# Panel 10 Introduction

## Program Design

This panel addresses the design of programs to promote the efficient use of energy. Significant opportunities for cost-effective energy investments exist in every sector of the economy, but numerous barriers inhibit the realization of this potential. The growing body of market research and experience from past programs enables today's programs to be more effective than ever at overcoming such barriers and stimulating the use of conservation technologies. With advances in end-use technologies, the packaging of information, the design of incentives, and the operation of programs, today's program managers can build on lessons from the past. At the same time, the utility industry and markets for energy efficiency are undergoing rapid change, and what worked well in the past may not apply in the future. As a result, the program design panel offers a balance between reviews of past experience, descriptions of new programs, and discussions of how future programs may be designed.

Some of the advances in the art and science of program design are described in the overview paper by Mast and Ignelzi. For years, program planners have assumed that financial incentives are necessary to achieve participation goals. Recent evidence indeed supports the notion that incentives attract customers to consider efficiency measures. This evidence also suggests, however, that incentives alone are ineffective in moving customers to take those measures. Factual information and utility implementation methods appear far more influential in customer decision making. Mast and Ignelzi share the evidence they have collected through years of evaluations to make the case that program managers should focus more heavily on non-incentive features to achieve success.

The types of programs discussed in this panel range from experimental bidding and market transformation programs, where experience is only now accumulating, to the more traditional residential, commercial, and industrial programs where experience is broader, but lingering questions still remain. Sessions on the role of collaborative and planning round out the panel.

### Bidding Programs

DSM bidding programs represent a set of diverse, large-scale experiments to acquire demand and energy savings from third party providers based on pay-for-performance contracts. Four papers offer guidance for the "demand-side auctioneer."

Goldman and Kito provide a national overview based on demand-side bidding programs at 30 utilities. Their analysis of the total resource costs of these programs and trends in DSM bid prices suggest the following: (1) separate RFPs for supply- and demand-side resources; (2) use the TRC test as a threshold requirement for valuing DSM bids; and (3) encourage DSM developers to install comprehensive packages of measures. Some of these same issues are highlighted by Washburn and Schiller, in their paper on PG&E's first DSM bidding program—PowerSaving Partners. Defining target market segments, economic criteria used for an auction, measurement and verification, and encouraging comprehensiveness are the key issues faced by the designers of this program.

Peters et al. examine the role of freeridership in the Public Service Company of Colorado's 50 MW bidding program. The different motivations for participation expressed by customer bidders, third parties, and the clients of third-party participants suggest that freeridership rates in DSM bidding programs are at least as high as those associated with rebate programs. Further, it is suggested that certain program design features (in particular, the award of contracts to the lowest priced bids) can increase the proportion of freeriders.

Machold uses case studies of performance-based DSM projects to describe the risks and rewards experienced by third-party investors and developers. A key risk to the third-party developer is competition with the utility's other DSM programs, both those that exist and any that are planned. The market opportunities solicited in a utility's bid can be eroded by expansion of non-bidding programs.

## Residential Programs

Three sessions focus on different aspects of residential programs: multifamily buildings, low-income markets, and lighting. DeCicco et al. set the stage by providing an overview paper on "Energy Conservation in Multifamily Housing." Energy use in multifamily housing has long been identified as a particularly challenging area for energy conservation efforts. This paper points out promising directions for the future, recommends policy initiatives, and identifies future research needs for advancing energy conservation in multifamily buildings.

The session on "Delivering DSM Services to Low-income Markets" addresses another challenging residential submarket. On a highly optimistic note, Morgan describes the significant new opportunities created by the 1991 revision of HUD's Performance Funding System, which enables public housing authorities to sign performance contracts with energy service companies. Based on the experiences of five utilities with recently established public housing DSM programs, Morgan offers a set of recommendations to promote future successes. On a less optimistic note, the prospects for increased energy efficiency in the construction of low-cost nonprofit and private-sector housing are not promising, according to Miller's paper on "Barriers to the Adoption of Energy Efficiency in Low-Cost Housing Production." Overriding barriers to the adoption of energy efficiency by private, nonprofit, and charitable builders include the lack of a comprehensive federal program that sets energy-efficiency targets, provides training, technical support, and standards, and is based on ongoing field research and development. Before significant energy-efficiency improvements will be realized in this housing sector, the current patchwork of state, local and utility programs must be coordinated and the serious gaps in service and support must be addressed.

Initiatives aimed at increasing the penetration of efficient lighting in the residential sector is the topic of another session. Haddad discusses barriers to widespread penetration of compact fluorescent lamps (CFLs). His findings suggest that the barriers derive more from production and distribution problems than from the customer disinterest and price concerns often cited. Grimm and Granda discuss an innovative program under development where utilities work with lighting products manufacturers to reduce the wholesale cost of compact fluorescent lamps. The results are expected to include decreased retail prices and improved customer access to efficient products. Finally, Goett examines the results from recent experience with utility programs that have been fielded to encourage adoption of compact fluorescent lamps. The comparison of results of evaluation studies from several utilities led Goett to conclude that some assumed barriers to the purchase of CFLs were not borne out by facts and suggested modifications to future programs to meet the customer needs identified.

## Commercial and Industrial Programs

With the emergence of increased competition in the utility industry, programs that increase efficiency in the commercial and industrial sectors may be more important than ever before. At the same time, competition is spotlighting groups of customers for whom price is the bottom line. The commercial and industrial sessions examine ways to serve both kinds of customers through DSM programs.

Historically, the small commercial market has been a low priority for utility program planners because of obstacles such as high turnover rates and high transaction costs. Warner's paper describes three pilot programs implemented at PG&E which were pilot tested as a source of cost-effective DSM resources. It concludes that the most effective small commercial program designs involve the direct installation concept, where door-to-door canvassing, high customer incentives, and turn-key installation services (including energy education, site-specific energy analysis, and equipment procurement) are combined into an integrated program delivery strategy.

The paper on "Demand-Side Management Strategies for Commercial and Industrial Refrigeration" by Hewett et al. presents a comprehensive assessment of refrigeration technologies in terms of energy savings, current market penetrations, and acceptability to customers and trade allies. In both sectors, Hewett et al. conclude that program marketing must target trade allies heavily, both because they have a strong influence on customer acceptance and because they are better able to grasp the technical aspects of the program.

Customer contribution requirements for DSM program participation are increasingly being considered as a means of strengthening customer commitment to energy efficiency and improving program equity. Tolkin and Ford's paper researches the "Acceptance of Customer Contributions for DSM Among Small Commercial/Industrial Companies." Through a series of focus groups, the authors identify several factors that would increase participation when customer contributions are required. These factors include providing more information on customer choices regarding the measures to be installed, and making contributions only when savings materialize on electric bills.

On the industrial side, Gandhi and Digiacomo describe end-use pricing as a DSM program option using the case study of the compressed air market. With the utility providing compressed air and maintaining the equipment, the highest profits are attained when the process is most efficient. Centolella examines the policy implications of another route—what happens when industrial customers are allowed to "opt out" of financial participation in demand-side programs? His interesting paper discusses the effects of opt out programs on cost allocation methods, lost revenues, and retail wheeling and provides some surprising insights. Kyricopoulos et al. provide a comprehensive overview of successful and cutting edge industrial programs. Improved understanding of the industrial customer decision-making process characterizes each of these programs: when targeted customers are well understood, utilities can market value added features with confidence and build a strong alliance with an important customer group.

## Designing Programs to Transform Markets

Market transformation in demand-side programs is the permanent alteration of markets for energy-efficient equipment and measures, so that improvements in efficiency continue to be obtained even after a program is changed or eliminated. As Nadel and Geller state, "Instead of saving energy building by building, a market transformation approach would seek to encourage and accelerate the market transformation process." The growing attention being given to market transformation programs is reflected in the fact that the program design panel is presenting two sessions—and a total of nine papers—on market transformation issues.

The paper by Oswald et al. on "Market Research-The Essential First Step to Market Transformation" argues that program success depends upon understanding the market that the program is intended to transform. Fortunately, the market and product research industries provide tools utilities can use to transform markets. This paper shows how.

The papers by Tiedemann and Lee et al. illustrate how a program can benefit from market research. Tiedemann describes a market penetration and discrete choice analysis of the impact of a fuel switching program. This research documents the impact of rebate levels on fuel choice and concludes that direct utility contact with apartment developers is a cost-effective way of achieving significant market penetration. Lee et al. describe an innovative manufactured home DSM program that has addressed market imperfections and the basic differences between consumer and utility economic perspectives. The program has been very successful at closing the gap between the economic interests of the homebuyer and the utility. The Granda et al. paper describes a national initiative designed to help realize the energy-saving potential of efficient lighting. By understanding and working within the existing structure of the retail marketplace, this initiative aims to increase the production, distribution, purchase, and installation of screw-base compact fluorescent lamps.

The papers by McMenamin et al. and Wirtshafter and Sorrentino both deal with issues that are critical to evaluating market transformation programs. Wirtshafter and Sorrentino discuss the problem of "Proving Causality in Market Transformation Programs." The McMenamin paper examines the issue of market transformation and technology modeling for two key DSM technologies: (1) electronic ballasts, and (2) high-efficiency motors. They conclude that as program impacts accumulate, utilities will increasingly face evaluation problems associated with dynamic baselines. The cost-effectiveness of future programs may depend upon a baseline that has been transformed by past programmatic efforts. Thus, establishing a baseline path should be an important part of ongoing evaluation efforts.

In the session on "Designing Programs to Transform Markets," three interesting and innovative approaches are discussed. Karl et al. discuss a joint utility marketing campaign that has the potential to reduce marketing expenditures and also reduce the confusion that can arise when utility service area boundaries adjoin. "Core" measures allow the utilities to offer common elements while maintaining their own program goals and separate customer needs as well. Nadel and Geller review program and policy elements that can be used to shape a market transformation strategy, examine recent efforts, and assess those efforts and the lessons they offer program designers. Future program targets are then presented. Wirtshafter and Sorrentino follow with discussion of how evaluation fits into the market transformation paradigm. When a program is designed to cause changes in the actions of non-participants, traditional evaluation techniques lose their

effectiveness. Because of the difficulties inherent in proving causality, the authors suggest an alternative method for rewarding utilities that actively participate in market transformation programs, which involves pre-negotiated targets for new product efficiencies.

## Collaborative and Planning

Collaborative groups of non-utility parties interested in utility regulation and planning have become an important force in demand-side planning. Originally adversaries in regulatory hearings, many collaborative groups have now emerged as partners with utilities in planning for the future. While not all collaborative work so well together, the session called "Making It Better Together" illustrates the benefits of the successful effort. Hirst and Swanson discuss another success story. Beginning in 1991, the Land and Water Fund of the Rockies challenged utility practices in a six-state Rocky Mountain region. Since then, Utah and Colorado have adopted rules to improve energy efficiency, renewable resource and environmental protection practices. In Maryland, collaborative parties worked closely with utilities to develop programs designed to be comprehensive in terms of customers served, magnitude of savings, and program delivery approaches. Obeiter et al. show how committed utility management and a strong collaborative effort created an impressive transformation at Potomac Electric.

The session on "Planning for the Turn of the Century" may change your perspective on utility planning models and methods forever. Hatcher, Conant, and Sebold examine the new planning process at New England Electric. One of the initial efforts was the development of a carefully defined and comprehensive DSM technical potential estimate. Hatcher, Conant, and Sebold describe how the potential estimates were used in designing long-range DSM strategies that are integrated with supply-side options. The result was a flexible plan that focused on competitive positioning and customer needs. Braithwait provides insights into the relationships between traditional cost effectiveness and the proposed next generation of DSM benefit-cost tests. The new tests are based on conventional economic welfare tests. The paper focuses on the extent of efficiency market imperfections and the degree to which those imperfections are removed by utility DSM programs. Melendy and Russ discuss how integrated resource planning must evolve as utilities plan for the next millennium. A proactive approach to transition elements for demand-side or supply-side competition are discussed. The authors find that a brave new world seems likely as competition overtakes the utility industry.

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