consumption records (electricity, natural gas, and fuel oil bills).

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 512

Shinn, R. A., and A. J. Rametta. 1984. "A Penny Saved is Half a Penny Earned: Pennsylvania's Third Party (Shared Savings) Financing Program for Energy Conservation." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, L:101-112. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper describes the practical experience gained by the State of Pennsylvania in developing and implementing a third party financing program for energy conservation, coal conversion, and cogeneration in public buildings operated by the state government. It reviews the origins of Pennsylvania's program and the process of energy management and budgeting in state buildings. It describes the procedures, criteria, evaluation, and results of ranking state facilities as potential candidates for a pilot program in shared savings.

OBCS Study	No	Commercial	Yes	Public	Yes
Residential	No	Industrial	No	International	No

#### ID NUMBER 507

Esteves, R. M. "The Utility as ESCO: Two Viewpoints." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, L:41-49. American Council for an Energy Efficient Economy, Washington, D.C.

Abstract - This report briefly examines why and under what conditions conservation is desirable for the utility company, and why it should seek to provide conservation services. The report concerns the various types of utility support normally available, both financial and non-financial, with special emphasis on the shared savings/energy service company concept.

OBCS Study	Yes	Commercial	No	Public	Yes
Residential	No	Industrial	Yes	International	No

#### ID NUMBER 511

Klepper, M. 1984. "Issues and Challenges for Third Party Financing: An Agenda for the Next Ten Years." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, L:88-100. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - In this report ten critical issues have been identified that will face the third-party financing industry during the next ten years. Each one is described and suggestions are made for a variety of steps that can be taken

within the next ten years to deal with each of these issues. A compilation of these suggested steps constitutes an agenda for the future of the energy services industry.

OBCS Study	No	Commercial	Yes	Public	Yes
Residential	No	Industrial	Yes	International	No

#### ID NUMBER 513

Weedall, M. 1984. "The Emerging Role of the Public Sector in Third-Party Finance." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, L:113-120. American Council for an Energy-Efficient Economy, Washington D.C.

Abstract - This paper explores what activities the local, state, and federal levels of government are likely to undertake over the next 5-10 years in the third-party finance of energy projects.

OBCS Study	No	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No

#### ID NUMBER 474

Wilk, R. R., and H. L. Wilhite. 1984. "Why Don't People Weatherize Their Homes?: An Ethnographic Solution." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, F:247-261. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - An analysis of energy decision making in 60 households reveals an anomaly in consumers' energy decision strategies. Few households have taken advantage of the low cost and high savings potential of weatherstripping and caulking, though many have spent thousands of dollars on other energy conserving investments that are expensive and have long payback periods.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 473

Vine, E. 1984. "Saving Energy the Easy Way: An Analysis of Thermostat Management." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, F:219-231. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - For this report, data was analyzed on self-reported winter and summer thermostat settings and control strategies that were collected in recent surveys by utility companies, and state and federal energy agencies. Several hypotheses were constructed to examine how thermostat behavior was related to conditions internal and external to the occupants: socioeconomic

characteristics of occupants, building characteristics, space conditioning fuel and system, climate, and energy audits. Also examined was thermostat management during the day and over time, and its relationship to energy use was analyzed.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 465

Fagerson, M. H. 1984. "Statistical Analysis of Lifestyle Factors in Heating Energy Use of New and Weatherized Minnesota Houses." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, F:93-105. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This study analyzes the relationships of building characteristics and occupant lifestyles to the heating energy use of each house, and to the variations in energy use by nominally identical houses. The results indicate that about one-third of the variation in heating energy use of nominally identical houses can be explained by the variables examined.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 492

Holt, E. A. 1984. "Public Investment in Commercial/Industrial Conservation: Some Approaches Considered by Seattle." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, I:101-113. American Council for an Energy Efficient Economy, Washington, D.C.

Abstract - This paper discusses several proposals for financing conservation investments in the commercial/industrial sectors. These proposals are contained in the following two basic concepts: 1) a public corporation that would sell tax-exempt revenue bonds, the proceeds of which would be loaned to building owners over long terms, and 2) a public/private partnership in which the municipal utility would provide incentives to the private energy services industry to secure higher levels of conservation investment than would otherwise occur.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	Yes	International	No

#### ID NUMBER 466

Hackett, B. 1984. "Energy Consumption and Energy Billing in Apartments." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, F:106-118. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper discusses the various possible meanings this experience may have for the way in which energy consumption is viewed or conceptualized. Also included is a Multiple Classification Analysis indicates the contributions of selected structural and social variables to energy use, as well as the seasonal variations in the nature and extent of these contributions.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 495

Keating, K. M., and C. B. Flynn. 1984. "Researching the Human Factor in Hood River: "Buildings Don't Use Energy, People Do"." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - While the technical aspects of the intensive research associated with the Hood River Project are well documented in other papers, this paper emphasizes the human, behavioral side of the research. The research team, motivated by a concern for the social impacts of the project, by an awareness of the role of human behavior in energy consumption, and by the central objective of the project, has put a strong emphasis on the study of the community and the household occupants. Seven such studies are briefly described in this paper.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 437

Nnathanson, I. 1984. "Financing Energy Improvements in Rental Housing: The Minneapolis Experience." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, C:83-94. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper examines a variety of financial barriers to improving the energy efficiency of rental housing including underwriting practices, security requirements, ownership structures, and credit costs. The paper looks at a comprehensive effort to overcome these barriers in Minneapolis, through a series of partnerships between a local housing agency, a group of lending institutions, and a public utility.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 483

Proctor, J. 1984. "Low Cost Furnace Efficiency Improvements." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, H:200-214. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report reveals that the potential energy savings of weatherization programs is vastly greater than the savings we have seen thus far. Furnace efficiency adjustments and modifications can bring these programs more in line with their potential. In this paper, furnace efficiency work on over 400 low income households is studied.

OBCS Study	No	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

ID NUMBER 464

Erickson, R. J. 1984. "Household Energy Use in Sweden and Minnesota: Individual Behavior in Cultural Context." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, F:80-92. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper concerns two questions, 1) to what degree Sweden's lower residential energy consumption can be explained by differences in Swedish and American "lifestyles" and 2) what are the respective socio-cultural forces which influence these individual decisions?

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	Yes

ID NUMBER 469

Kempton, W., and S. Krabacher. 1984. "Thermostat Management: Intensive Interviewing Used to Interpret Instrumentation Data." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, F:139-152. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper reports on an intensive analysis of a small number of houses in Michigan that have been chosen to cross-cut American families. Seven houses have been intensively monitored over a twelve-month period by electronic recorders. During this period, in-depth, open-ended interviewing has elicited daily behavior cycles, self-reported thermostat settings, and the rationale for thermostat management.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 479

Krumholz, N., and M. McDermott. 1984. "Poor People, Neighborhood Groups and Energy Conservation." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, H:63-75. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report indicates that insulation/weatherization programs to improve the efficiency of homes of lower income people offer a more promising way of reducing the impact of fuel prices, with more lasting benefits.

OBCS Study	Yes	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

ID NUMBER 485

Miller, C. 1984. "Maintenance After Energy Conservation: The Route to a Conservation Ethic." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, H:266-272. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - The Energy Conservation Fund (ECF) has worked with about 250 nonprofit agencies in the past 2-1/2 years, and has helped bring about half of these through the implementation of energy conservation improvements, and has also brought many more to a decision to proceed. ECF's experience indicates that, contrary to conventional belief, barriers to implementation are least often financial, although agencies usually cite "financing" as the reason for failing to go ahead. The real reasons are more likely a combination of institutional and emotional factors.

OBCS Study	No	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	No	International	No

ID NUMBER 486

Andrews, E. R. 1984. "Residential Weatherization Through Zero Interest Financing- the PG&E Experience." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, I:5-16. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper explores the major factors contributing to the success of Pacific Gas and Electricity's (PG&E) Zero Interest Program (ZIP): the foundation provided by PG&E's management commitment to the program, the cost savings achieved through a project financing mechanism, the activities of a contractor advisory committee, which help communication flow between the weatherization industry and PG&E, and the various consumer protection promotion activities that encourage the participation of specific target customers.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 462

Diamond, R. C. 1984. "Energy Use Among the Low-Income Elderly: A Closer Look." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, F52-66. American Council for a Energy-Efficient Economy, Washington, D.C.

Abstract - This report indicates that an investigation of energy use in a public housing project for the elderly continues to turn up unexpected findings regarding the importance of occupant behavior in actual energy consumption. A detailed examination of eighteen months of utility bills for each unit in the project shows a wide variation in both summer and winter.

OBCS Study	Yes	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

ID NUMBER 480

Wirtshafter, R. M., and M. D. Koved. 1984. "Utility Conservation Programs Designed to Improve Participation Rates Among Low-Income Customers." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, H:131-143. American Council for an Energy Efficient Economy, Washington, D.C.

Abstract - The research presented here examines the four following questions: 1) what is the extent of utility efforts to provide conservation incentives and opportunities to the target group 2) what approaches have the utilities chosen 3) which of these have been the most successful, and 4) is the success because of a cost greater than that of general utility conservation programs?

OBCS Study	No	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

ID NUMBER 444

Accomando, R. C., and G. L. Aden. 1984. "Energy Conservation and Property Management." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, D:5-15. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - What is presented in this report is how energy conservation is used in the property management industry (i.e., managing someone else's investments).

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No



ID NUMBER 496

Anderson, C. D. 1984. "Evaluation of Canada's Oil Substitution Program (COSP)." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, J:5-18. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - In October 1980 Canada launched a national "off-oil" program, called COSP, to lessen the dependency of its residential sector on oil-fired space heating. The goal was to convert two million residential units to another form of heat in the 1980-1990 period. Homeowners were offered a grant of \$800 towards conversion costs. How did this program perform over the 1980-1984 period? This paper presents national off-oil conversion statistics in relation to COSP program goals. It also describes the results of two major national consumer behavior surveys carried out to assess the role COSP played in the homeowners' decisions to convert off-oil. The results indicate that conversion rates are on target with program goals but that COSP, in a majority of cases, was not the decisive factor in precipitating homeowners' conversion actions.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	Yes

ID NUMBER 459

Archer, D., T. F. Pettigrew, M. Costanzo, and B. Iritani. 1984. "Energy Conservation and Public Policy: The Mediation of Individual Behavior." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, F:3-22. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report indicates that in studies that are done to influence individual behavior, it is frequently assumed, explicitly or not, that behavior is determined by individual attitudes and rational decision making. New survey data on energy conservation show that the attitude and rational theoretical models are severely flawed.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 617

Corrigan, M. B., and C. Grist. 1984. Commercial Energy Study - Hotel/Motel Survey. Oregon Department of Energy, Salem, Oregon.

Abstract - This report is part of support work for a computer model of the commercial sector, describing in detail how energy is used by various types of

commercial enterprises. This part provides specific information on the hotel/motel sector. Information was gathered by using surveys.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 548

Church/Davis and Columbia Research. 1984. Energy Conservation Opportunities in New Commercial Buildings. Bonneville Power Administration, Portland, Oregon.

Abstract - The purpose of this study was to determine the feasibility of incentive programs for energy conservation in new commercial buildings. It contains the following information: identification of key actors in the commercial building process, criteria for decisions regarding energy conservation, and estimated levels of participation in various incentive programs. Information was gathered using focus groups and telephone discussions with key actors.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 0262

RMH Research, Inc. 1984. Marketing Environment for Energy Conservation in the Pacific Northwest. Bonneville Power Administration (BPA), Portland, Oregon.

Abstract - The purpose of this report was to provide Pacific Northwest Laboratory (PNL) and BPA with factual information on the mood and thinking of Pacific Northwest residents, and with a recommendation for marketing cost-effective conservation measures.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 618

Corrigan, M. B., C. Grist, and T. Wilson. 1984. Commercial Energy Study - Restaurant Survey. Oregon Department of Energy, Salem, Oregon.

Abstract - This report contains support work for a computer model of the commercial sector, describing in detail how energy is used by various types of commercial enterprises. This section provides specific information that explains variations in energy use among restaurants. The information was gathered by using surveys.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

#### ID NUMBER 598

Temple, Barler, and Sloan Inc. 1984. The Commercial Sector and Conservation Investment Decisions: Experiences and Motivations a Literature Review. Bonneville Power Administration, Portland, Oregon.

Abstract - This report reviews the literature that is relevant to conservation and load management in the commercial sector, with particular emphasis on customer decision making. The review is designed to assist electric utilities in designing and marketing conservation and load-management programs.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

#### ID NUMBER 597

Madsen, M., and J. Johansen. 1984. "Better Homes and Gardens Inquiry on Housing." Better Homes and Gardens.

Abstract - This report contains results of a questionnaire exploring attitudes, issues, and trends related to the housing industry. In addition to the actual data, this volume contains a demographic profile of the consumer panel respondents, information on the methodology, and an analysis of the response.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 0128

Tcohey, W. J. 1984. "Saving Energy in Commercial Buildings." In Proceedings of the Eleventh Energy Technology Conference, pp. 358-363. ISBN 0-86587-012-8, Government Institutes, Inc., Rockville, Maryland.

Abstract - This article describes in detail a recent experience in which an existing commercial office building underwent changes in both ownership and management.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 0028

Ferrey, S., and J. Gordon. 1984. Filling the Cracks in Federal Weatherization: The Implications of Conflicting Policy Objectives, pp. 453-461. ISBN 0-918249-01-5, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This study indicates that the only program which addresses the energy conservation needs of the poor is the federal Weatherization Assistance Program (WAP). However, WAP has not been as effective as it might have been because of poor administration and a general lack of focus. Once adjustments are made, WAP is potentially the single most important and effective energy initiative for low-income persons.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0027

Naismith, N. C. 1984. Building Energy on Equity: Back to the Drawing Board, pp. 445-452. ISBN 0-918249-01-5, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report confirms that the problem of achieving building energy conservation while meeting the special needs of the poor continue to plague policymakers. Some mechanisms have not worked well, if at all; individual metering, RCS, lifeline utility rates, and tax incentives. Some examples of effective local organization are presented. This paper is offered in the hope of broadening discussion on this topic as new policy is considered.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0026

Kempton, W., C. K. Harris, J. G. Keith, and J. S. Wehl. 1984. Do Consumers Know "What Works" in Energy Conservation, pp. 429-438. ISBN 0-918249-01-5, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper divides energy conservation into the following three types: efficiency investments, management, and curtailment. When asked how they could save energy, consumers mentioned management and curtailment measures more frequently than they mentioned efficiency investments. Consumers' estimates of savings are not strongly related to the actual savings potential of homes, but seem to be determined more by social or attitudinal factors.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0005

Morgan, S. J. 1984. Sharing Savings in Multifamily Housing: The Incentive Divided, pp. 151-160. ISBN 0-918249-01-5, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report shows that a new approach to sharing savings and incentives between landlord and tenant has been attempted. In this design, the bank finances the energy conservation improvements and deducts from an account that holds the landlord's payments, equal to his normal energy expenditures. The funds in this escrow account are mailed to tenants two or three times per year during the coldest months, as an incentive for continued energy-savings behavior. A guarantor (e.g. bonds or grants) is backup for any costs the bank may have suffered.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 615

McClure Research Company. 1983. Accessing Commercial/Industrial Accounts Through Direct Mail. Seattle City Light, Seattle, Washington.

Abstract - This report presents evaluation and planning information concerning the following: 1) who receives direct mail pieces, 2) whether the recipient reads or passes along direct mail pieces, 3) who has the authority to make conservation-related decisions, and 4) whether the recipient is also the person who opens the Seattle City Light billings.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	Yes	International	No

ID NUMBER 625

Klepper, M., and M. Michaelson. 1983. Evaluation of Financial Incentive Programs for Energy Conservation Measures in Commercial Buildings. Bonneville Power Administration, Portland, Oregon.

Abstract - This report summarizes the analysis used to identify, evaluate, and recommend energy conservation incentive programs, which would stimulate energy conservation in the commercial and industrial building sectors. This report was prepared for the Bonneville Power Administration.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 556

McClure Research Company. 1983. Conservation-Related Decision-Making in the Commercial/Industrial Segments. Seattle City Light, Seattle, Washington.

Abstract - This report presents details concerning the organizational levels at which Seattle City Light's bills/program/promotional materials are received and opened, and where the ultimate decision to act is made. It represents a "level from - level to" within organizations.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	Yes	International	No

ID NUMBER 616

Corrigan, M. B., and T. Wilson. 1983. Commercial Energy Study - Grocery Store Survey. Oregon Department of Energy, Salem, Oregon.

Abstract - This report contains support work for a computer model of the commercial sector, and describes in detail how energy is used by various types of commercial enterprises. The report provides the results of a survey to gain information explaining variations in energy use between firms and to get a database for the forecasting model.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 0295

Lipshutz, R. D., R. C. Diamond, and R. C. Sonderegger. 1983. Some Technical and Behavioral Aspects of Energy Use in a High-Rise Apartment Building. DE84 002907, Lawrence Berkeley Laboratory, Berkeley, California.

Abstract - This research was conducted to understand how energy is used in a large residential building located in a mild climate. The goals were as follows: to determine which of several techniques and behavioral factors affect electricity consumption and space heating; to discover the relative significance of each factor; and to understand how energy was being used in the building in order to recommend conservation measures.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 322

Brown, M. A., and S. M. Macey. 1983. Understanding Residential Energy Conservation Through Attitudes and Beliefs. Environment and Planning. 15:405-416.

Abstract - In this report the role of beliefs, attitudes, social influence, and intentions as predictors of residential energy conservation behavior is explored in the context of Fishbein and Ajzen's theory of reasoned action. Empirical analysis of survey data from Decatur, Illinois provides support for the theory and insight into barriers to energy conservation.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 560

Klepper, M., D. Smith, J. Sherman, and M. Carroll. 1982. Innovative Financing for Energy Efficiency Improvements Phase II Report. Bonneville Power Administration, Portland, Oregon.

Abstract - This Phase II report includes model documents, a commentary on the model documents, and financial projections necessary to complete energy efficiency financing transactions for a shared savings program and a leasing program. The report also describes efforts to evaluate the legal and financial feasibility of a utility diversifying its business by establishing an energy service company.

OBCS Study	No	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	Yes	International	No

ID NUMBER 561

Klepper, M., D. Smith, J. Sherman, and M. Carroll. 1982. Innovative Financing for Energy Efficiency Improvements Phase I Report. Bonneville Power Administration, Portland, Oregon.

Abstract - The Phase I report identifies legal, financial, institutional, and behavioral factors that must be considered in evaluating the feasibility of the following six financing options: leasing, bank financing, utility assisted financing, tax-exempt financing, financing by an energy service company, and joint venture financing. The report assesses the advantages and disadvantages of using each of these financing methods for each building sector. It identifies criteria which must be met before an energy conservation investment will be made by a commercial building owner, an industrial building owner, or a multi-family building owner.

OBCS Study	No	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	Yes	International	No

ID NUMBER 566

Pacific Northwest Laboratory. 1981. Criteria for Building Owners to Invest in Energy Conservation Measures for Their Buildings. B-99678-A-Y, Applied Management Sciences, Inc., Silver Springs, Maryland.

Abstract - The purpose of this study is to 1) identify the decision making process and the criteria used by owners and operators of commercial and multi-family residential buildings when investing in energy conservation, and 2) assess building owners' perceptions of existing and proposed policy alternatives designed to promote higher levels of investment in conservation.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 568

Better Homes and Gardens. 1979. "Inquiry: A Study on Home Remodeling/Home Maintenance from the Better Homes and Gardens Panel." Better Homes and Gardens, New York, New York.

Abstract - This article contains responses to a questionnaire that was developed to explore the attitudes and buying habits among consumers who have done or plan to do home remodeling or home maintenance. In addition to the actual data, this article contains a demographic profile of the consumer panel respondents, information on the panel methodology, an analysis of the response, and a section of consumer comments.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 550

Cordon, F., B. Evans, W. Davis, and B. Bayley. Market Analysis for Energy Conservation in New Commercial Buildings. Bonneville Power Administration, Portland, Oregon.

Abstract - This paper describes a study of the market of electric energy conservation in the construction of new commercial buildings in the Pacific Northwest. It consists of 1) a qualitative analysis of the factors and players influencing the electric energy efficiency of new commercial buildings 2) an assessment of the needs, attitudes, and willingness to invest (between developers and design professionals) in energy conservation, and 3) a quantitative model, which forecasts potential program penetration and associated electric energy savings for various conservation program types and incentive levels.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No



## 6.0 DISTRICT HEATING AND COOLING

### ID NUMBER 0143

Communication Services - Electric Power Research Institute. 1984. "Renewed Interest in District Heating and Cooling." EPRI Journal. pp. 33-38.

Abstract - In this report a National Academy of Sciences symposium looks at international experience to assess the feasibility of district heating systems for cities in the United States.

OBCS Study	No	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	Yes

### ID NUMBER 590

Public Technology, Inc. 1984. Renovation Opportunities for Steam District Heating Systems: A Decision Process in San Francisco. DG/83-313 12/83-100, Publications and Distribution, Public Technology, Inc., Washington, D.C.

Abstract - This project develops a procedure by which local governments can examine old steam-based systems and by which they can identify and evaluate renovation opportunities for improving system performance. The procedure has been applied to two district heating systems in San Francisco. It encompasses six phases: general planning, information acquisition, problem identification, solution identification, investment evaluation, and financial analysis.

OBCS Study	No	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No

### ID NUMBER 0290

Bergman, M. K., and L. Bruneel. 1985. A Statement of Priorities in District Heating and Cooling/Community Energy Systems. National Coordinating Group on DHC.

Abstract - This report 1) establishes the short- and long-range public energy, economic and environmental benefits of district heating and cooling/community energy systems (DHC/CES), 2) stimulates active consideration of these systems, 3) describes the DHC/CES industry, 4) provides consensus on the priorities the industry should have, 5) encourages development of improved techniques in energy systems, 6) urges Congress to provide appropriate legislative actions for DHC/CES, and 6) identifies important possible research areas.

OBCS Study	Yes	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No



## 7.0 COMMUNITY ENERGY SYSTEMS

### ID NUMBER 0645

Argonne National Laboratory. IN-PROGRESS. "Community Energy Demand Reduction Programs." Argonne National Laboratory, Argonne, Illinois.

Abstract - The objectives of this study are to (1) ascertain local energy activities that have occurred following completion of energy plans, and (2) investigate community energy awareness, public and private leadership involvement, and integration with other community objectives.

OBCS Study	Yes	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No

### ID NUMBER 0077

Burt, B. J., and M. Nelman. 1987. "Support for Local Government Regulation to Support Solar Energy." In Energy Efficiency: Perspectives on Individual Behavior, pp. 151-170. ISBN 0-918249-05-8, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report indicates that local governments are in a better position to tailor energy policies to the local climate, terrain, geology, and economic base.

OBCS Study	No	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

### ID NUMBER 484

Hunter, Y. L. 1984. "A Profile of Local Government Energy Activities: Trends, Observations, and Implications For the Future." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, H:254-265. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper discusses the status of energy management activities in California cities and counties. It explores factors that stimulate or constrain local government energy management programs, including improvements in energy efficiency in government buildings, regulatory activities, and community outreach education programs.

OBCS Study	No	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	No	International	No

ID NUMBER 4B1

Brunmitt, M. D. 1984. "Marketing a Conservation Program through Grassroots Organizing: Neighborhood Energy Workshop Program in Minneapolis." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, H:144-163. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report describes the Neighborhood Energy Workshop Program. It is described as a comprehensive, cost-effective, neighborhood-oriented energy conservation program that is co-sponsored by the City of Minneapolis and the local gas utility (Minnegasco). The program is implemented by city staff who identify and train volunteer block captains to invite their neighbors to the energy workshops.

OBSC Study	No	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

## 8.0 ADVANCED HVAC SYSTEMS

ID NUMBER 0647

Cantor, R. 1987. Consumer Choice Analysis: Replacement Furnace Purchases.  
Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - The objectives of this project are (1) to determine homeowners' decision criteria for choosing the efficiency levels of replacement gas furnaces, (2) to determine whether consumers using different decision criteria have different socioeconomic characteristics, (3) to estimate the discount rate associated with replacement furnace purchases, (4) to determine whether consumers notice efficiency ratings on furnace equipment, (5) to investigate their perceptions concerning the accuracy of efficiency ratings, and (6) to examine their perceptions of the resale value of furnaces.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0072

Ruderman, H., M. Levine, and J. McMahan. 1987. "Energy-Efficiency Choice in the Purchase of Residential Appliances." In Energy Efficiency: Perspectives on Individual Behavior, pp.41-50. ISBN 0-918249-05-8, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report contains a quantitative analysis of the behavior of the market for the purchase of energy efficiency in residential appliances and heating and cooling equipment. The results of the investigation of market behavior can lead to a better understanding of the barriers to investment in energy conservation. This report examines the historical efficiency choices for eight consumer products: gas central space heaters, oil central space heaters, room air conditioners, central air conditioners, electric water heaters, gas water heaters, refrigerators, and freezers.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0084

American Gas Association. 1986. Conservation in the Residential Gas Space-Heating Market: 1986 Update EA 1986-13. American Gas Association, Planning and Analysis Group, Arlington, West Virginia.

Abstract - This analysis continues the series of studies to determine the residential consumer's response to price changes in the space heating market, i.e., price elasticity. The purpose of this update is to determine the level of conservation that has occurred since 1972 through the 1985-86 heating season.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 397

Kunka, J. 1986. "The Technical Promotional Interface in Marketing Energy Efficiency: "Springfield Sells Heat Pumps"." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 5:114-125. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - Two components are vital to a successful energy efficiency program: 1) the technologies must be sound and carefully applied; 2) the program must be sold. The experience of SCWLP demonstrates how technical and promotional components can be developed to reinforce one another to create remarkable success. The success is attributed to the interface between technical and promotional approaches within all program components.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 418

Feldman, S.C.T. Finkbeiner, J. A. Berrigan, and L. Lewis. 1986. "A Utility Program by Any Other Name...the Perceptual Space for Considering Participation." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 10:190-195. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report is on how sixty-four residential electrical utility customers rated each of sixteen space heating and cooling technologies on twelve different attributes. This was part of a pilot research for a national area probability survey of customer preference and behavior, sponsored by the Electric Power Research Institute.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0206

Harris, L., S. Katsenelenbogen, H. Bernstein, and J. Bluestein. 1986. Status of the Space-Cooling Equipment Market in the Commercial Sector PB-B6-222809-XAB. National Technical Information Service, Springfield, Virginia.

Abstract - The report covers the cooling equipment market for commercial applications as characterized by a data base on shipments, highlighting activities in the absorption chiller market, and predicting scenarios for future equipment shipments. An analysis of unitary air-conditioning equipment and commercial liquid chillers was performed to determine the population of domestically shipped equipment by type and capacity. A review identified marketing techniques used to enhance absorption liquid chiller sales. Cooling-market projections were made to forecast the future sales trends of commercial air-conditioning equipment.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 0674

Carson, M. S. 1986. A Ten Year Trend Study of Consumer Attitudes Toward the Natural Gas Industry. American Gas Association, Arlington, Virginia.

Abstract - This ten year study has been prepared to summarize the major findings, which could be tracked from 1975 through 1985 from the Consumer Attitude Studies.

The purpose of this report is to show, by a graph analysis, trends that have been identified from the biennial reports. This report is not all inclusive, because the majority of the questions asked each year are not identical and cannot be trended.

The major trends listed in this study are:

1. the public climate
2. attitudes on treatment of customers
3. communications
4. usage of natural gas - market share
5. images of the gas utility.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID Number 0279

American Council for an Energy-Efficient Economy (ACEEE). 1986. Federal R&D on Energy Efficiency: A \$50 Billion Contribution to the U.S. Economy  
Part B: Case Studies of R&D on Energy Efficiency in the Building Sector.  
American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This section of the report recounts the development of seven energy conservation technologies in lighting, windows, and appliances. In hastening the commercialization of these technologies by 2 to 5 years, federal conservation research and development will save United States consumers \$68 billion over the next 25 years.

OBCS Study	Yes	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	Yes	International	Yes

ID NUMBER 0054

Hickman, K. E. 1985. "The HVAC Equipment Market: Considerations for Electric Utilities." In Proceedings of Buildings and Their Energy Systems - Technology & Planning Strategies, 6:1-20. EPRI EA/EM-4197, Electric Power Research Institute, Research Reports Center, Palo Alto, California.

Abstract - Recent concerns about load management are causing a number of electric utilities to intervene in the market for heating, ventilating, and air conditioning (HVAC) equipment. Their objective is to encourage the installation of higher efficiency cooling and heat pump units in residential and commercial applications. This paper reviews the nature and size of the HVAC market from the manufacturer's perspective. The impacts of state minimum efficiency legislation and utility rebate/incentive programs are discussed. Recommendations for structuring rebate programs are outlined. Finally, a number of HVAC technology improvements which may affect utility loads are surveyed.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0085

American Gas Association. 1985. Gas Househeating Survey. American Gas Association, Arlington, Virginia.

Abstract - This is the 38th annual househeating survey, which includes company-specific data on housed heating customers, conversions, and competitive fuel prices for over 140 gas companies. While conversions from oil to gas make up the majority of switching in the residential market, the share of conversions from electricity to gas has grown significantly since 1981 and has now reached 14% of total conversion.



OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0086

American Gas Association. 1985. Commercial Gas Market Survey. American Gas Association, Arlington, Virginia.

Abstract - This report, the 6th annual survey of the commercial market, includes regional data on commercial customers by standard industrial classification codes, conversions to gas, and dual-fuel capability. The results for 1985 confirm a consistent pattern in the commercial market with space heating constituting two-thirds of total end-use consumption and dual-fuel capability available to about one-fifth of all commercial customers.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 0268

Cambridge Systematics, Inc. 1984. Household Appliance Choice: Revision of REEPS Behavioral Models. EA-3409, Electric Power Research Institute (EPRI), Palo Alto, California.

Abstract - This report describes an analysis of household decisions to install space heating, central cooling, and water heating in new housing as well as decisions to own freezers and second refrigerators. The empirical models used in this analysis were the multinomial logit and its generalization, the nested logit. The choice model parameters were estimated statistically on national and regional survey data. The results show that capital and operating costs are significant determinants of appliance market penetrations, and the relative magnitudes of the cost coefficients imply discount rates ranging from 3.4% to 21%. Several tests were conducted to examine the temporal and geographical stability of the key parameters. The estimated parameters have been incorporated into the REEPS computer code.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0102

Gas Research Institute. 1982. Commercialization of a Pulse Combustion Furnace with Ultra-High Efficiency. PB82-243809, Gas Research Institute, Chicago, Illinois.

Abstract - This paper reports on the field test of the pulse combustion furnace, performed in conjunction with Lennox Industries. The field test indicated that pulse combustion technology has potential application in residential forced warm air furnaces and marked the end of Lennox's affiliation with the

project. Based on the field test data, Lennox decided to continue the development of and proceed towards commercialization of the pulse combustion furnace. The field tests identified additional problems that needed to be addressed, and so the project is being continued to advance pulse combustion technology.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0267

Kastovich, J. C., R. R. Lawrence, R. R. Hoffman, and C. Pavlak. 1982.  
Advanced Electric Heat Pump Market and Business Analysis.  
 ORNL/SUB/79-24712/1, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - As part of a Department of Energy contract to the Westinghouse Electric Corporation, the Heating and Cooling Business Unit (with the assistance of Marketing/Management Studies) undertook a marketing and business analysis of the Advanced Electric Heat Pump, i.e., a heat pump with an annual energy efficiency at least 20% better than the most efficient unit available in the marketplace in 1979. This study consisted of the following subtasks:

1. market study of currently available heat pumps - Using secondary research sources, the market position of currently available heat pumps was established.
2. marketability analysis for advanced electric heat pumps - Primary research techniques (personal interviews, mail, and telephone surveys) were used to assess the market potential of an advanced electric heat pump.
3. sales forecast for advanced electric heat pumps through 1990 - Using the findings of the above, a proprietary computer-based model was revised to project advanced electric heat pump unit sales volume.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 596

American Gas Association. 1981. Development of Marketing Support Recommendations for High Efficiency Gas Heating Equipment. American Gas Association, Arlington, Virginia.

Abstract - In order to take advantage of the opportunities for commercialization of improved gas heating equipment during the 1980s, the American Gas Association's Marketing Action Committee commissioned a study to develop a marketing support plan for high efficiency furnaces (HEF). The assignment was designed to address the marketing support requirements for HEFs (those

with seasonal efficiencies of 85+%) in two time periods: the near-term (1981-1985), and the long-term (1986-1990). Primary attention was to be focused on HEF equipment expected to be ready for market introduction by the end of 1982, and on the near-term support requirements.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0104

Research Planning Association, Inc. 1980. Market Penetration and Associated Benefits of Improved Gas Furnaces. PB80-216336, National Technical Information Service, Washington, D.C.

Abstract - The Gas Research Institute (GRI) is sponsoring the research and development (R&D) of advanced, highly energy-efficient gas space conditioning equipment. To evaluate the contribution of its R&D program to national energy conservation, GRI engaged Resource Planning Association, Inc. to determine the likely market for GRI's improved equipment, and to calculate the savings (for consumers and the nation) that will result from the development and market acceptance of the equipment. To perform this evaluation, a methodology was developed that simulates the way in which the residential space-conditioning market will assess the trade-off between higher capital cost and higher system efficiency that the new equipment offers.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0167

Ruderman, H., M. Levine, and J. McMahon. No Date. The Behavior of the Market for Energy Efficiency in the Purchase of Appliances and Home Heating and Cooling Equipment. LBL-15304, Lawrence Berkeley Laboratory, Berkeley, California.

Abstract - This paper provides a quantitative analysis of the behavior of the market for the purchase of energy efficiency in residential appliances including heating and cooling equipment. We examine the historical efficiency choices during the period 1972-1980 for eight consumer products. We characterize the behavior of the market for these products by an aggregate market discount rate and by a simple payback period. The major finding of this study is that the overall market discount rates for major household appliances are high. Except for air conditioners, which show a discount rate of about 20%, they range from 40% for gas furnaces to over 800% for gas water heaters. The market discount rates and payback periods appear to be relatively constant over the time period, even though fuel prices escalated rapidly during this time. We conclude from these results that the market for energy efficiency is not performing well.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0101

American Gas Association. No Date. Marketing Plan for the Multi-Family Gas Market. American Gas Association, Arlington, Virginia.

Abstract - This marketing plan was developed in response to a growing interest within the gas industry in marketing gas to the multi-family housing sector. The plan explores the market and its characteristics and attitudes affecting the energy decisions in the multi-family market. The plan also looks at the opportunities and problems for the gas industry, and recommends some broad strategies which will help to take advantage of the opportunities or solve the problems. Finally, the plan outlines some specific programs which should be undertaken by various gas industry participants to fulfill the strategies. Not all of the recommendations in this plan will be applicable to all gas utilities, but overall, the plan is designed to improve the national gas industry's multi-family market share.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID Number 0095

American Gas Association. No Date. Meeting the Electric Heat Pump Competition in Commercial Buildings. S60088, American Gas Association, Arlington, Virginia.

Abstract - This is a marketing reference manual to help the gas industry sales person understand and compete with sales of the electric heat pump in commercial markets. This illustrated manual discusses the advantages and disadvantages of gas use compared with the use of the electric heat pump. Effective marketing ideas and techniques are presented.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID Number 0099

American Gas Association. No Date. Development of Marketing Support Recommendations for High-Efficiency Gas Heating Equipment. S00791, American Gas Association, Arlington, Virginia.

Abstract - This report addresses the marketing support requirements for high-efficiency gas furnaces in two time periods: 1981-1985 and 1986-1990. The report covers the views of heating, ventilating, and air conditioning manufacturers on product development, high-efficiency equipment, key

industry/market traits, requirements for high-efficiency heating equipment, and recommended gas industry marketing support strategies and programs.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No



## 9.0 ADVANCED WATER HEATERS

ID NUMBER 0672

Ivey, D. L., and S. A. Smith. 1987. The Role of Market Research in the Commercialization of Technology. Pacific Northwest Laboratory, Richland, Washington.

Abstract - Residential consumers are often the decision makers in replacement or retrofit investment decisions. Consequently it is important for the Office of Buildings and Community Systems to understand the residential consumer market to prevent costly research and development errors, and to enhance technology transfer/commercialization efforts.

The objective of this report is to provide information on available empirical work that describes criteria used by the residential consumer market in selecting energy-related products. Several case studies are presented that illustrate the importance of conducting systematic market research in the early stages of the technology-development process, and one particular case study involves the heat pump water heater.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0079

Kempton, W. 1987. "Residential Hot Water: A Behaviorally-Driven System." In Energy Efficiency: Perspectives on Individual Behavior, pp. 229-244. ISBN 0-918249-05-8, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report indicates that the water heater is viewed as an intermediate conversion device, and hot water taps are viewed as the energy-consuming appliances. Hot water energy consumption is behaviorally driven by water use events ranging from a few seconds to over 20 minutes, and from less than .10 liter to 100 liters in volume. These water-use events should be examined, including the needs they serve, and the efficiency of the system in meeting those needs.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 605

Columbia Information Systems. 1986. Solar and Heat Pump Water Heater Program. Bonneville Power Administration, Portland, Oregon.

Abstract - This report examines the solar and heat pump water heater markets test program after two years of operation. The objectives of the test are to

1) test the effectiveness of incentives and product promotion and their effects on participation actions, 2) test a reduced requirements and streamlined program approach, 3) monitor system costs and energy savings, 4) develop capability to acquire megawatt targets.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 329

Gehring, K. C. 1986. "The Evolution of Ventilating Heat Pump Water Heater." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 1:62-75. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This report discusses ultra tight housing, which requires controlled ventilation. This requirement led to the development of incorporated heat recovery from exhaust air from the house by using water heating, space heating, and space cooling. These systems are of two styles:

1. a simple one-direction air flow system--exhaust in the winter and intake in the summer
2. a semi-balanced air flow system with open vented combustion devices.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 333

Gladhart, P. M., and J. S. Wehl. 1986. "Monitored Hot Water Use: A Seasonal Analysis." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper extends Kempton's initial analysis by using a more complete set of data obtained from the same houses. Hot water demand is desegregated into individual hot water use events and is measured for time of occurrence, duration, volume, and place of demand.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 326

Bosma, G. J. 1986. "A Realistic Approach to High Efficiency Gas, Water, and Space Heating." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 1:19-30. American Council for an Energy-Efficient Economy, Washington, D.C.



Abstract - This report reveals that for years the usual method of providing gas water heating and space heating for the typical American household has remained relatively unchanged. The domestic water heater has provided the hot water, and a separate warm air furnace or boiler has provided the space-heating requirements; two separate appliances were performing two similar but separate functions.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0166

Vine, E., and R. Diamond. 1986. "Analysis of Occupant Behavior and Energy and Hot Water Consumption in Public Housing." In FY 1985 Annual Report - Energy Analysis Program, pp. 5.30-5.33. LBL-20205, Lawrence Berkeley Laboratory, Berkeley, California.

Abstract - The principal objective of this research has been to understand how energy is used in public housing by analyzing 1) baseline energy use, 2) energy conservation retrofits, and 3) tenant behavior.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 576

Morten, Cole, and Webster. 1986. Survey of Water Heater Manufacturers. Bonneville Power Administration, Portland, Oregon.

Abstract - This report provides a detailed profile of seven companies manufacturing heat pump water heaters, eight previous heat pump water heater manufacturers, and nine manufacturers of other types of water heating products.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0203

Vine, E., R. Diamond, and R. Sydlowski. 1986. Domestic Hot Water Consumption in Four Low-income Apartment Buildings. DE86015139, National Technical Information Service, Springfield, Virginia.

Abstract - This report indicates that domestic hot water consumption is a major source of energy use in multi-family buildings. In contrast to space heating energy consumption, in which behavioral factors compete with the effect of climate; domestic hot water consumption is highly dependent on behavior.

Consequently, knowledge of usage patterns is useful in understanding domestic hot water consumption, whether for calculating baseline usage or for estimating retrofit performance.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 601

Hirst, E., et al. 1986. Determinants of Electric Use for Residential Water Heating: Hood River Conservation Project. Bonneville Power Administration, Portland, Oregon.

Abstract - This paper analyzes the determining factors in the use of electricity for heating water. The analysis is done by using end-use load data and detailed home interview responses.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 608

Columbia Information Systems. 1986. Retailer Report Solar/Heat Pump Water Heater Program Evaluation. Bonneville Power Administration, Portland, Oregon.

Abstract - This report analyzes and presents the results of interviews with solar and heat pump water heater dealers who service the eleven utility areas participating in the program. The objectives were as follows: 1) develop a profile of dealers offering solar and heat pump water heaters within the test area, 2) identify the types of systems and their costs available to consumers in the area, 3) determine sales and promotional techniques used, and 4) determine the retailers' reaction to utility policies and programs.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

#### ID NUMBER 0246

Franke, J. C., et al. 1985. Case Study of the Research and Development and Commercialization of Two Energy-Efficient Appliances. Pacific Northwest Laboratory, Richland, Washington.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 565

Columbia Research Center. 1985. Solar and Heat Pump Water Heater Market Tests: Results at Nine Months. Bonneville Power Administration, Portland, Oregon.

Abstract - This report examines the solar and heat pump water heater market test program after nine months of operation. The goals of the evaluation are 1) to test the effectiveness of advertising promotion versus direct incentives, 2) to identify factors which cause one strategy to be more effective than another, and 3) to describe the strengths and weaknesses of various approaches to implementing the strategies.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0041

Gilbert Associates, Inc. 1985. Electric Water Heating for Single-Family Residences: Group Load Research and Analysis, EPRI EA-4006. Electric Power Research Institute, Research Reports Center, Palo Alto, California.

Abstract - This survey and analysis of hot water flow and individual water heater loads in 110 homes represents one of the first nationwide studies of hot water consumption in single-family residences. The data base and methodology established to obtain the data, in addition to the discussion of research problems encountered, will help utilities to tailor market research to their own service areas.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 558

McCutcheon, L., and W. Wilcox. 1984. A Survey of Water Heater Dealers to Seattle City Light's Water Heater Rebate Program. NO 722B-R2, Seattle City Light, Seattle, Washington.

Abstract - The purposes of this study were to investigate changes in dealer perceptions of Seattle City Light's Rebate Program, and to assess dealer attitudes, the effectiveness of informational/promotional support, and the mechanics of dealer-customer sales interactions. In this analysis, comparisons with results from an earlier study are made when appropriate.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 468

Kempton, W. 1984. Residential Hot Water: A Behaviorally-driven System. In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, F127-F138. American Council for an Energy Efficient Economy, Washington, D.C.

Abstract - Residential water use was intensively studied in seven houses, using automatic recorders and open-ended interviewing. The recorders logged water volume, fuel use, and temperatures at the water tank and at each hot water tap. From these measures, heat sent from the tank and heat received at the tap were computed. Time resolution on the instruments was one minute, which allows examination of behavior during individual water use events.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 614

Carrington, J., et al. 1984. Marketing Strategy Report for Heat Recovery for Water Heating in Restaurants. Oregon Department of Energy (ODOE), Salem, Oregon.

Abstract - This report summarizes the findings of the marketing research and proposed marketing strategies for restaurant heat recovery. All factors considered, the amount of waste heat recovery in restaurants was determined 1) to provide significant cost savings for restaurant operators, and 2) to provide conservation progress for ODOE.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 0269

Cambridge Systematics, Inc. 1984. Household Appliance Choice: Revision of REEPS Behavioral Models. EA-3409, Electric Power Research Institute, Palo Alto, California.

Abstract - This report describes the analysis of household decisions to install space heating, central cooling, and water heating in new housing, as well as decisions to own freezers and second refrigerators. This analysis is part of the enhancements to the Residential End-Use Energy Planning System.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0142

Electric Power Research Institute, Communication Services. 1984. "Pumping Heat into Cold Water." EPRI Journal. pp. 16-21.

Abstract - High efficiency is the reason for adapting heat pump technology for domestic water heating. With almost 20,000 units now in service, the heat pump water heater is coming on strong as an end-use conservation option.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0020

Connor, L. T. 1984. Institutional Approaches to Providing Systematic Quality Control for the Realization of Expected Energy Savings, pp. 340-352. ISBN 0-918249-01-5, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - In this report, experiences with the major mechanisms now available for addressing quality control are analyzed. Mechanisms addressed are 1) equipment standards, testing, rating, certification and labeling; 2) installer licensing or certification; 3) building codes; 4) deceptive trade practice laws; and 5) warranties. Systematic institutional approaches would appear to provide the best way to ensure realization of predicted energy savings. General characteristics of such approaches are described, along with reasons why they are needed.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 555

McClure Research Company. 1983. "Participating Consumers' Reaction to the Water Heater Rebate Program." Seattle City Light, Seattle, Washington.

Abstract - This is part of an evaluation of Seattle City Light's energy conservation program. The objectives of this report were to determine 1) how people heard of the program, 2) the impact of the rebate on their purchasing decision, 3) the level of satisfaction with the program, and 4) certain demographic information. The information was gathered through a survey.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0110

Facility & Manufacturing Automation, Inc. 1983. Commercial Water Heating Market Characterization. PB83-232736, Gas Research Institute (GRI), Chicago, Illinois.

Abstract - Field interviews with users of gas-fired commercial water heaters led to estimates for 15 commercial market subsectors of equipment type, input size, storage capacity, and estimated time of day demand schedule for gas-fired water heaters currently in use. Market sales (units and dollar value) and energy use estimates were also developed for 1982, 1990, and 2000. The sales estimates were further subclassified by demand segment (i.e., new construction, replacement, and retrofit). Retrofit sales were estimated to grow to approximately 14% of the total market by the year 2000 from a near zero level in 1982. An analysis of the parameters of a prototype advanced design gas-fired water heater under development at AMTI, and sponsored by GRI, led to findings that economic factors point to a successful and vigorous penetration of four separate equipment size market segments.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

## 10.0 ADVANCED REFRIGERATION SYSTEMS

### ID NUMBER 304

Smith, S. A., et al. 1987. Potential of the Tractor-Trailer and Container Segments as Entry Markets for a Proposed Refrigeration Technology. PNL-5953, Pacific Northwest Laboratory, Richland, Washington.

Abstract - In this study the refrigerated trailer and container markets are evaluated as potential users of a proposed absorption refrigeration technology. The existing transportation refrigeration industry is characterized as well as its consumers. Recommendations are made to avoid entry into that market.

OBCS Study	Yes	Commercial	No	Public	No
Residential	No	Industrial	Yes	International	No

### ID NUMBER 603

ICE Incorporated. 1986. Analysis of Refrigerator Purchase Behavior in the Third Party Market. Bonneville Power Administration (BPA), Portland, Oregon.

Abstract - This report analyzes the results of a survey conducted for BPA on third party market refrigerator purchase behavior. The primary effort was focused on the development (by BPA) of a data base for ICE, Incorporated. This report describes the data base and its development. It also describes several analyses directed toward identifying similarities and differences in purchase behavior among the three sectors.

OBCS Study	No	Commercial	No	Public	Yes
Residential	Yes	Industrial	No	International	No

### ID NUMBER 398

McKellar, B. J. 1986. "Preliminary Evaluation Findings WPL's Great Refrigerator Rebate Program." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, 5:126-128. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This summary describes the preliminary findings of an ongoing evaluation of Wisconsin Power and Light's (WPL) Great Refrigerator Rebate Program. The program was designed to motivate WPL's retail residential electric customers (in 3 of WPL's 14 service districts) to purchase energy efficient refrigerators.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0247

Franke, J. C., et al. 1985. Case Study of the Research and Development and Commercialization of Two Energy-efficient Appliances. Pacific Northwest Laboratory, Richland, Washington.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 457

Goldstein, D. B. 1984. "Efficient Refrigerator in Japan: A Comparative Survey of American and Japanese Trends Toward Energy Conserving Refrigerators." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, pp. E131-E146. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper describes 1) the trends in Japanese refrigerator sizes, 2) the efficiency of the refrigerators, and 3) the conservation technology. The data is compared and contrasted with American data.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	Yes

ID NUMBER 491

Gamble, J., and L. Jacobson. 1984. "Marketing Issues in the Development of a Utility Refrigerator/Freezer Conservation Program." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, pp. I88-I100. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper presents the methods and results of a market research effort, and describes the Seattle City Light decisions in developing a final program.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0270

Cambridge Systematics, Inc. 1984. Household Appliance Choice: Revision of REEPS Behavioral Models. EA-3409, Electric Power Research Institute, Palo Alto, California.

Abstract - This report describes the analysis of household decisions to install space heating, central cooling, and water heating in new housing as well as decisions to own freezers and second refrigerators. The empirical models used in this analysis were the multinomial logit and its generalization, the nested logit. The choice model parameters were estimated statistically on



national and regional survey data. The results show that capital and operating costs are significant determinants of appliance market penetrations, and the relative magnitudes of the cost coefficients imply discount rates ranging from 3.4% to 21%. Several tests were conducted to examine the temporal and geographical stability of the key parameters. The estimated parameters have been incorporated into the REEPS computer code.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0014

Goldstein, D. B. 1984. Efficient Refrigerators: Market Availability and Potential Savings, pp. 292-304. ISBN 0-918249-01-5, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - Cost-effective ways of reducing a refrigerator's energy consumption by 75% are described, based on engineering studies. Refrigerators currently marketed in Japan use 40% less electricity than the most efficient comparable American model. The market has been slow to achieve efficiency improvements in refrigerators in the United States.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	Yes

ID NUMBER 559

Synergic Resources Corp. 1983. Refrigerator/Freezer Dealer Survey. Seattle City Light (SCL), Seattle, Washington.

Abstract - Seattle City Light has determined that the promotion of energy efficient appliances in their service area could save approximately 8 MW of electricity. They selected refrigerators and freezers as the first appliances to be targeted. To get the necessary information on current penetrations and emerging trends, they are doing four market surveys on refrigerators and freezers. This report presents the results of surveying refrigerator and freezer dealers in the SCL service area. The purpose of the survey was to determine:

1. current and emerging sales trends in refrigerators and freezers
2. trade-in policies
3. dealer promotional activities for energy efficient refrigerators and freezers
4. which alternative conservation program designs would work well from their standpoint and experience.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 593

Good Housekeeping. 1982. "Home Appliance Study." Good Housekeeping, p. 47.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

## 11.0 COMBUSTION AND THERMAL DISTRIBUTION

ID NUMBER 0644

Murray, J. G. 1987. Thermal Distribution and Utilization. Brookhaven National Laboratory, Brookhaven, New York.

Abstract - The objective of this study is to conduct combustion systems research that will determine occupant comfort and behavior requirements in the residential and commercial sectors.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0640

McDonald, R. J. 1987. Direct Venting Technology. Brookhaven National Laboratory, Brookhaven, New York.

Abstract - In this study the project objectives are 1) to establish conclusions regarding the potential energy savings that could result from developing direct venting technology for oil-fired systems, and 2) to identify barriers that need to be addressed if the technology is to be implemented by the oil heat industry.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 337

Proctor, J., and B. Foster. 1986. "Low Cost Furnace Efficiency Program - 10,000 Furnaces Later." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, pp. 204-219. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - In this report the administrative portion of the programs is discussed, because that portion is the least understood and most important part of the programs. This administrative system is now used on three programs: the furnace program, the boiler program, and the "House Nurse" program.

OBCS	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0147

Batey, J. E. 1986. 1985 Oil Heat Technology Conference and Workshop: Summary of Proceedings. DE 86015289, National Technical Information Service, Springfield, Virginia.

Abstract - This report summarizes the proceedings of the 1985 Oil Heat Technology Conference and Workshop conducted at Brookhaven National Laboratory (BNL) in September 1985. It was sponsored by the Department of Energy's Office of Building and Community Systems, as a technology transfer activity related to the ongoing Combustion Equipment-Space Conditioning Technology Program at BNL.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0130

Hurley, J. R., and R. A. Panora. 1984. "Opportunities for New and Existing Technologies in Commercial Cooking Equipment." In Proceedings of the Eleventh Energy Technology Conference, pp. 489-497. ISBN 0-86587-012-8, Government Institute, Inc., Rockville, Maryland.

Abstract - This paper points out to the developers of energy-efficient equipment that only cost-effective, energy-efficient cooking equipment can truly save energy. A brief review of some of the recent energy-efficient improvements is first presented. A more in-depth study of the evaluation and selection criteria used in the commercial cooking market is highlighted, together with a typical example showing the relationship between efficiency improvement and cost effectiveness.

OBCS Study	No	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 677

Berry L, J. Bledsoe, T. Vineyard, and D. L. White. 1987. Evaluation of Gas Heating System Retrofit Pilot Programs in Kentucky and Minnesota. ORNL/CON-229, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - The purpose of this report is to evaluate the fuel savings and cost effectiveness of the heating system retrofit programs (for low-income households) that were implemented in Minnesota and Kentucky in 1985. The following four retrofit types were to be installed by these programs: 1) a secondary condensing heat exchanger for forced warm air furnaces; 2) a power gas burner for a steam or hot water boiler; 3) an electronic ignition and

electronic vent damper for gravity, hot water or steam boilers for forced air units not suitable for heat exchangers, and for forced air units with an adjustable anticipator thermostat; and 4) two thermally actuated vent dampers for forced air furnaces in which the other applications could not be used.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No



## 12.0 LIGHTING EQUIPMENT

ID NUMBER 0650

Berman, S. M. IN-PROGRESS. Impacts of Lighting on Health and Visual Performance. Lawrence Berkeley Laboratory, Berkeley, California.

Abstract - This project studies the impacts of lighting variables on health and visual performance where impacts include 1) the relationship between lighting variables and visual performance, 2) the physiological changes on human subjects because of lighting and lighting equipment, and 3) the possibility of objective correlation to lighting glare.

OBCS Study	Yes	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	No	International	No

ID NUMBER 0671

Ivey, D. L., and S. A. Smith. 1987. The Role of Market Research in the Commercialization of Technology. Pacific Northwest Laboratory, Richland, Washington.

Abstract - The objective of this report is to provide information on available experimental work describing criteria used by the residential consumer market in selecting energy and energy-related products. Several case studies are presented that illustrate the importance of conducting systematic market research in the early stages of the technology development process. In one case study, the long-life light bulb is discussed.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 0141

Electric Power Research Institute, Communication Services. 1986.  
"Lighting and the Human Condition." EPRI Journal. pp. 16-23.

Abstract - This article concerns whether energy efficiency should be the primary concern in lighting the human environment? Emerging research indicates that the quality of our lighting can have subtle but powerful influences on how we work, feel, and function.

OBCS Study	No	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	Yes	International	No

ID NUMBER 0202

Boyce, P. R. 1986. Lighting for the Partially Sighted: Some Observations in a School. Electric Council Research Center, Capenhurst, Chester, Britain.

Abstract - For this report, measurements and observations were made at a residential and day school for the partially sighted to establish 1) the visual conditions produced by the lighting, 2) the way in which the lighting was used, and the opinions of the staff and pupils about the lighting. Results showed that very few pupils found the lighting inadequate; such problems could be solved by use of local lighting.

OBCS Study	No	Commercial	No	Public	Yes
Residential	No	Industrial	No	International	No

ID NUMBER 0138

Electric Power Research Institute, Communication Services. 1984. "Evolution in Lighting." EPRI Journal. pp. 6-15.

Abstract - This article reveals that lights consume 20%-25% of the nation's electricity. Therefore, there are strong incentives to develop lighting strategies that are more efficient. Attention is turning to where, when, and how we light our environment, and to the potential savings of half the lighting load nationwide.

OBCS Study	No	Commercial	Yes	Public	No
Residential	Yes	Industrial	Yes	International	No

ID NUMBER 681

Gillette, G., and M. A. Brown. 1986. Occupant Evaluation of Commercial Office Lighting: Volume 1, Methodology and Bibliography. ORNL/TM-10264/V1, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - This report documents the forms and procedures developed for a post-occupancy evaluation of office lighting environments. It is the first in a series of four reports. The central aim of the larger project is to explore possible causal factors that are associated with successful lighting design, with particular interest in the relationship between the connected lighting power load and subjective measures of lighting quality. A post-occupancy evaluation procedure was used as the strategy for obtaining the desired data. The procedure involved collecting several different types of data: 1) direct measures of the physical environment, including spatial luminances, illuminances, and contrast conditions; 2) indirect measures such as the amount of space provided for each work station and the connected lighting power load; 3) occupant responses to lighting and other factors of the work station; and 4) a limited number of expert ratings of the lighting conditions.



Data from thirteen buildings and 1217 work stations were collected. These data were built into a database allowing lighting quality to be quantified and explained.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 682

Marans, R. W., and M. A. Brown. 1987. Occupant Evaluation of Commercial Office Lighting: Volume II, Preliminary Data Analysis. ORNL/TM-10264/V2, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - This report presents the preliminary results of a post-occupancy evaluation of office lighting environments. It explores the relationship between quantitative measures of lighting in occupied environments and qualitative measures related to occupant satisfaction.

The report analyzes several types of data from more than 1000 occupied work stations; 1) subjective data on attitudes and ratings of selected lighting and other characteristics; 2) photometric and other direct environmental data, including illuminances, luminances, and contrast conditions; 3) indirect environmental measures obtained from the architectural drawings and the work station photographs; and 4) descriptive characteristics of the occupants. The work stations were sampled from thirteen office buildings located in various cities in the United States.

OBCS Study	Yes	Commercial	Yes	Public	No
Residential	No	Industrial	No	International	No

ID NUMBER 683

Gillette, G., and M. Brown. 1987. Occupant Evaluation of Commercial Office Lighting: Volume III, Data Archive and Database Management System. ORNL/TM-10264/V3, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Abstract - This report documents a database of measured lighting environmental data. The database contains four different types of data on more than 1000 occupied work stations: 1) subjective data on attitudes and ratings of selected lighting and other characteristics; 2) photometric and other direct environmental data, including illuminances, luminances, and contrast conditions; 3) indirect environmental measures obtained from the architectural drawings and the work station photographs; and 4) descriptive characteristics of the occupants. The work stations were sampled from thirteen office buildings located in various cities in the United States. In the database, each record contains data on a single work station with its individual fields comprising characteristics of that work station and its occupant. The relational database runs on an IBM or IBM compatible personal computer using commercially available software. As a supplement to the database, an independent ASCII-8 bit data file is available.



### 13.0 APPLIANCE STANDARDS

ID NUMBER 0651

Levine, M. D. 1987. Appliance Energy Efficiency Analysis. Lawrence Berkeley Laboratory, Berkeley, California.

Abstract - This project comprehensively analyzes the impacts of appliance efficiency standards on consumers, manufacturers, utilities, and national welfare.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 406

Messenger, M. 1986. "An Overview of California's Appliance Efficiency Programs." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, pp. 6.52-6.54. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - The goal of the Appliance Program is to increase the sales of high efficiency appliances. This paper examines the range of programs used to reach this goal and analyzes their potential impact on the distribution of sales by efficiency level. The paper concludes with a set of recommended program strategies to increase the efficiency of appliances beyond the levels achieved by efficiency standards.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 404

Geller, H., and T. Scaulon. 1986. "Analysis of Minimum Efficiency Standards and Rebate Incentive Programs for Domestic Refrigerators in the Pacific Northwest." In Proceedings from the ACEEE 1986 Summer Study on Energy Efficiency in Buildings, pp. 6.25-6.38. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper examines the energy savings potential and cost-effectiveness of inducing higher levels of refrigerator efficiency in the Pacific Northwest, by using minimum efficiency standards and rebate incentive programs.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	NO	International	No

ID NUMBER 0172

Ruderman, H. 1986. "Modeling the Demand for Household Appliances and Energy." FY 1985 Annual Report - Energy Analysis Program, pp. 5.93-5.97. LBL-20205, Lawrence Berkeley Laboratory, Berkeley, California.

Abstract - NEPCA required the Department of Energy to conduct a re-analysis of the appliance standards. A panel of experts 1) reviewed the previous standards analysis 2) recommended changes needed for the re-analysis, and 3) formulated a research agenda to accomplish these changes. A proposed structure consisted of four integrated components (engineering, consumer, manufacturer, and impact analysis) having consistent input, output, and assumptions. Additional work will be done on the model formulation stage during next fiscal year. Of special interest will be an attempt to incorporate market behavior variables in the consumer demand model.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 458

Jaske, M. R. 1984. "Trends in Residential Appliance Efficiency Choice." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, pp. E159-E173. Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper presents preliminary results of an extensive survey of single-family residences in northern California, in which the efficiency characteristics of residential appliances were the principal data objectives. Analysis of the data to date (by year of purchase) reveals interesting trends in the marginal efficiency choices that have been made.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0021

Connor, L. T. 1984. Institutional Approaches to Providing Systematic Quality Control for the Realization of Expected Energy Savings, pp. 340-352. ISBN 0-918249-01-5, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - In this report the following items are addressed: 1) equipment standards, testing, rating, certification and labeling; 2) installer licensing or certification; 3) building codes; 4) deceptive trade practice laws; and 5) warranties. Each of these mechanisms, although having an apparent role to play, suffers from severe technical, resource, or enforcement limitations. Systematic, "institutional approaches" would provide the best way to ensure the realization of predicted energy savings. General characteristics of such approaches are described, along with reasons why they are needed.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0017

Gunn, R. K. 1984. Description, Initial Results, and Evaluation Plan for Northern States Power Company's Appliance Rebate Program, pp. 317-333. ISBN0-918249-01-5, American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - This paper presents a detailed description of the initial results and evaluation plan of Northern States Power Company's Appliance Rebate Program. Appliances covered under the program are room and central air conditioners, room and central heat pumps, electric water heaters, refrigerators, and freezers. The goal of the program is to shift the market toward more efficient appliances through consumer awareness. This will be accomplished by using dealers and distributors.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0261

Brian Gard William Lesh, Inc. No date. Report on Market Research and Program Recommendations: BPA Regionwide Promotion of Energy-Efficient Appliances. Bonneville Power Administration, Portland, Oregon.

Abstract - This campaign includes two phases. The goals of Phase I are to increase consumer awareness of the range of energy efficiencies in new appliances, and to increase consumer awareness of Energy Guide Labels. The goal of Phase II is to increase the "market share" of energy-efficient models purchased in the region. The report is an evaluation of the phases.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industry	No	International	No



#### 14.0 TECHNOLOGY TRANSFER AND COMMERCIALIZATION

ID NUMBER 681

Roberson, B. F., and R. O. Weijs. IN-PROGRESS. Consumer Decision Research.  
Pacific Northwest Laboratory, Richland, Washington.

Abstract - This task consists of three main areas: 1) screening and identifying the Office of Building and Community Services equipment and practices, which are ready to be commercialized; 2) assessing decision processes, behavioral factors, and other factors that will significantly affect the likely market acceptance and penetration of these technologies; and 3) conducting commercialization planning to develop strategies to overcome identified adoption barriers.

OBCS	Yes	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	Yes	International	Yes

ID NUMBER 680

Roberson, B. F., and R. O. Weijs. 1988. Using Market Research to Convert New Technology into Marketable Products. PNL-SA-15486, Pacific Northwest Laboratory, Richland, Washington.

Abstract - This article contains a discussion of the need for a new research strategy to ensure timely applications of federally developed technology in the private sector. Emphasis is placed on the use of market research to facilitate the conversion of new technology into marketable new products, and to guide decisions regarding future directions for technological research. Market research is a widely used source of information in the private sector, but has historically been excluded from federal research programs.

OBCS Study	Yes	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	Yes	International	No

ID NUMBER 0238

Warner, B. P. 1986. Technology Transfer Initiatives in Idaho National Lab/Incubators. DE87002596, National Technical Information Service, Springfield, Virginia.

Abstract - A discussion of technology transfer with applications in the Idaho National Engineering Laboratory and the State of Idaho is presented in this paper. Also discussed is a new approach to a technology transfer communication vehicle.

OBCS Study	No	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	Yes	International	No

ID NUMBER 0150

Brown, M. A., et al. 1986. Technology Transfer for DOE's Office of Building and Community Systems: Assessment and Strategies. DE86013367, National Technical Information Service, Springfield, Virginia.

Abstract - This report reveals that the uninterrupted availability of oil supplies over the past several years, and the moderation of energy price increases has sent signals to consumers and decision makers in the building industry, that the "energy crisis" is over. As a result, efforts to promote energy-conserving technologies must emphasize benefits other than BTU savings.

OBCS Study	Yes	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	Yes	International	Yes

ID NUMBER 0155

Mohler, B. L., and V. Barnes. 1985. Consumer Decision and Behavior Research Agenda for the Office of Building and Community Systems. DE86004486, National Technical Information Service, Springfield, Virginia.

Abstract - This report presents a research agenda of consumer decision and behavior projects related to improving, facilitating, and planning Building and Community Systems (BCS) research and development activities. Information for developing this agenda was gathered through the use of focus groups and through in-depth interviews with BCS staff, directors, and program managers.

OBCS Study	Yes	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 0161

Brown, M. A., and S. C. Hite. 1985. Evaluation of the Institute on Energy and Engineering Education. DE85012073, National Technical Information Service, Springfield, Virginia.

Abstract - This paper evaluates the Institute on Energy and Engineering Education in terms of its stated goals and in light of the objectives of the RU Program. The evaluation draws upon two types of data collected from participants. This first data set was generated through questionnaires completed during the last day of each of the Institutes. The overall conclusion of the evaluation is that the Institute has served its mission very well, and that by evolving, in response to changes in the engineering professions and energy technologies, it will continue to do so.

OBCS Study	No	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	Yes	International	No



ID NUMBER 324

ASHRAE, Inc. 1984. Proceedings of Building Industry Roundtable on Technology Transfer and Research Utilization. PNL-SA-12995, Pacific Northwest Laboratory, Richland, Washington.

Abstract - This report discusses a technology transfer program that includes a coordinated set of mechanisms for 1) incorporating end-user feedback into research and development planning, and 2) maintaining interaction throughout the process. The program assesses needs, develops transferable information, conducts outreach activities, and gathers feedback.

OBCS Study	Yes	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	Yes	International	No

ID NUMBER 471

Morrison, B. M. 1984. "A Decade of Residential Energy Research: Some New Directions and Some Speculations About the Future." In Proceedings from the ACEEE 1984 Summer Study on Energy Efficiency in Buildings, pp. F167-F182. American Council for an Energy-Efficient Economy, Washington, D.C.

Abstract - In October 1983, a conference was held (at Michigan State University) that explored what research had been done to examine residential energy and its uses and changes in the 10 years since the Arab oil embargo. The intent of this paper will be to summarize what the major findings were, what measurements were used, and what the future goals in residential energy research must be in order to reach an understanding of the determinants of energy efficiency in the residential sector of the economy.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 321

Brown, M. A. 1984. "Change Mechanisms in the Diffusion of Residential Energy Conservation Practices: An Empirical Study." Technological Forecasting and Social Change, 35:123-138.

Abstract - In this report, four types of variables that affect the diffusion of home energy conservation measures are assessed as follows: 1) information possessed by households, 2) household attitudes, 3) economic and demographic characteristics of households, and 4) the attributes of conservation measures.

OBCS Study	No	Commercial	No	Public	No
Residential	Yes	Industrial	No	International	No

ID NUMBER 678

Brown, M. A., E. J. Soderstrom, E. D. Copenhaver, and J. H. Sorensen. 1985.  
 "A Strategy for Accelerating the Use of Energy Conserving Building  
 Technologies." Journal of Technology Transfer, 10(1):35-50.

Abstract - This article reveals that to accelerate the use of energy-conserving building technologies in the decentralized buildings industry, a strategy for more directed transfer of government research to public- and private-sector users has been implemented. The strategy involves a cycle of four sets of activities: 1) a needs assessment, 2) the development of transferable information, 3) the development of outreach activities, and 4) monitoring feedback and conducting evaluations. By employing this iterative technology transfer cycle and by emphasizing trade and professional organizations as communication channels to and from users, it is hoped that research sponsored by the U.S. Department of Energy's Building Systems Division will be responsive to the industry's needs and will be accessible to its diverse participants.

OBCS Study	Yes	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	Yes	International	No

ID NUMBER 679

Weijo, R. O. 1987. "Strategies for Promoting Technology Transfer to the  
 Private Sector." Journal of Technology Transfer, 11(2):43-65.

Abstract - This article discusses alternative promotion strategies that public policy makers can use to increase the effectiveness and efficiency of technology transfer programs. Three transfer strategies are described: the passive, the role-directed, and the organization-directed strategies. Factors influencing the selection of one of these transfer strategies by policy makers are considered in detail.

OBCS Study	Yes	Commercial	Yes	Public	Yes
Residential	Yes	Industrial	Yes	International	No

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