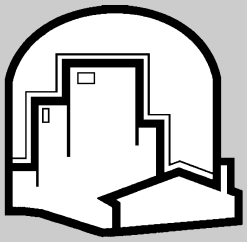

2002 ACEEE Summer Study on Energy Efficiency in Buildings

Teaming for Efficiency
PROCEEDINGS

10

Program Measurement and Evaluation

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PUBLICATIONS: (202) 429-0063

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Foreword

The 2002 Summer Study on Energy Efficiency in Buildings, a biennial conference organized by the American Council for an Energy Efficient-Economy (ACEEE) brings together professionals from around the world to discuss the technological basis for, and practical implementation of, improving energy use in buildings. Participants, including authors of the papers published in these proceedings, represent government agencies, industry, utilities, national laboratories, universities, consultants, public interest groups, and others.

We selected the Summer Study's theme, "Teaming for Efficiency," to highlight the importance of public/private partnerships, regional collaborations, and inter-regional efforts. However, it is clear from the papers presented at this conference and published in these proceedings that the word "team" meant much more to our conference participants than the traditional definition with which we had started—a group of people joining together to bring a specific effort to fruition. The complexity and global nature of today's energy concerns calls for national and international collaborations and the linking together of fields of study and strategies which often evolve separately.

In addition to focusing on teams and partnerships collaborating on specific projects, papers in these proceedings highlight the importance of metaphorical teaming between many individual subjects. Lessons learned from the papers include:

- teaming between individuals involved in field measurements and analytical evaluations is key to developing new efficient products
- the integration of component technologies into building systems results in totals greater than the sums of the individual parts
- research and deployment efforts need to complement each other
- teaming of systems with operators through commissioning, load management, and the use of information technologies is key to realizing expected energy savings and curtailing demand
- teaming is key to getting the tools that support energy-efficient building design and construction into the hands of people who design, build, and operate buildings
- as witnessed in the subject of utility issues, the lack of teamwork and the absence of the ethic of collaboration for the good of society as a whole derailed one of the world's largest energy infrastructures
- the issue of teaming runs through the whole field of market transformation: defining market transformation is, in itself, a team effort, and market transformation programs inherently rely on team efforts to be successful. Advocates of energy efficiency must team with those working to improve the quality of the built environment because energy efficiency is inherently linked with increased comfort and productivity in buildings

- teamwork between program developers and evaluators ensures that we learn from our mistakes and promote our successes
- cross-cultural efforts lead to more effective programs

Finally, as global events this past year have reminded us, energy efficiency professionals are part of the team working to solve global environmental and security problems.

The subjects of the ten volumes in these proceedings are:

1. Residential Buildings: Technologies, Design, Performance Analysis, and Building Industry Trends
2. Residential Buildings: Program Design and Implementation
3. Commercial Buildings: Technologies, Design, Performance Analysis, and Building Industry Trends
4. Commercial Buildings: Program Design and Implementation
5. Utility Issues
6. Market Transformation
7. Information and Electronic Technologies: Promises and Pitfalls
8. Human and Social Dimensions of Energy Use: Understanding Markets and Demand
9. Energy and Environmental Policy
10. Program Measurement and Evaluation

At this 15th Summer Study, we offered participants a new presentation format—"Round Table" sessions. These sessions involved a full hour and a-half session within the topic area of each panel, and were designed so that industry and non-industry participants could collaborate on topic areas where issues are best addressed by a diverse panel of authors. Within each volume of these proceedings, you may find one or two such "Round Table" papers.

We, the Co-Chairs, would like to thank the 25 Panel Leaders who evaluated more than 600 abstracts, and selected and led 273 papers through a rigorous review process. We would like to thank the many peer reviewers who worked with the Panel Leaders through this process. Most importantly, we would like to thank ACEEE staff, in particular Glee Murray, Rebecca Lunetta, Renee Nida, Deborah Ziff, and Julie Harvell for their tireless efforts to make this an extremely successful conference and to produce these valuable proceedings.

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PANEL 10: INTRODUCTION

Program Measurement and Evaluation

"Outside of a Small Circle of Friends" – Phil Ochs, 1967

A Program Evaluation Panel appeared as a standard volume of papers at every ACEEE Summer Study from 1984 through 1996. Evaluation was one of four topics chosen in 1992 for a plenary presentation on "Futures." With the advent of rigorously evaluated energy programs in California during the mid-1990s, evaluation grew to become two panels in 1996: one on commercial programs and one on residential programs. However, what California giveth, California taketh away, and in 1998 and 2000, with the focus shifting toward restructuring and the consequent de-emphasis on acquisition programs, the Summer Study accepted evaluation papers as one of the topics to be considered in the sector-based panels. Or should we say, papers were considered for acceptance, for evaluation was of interest to very few *Outside of a Small Circle of Friends.*

Evaluation did not cease. It actually may have matured, or at least evolved, in its years outside of the contentious limelight. The continuous emphasis on "impact evaluations" to justify ratepayer funds encouraged the growth of evaluation. The predictions for the future of evaluation in 1992 were largely focused on the role of impact evaluation. In 1992, the expectation was that the growth of demand-side management (DSM) would be steady and would lead to a pursuit of, and success in, finding accurate and reliable measures of savings. At the same time, the authors made small predictions about likely changes in the practice of evaluation.

Over the past 10 years, the predictions fulfilled are primarily those reflecting the practice of evaluation and those reflecting improved understanding of the market and consumer behavior. As the papers in this panel evidence, the field of evaluation has reached beyond impacts, while at the same time returning to the fundamentals of the practice of evaluation. The goals of evaluation have always included feedback to programs. Even impact evaluations, if they aren't solely done for regulatory purposes on arbitrary schedules, provide insights into what works well and where improvements can be made.

Two very important trends have accompanied this return to evaluation fundamentals. The first is the emergence of "logic models" in planning evaluations. These provide structured insight into why the programs are being run, and what the assumed steps are in the process leading to success. Not only do they determine what are the important things to study in the evaluation, but also, they force program implementers to re-visit the goals and objectives of the program in order to see whether all aspects of the programs are actually designed to

accomplish the objectives. This interaction between how the program is designed and implemented with what the actual goals of the program are became much easier once the emphasis on megawatt (MW) savings was reduced.

The second evaluation fundamental to re-emerge is the importance in observing whether, and how, the assumptions underlying the program are met in the implementation of the program. When these assumptions are not met, the program can get off-track. This straightforward approach to evaluation enables policy makers to have consistent expectations for evaluations of acquisition, educational, marketing, or market transformation programs. Better yet, it allows evaluations to combine process, market characterization, and impact studies into comprehensive efforts. Knowledge comes from unifying information, not dividing it into separate studies. Examining the "logic model"—whether implicit or explicit—as it applies to all program assumptions can be much more enlightening than applying a prescribed set of evaluation tools—such as surveys, interviews, and billing analysis—to every program that comes around the bend. And this more fundamental approach is ultimately more responsive to program managers' needs!

The papers in this panel represent a broad array of how evaluations are used. They compare one type of program to another. They look at the assumptions underlying market penetration goals, the actual lives of measures, and even the assumption that what is being measured reflects what was targeted. A couple of papers look narrowly at how we can test savings assumptions with verification protocols and another looks broadly at how national programs are assumed to affect long-term trends in building energy usage and whether this outcome is measurable. Evaluation issues covered range from how to pose the "fundamental evaluation question" to how to word the "questionnaire item" for an evaluation. Studies are presented that cover the gamut from: how program managers make decisions; to how building developers make decisions; to how to model household decision making.

The papers in this panel may or may not be the best papers on each topic over the last 10 years, but the diversity of the papers provides a gauge of how the field of energy program evaluation has evolved and grown during its period of relative quiescence. By returning to some fundamental principles of how and why evaluations are performed, they produce better information for policy makers, and more useful feedback for program implementers. Hopefully, these improvements will pave the way for greater appreciation of the field ***Outside of a Small Circle of Friends***.

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