

**AMERICA'S BEST: PROFILES OF AMERICA'S LEADING
ENERGY EFFICIENCY PROGRAMS**

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BACKGROUND

Over the past three decades, utility ratepayer-funded energy efficiency programs have become a central component of public policy regarding energy efficiency in the United States. Although there was a noteworthy decline in utility demand-side management (DSM) spending in the late 1990s, the good news is that public policy interest in energy efficiency remained relatively strong. This was evidenced by the development of new mechanisms (such as "public benefit funds") to support energy efficiency programs. Recent research indeed shows that utility and public benefits spending on energy efficiency programs has rebounded from this decline (York and Kushler 2002). In addition, in 2001, electric system reliability concerns experienced in many regions of the country provided a substantial boost for the issue of energy efficiency as an important component of energy resource portfolios (Kushler, Vine, and York 2002). Most recently, concerns about the war in Iraq, coupled with energy industry trends, have resulted in surging energy prices. These factors, together with increasingly important environmental concerns, suggest that energy efficiency will be emerging as an even more important public policy objective in the foreseeable future.

In this context, it is vitally important that policymakers, regulators, utilities, and other involved parties have up-to-date information on the best energy efficiency program designs and implementation practices. To this end, ACEEE conducted a national review and assessment of current utility-sector energy efficiency efforts in order to identify exemplary energy efficiency programs that might be replicated by those in other jurisdictions.

SCOPE AND OBJECTIVES

The intent of the project was two-fold: (1) to provide information about top quality energy efficiency program designs and implementation techniques that might help others to improve their programs or serve as models for new programs and initiatives; and (2) to provide recognition to those who are doing an excellent job in their energy efficiency efforts.

The project scope's was national. ACEEE sought to identify and solicit nominations from across the United States of programs that merited consideration as among the best programs in the nation. ACEEE sought programs of all types, including resource acquisition, market transformation, industry collaboratives, and professional education. We also sought programs serving all customer classes (residential, commercial, institutional, and industrial) and covering a wide variety of end-use technologies, including lighting, HVAC, industrial processes, and consumer appliances.

SOLICITATION OF PROGRAM NOMINATIONS

ACEEE actively solicited nominations for programs to be recognized as exemplary. ACEEE staff notified key contacts at state public service commissions, utilities, state energy offices, regional market transformation organizations, state research and development organizations, and other allied organizations and industry professionals. We also contacted national experts. Our intent was to cast a wide net to ensure that we had sufficient numbers of top-quality programs from which to make selections for the project.

We completed our first rounds of surveys to solicit nominations in July and August of 2002. We also publicized this project and solicited nominations at the ACEEE 2002 Summer Study on Energy Efficiency in Buildings in late August 2002, which drew over 600 participants. ACEEE also posted information regarding this solicitation on its website with a headline announcement on its home page and links to more information and the nomination form. After reviewing the initial set of nominations and identifying certain gaps, we conducted additional surveys and made additional contacts to solicit nominations in September 2002.

The nomination form was a simple one-page summary document to provide brief information and key data about the programs. Along with the nomination forms we distributed background information on the project and a set of “factors to be considered in identifying exemplary programs.” These factors were:

1. *Direct Energy Savings.* Demonstrated ability of the program to deliver substantial immediate kWh and KW savings from energy efficiency. Programs could be noteworthy due to overall total magnitude of impact (i.e., very large programs) or in terms of amount of impact per dollar spent (i.e., very cost-effective programs).
2. *Market Transforming Effects.* Demonstrated ability of the program to produce desirable and lasting improvements in the energy efficiency characteristics and performance of the targeted market.
3. *Evaluation Results.* Programs that have used good quality ex post evaluation/verification methodologies to document savings impact and/or market effects achieved by the program would receive more favorable consideration.
4. *Qualitative Assessment.* Achievements of the program in terms of noteworthy program implementation performance, customer participation, participant satisfaction, stakeholder support, etc.
5. *Innovation.* The incorporation of particularly innovative designs and/or implementation techniques that would be judged to hold significant promise for the future.
6. *Replicability.* Programs that are well documented and have characteristics amenable to replicating the program design in other settings.

We anticipated receiving about 50 program nominations and intended to select a final set of 15–20 programs to recognize and profile.

EXPERT PANEL REVIEW AND SELECTION

ACEEE staff catalogued and organized the programs according to major categories. This step was necessary in order to compare programs that targeted the same technologies (for example, residential lighting) or offered the same kinds of services to a customer class (for example, design assistance for new construction).

ACEEE convened an expert panel, which consisted of 3 external industry experts (Doug Baston,¹ Jeff Schlegel,² and Ed Vine³) and 3 ACEEE staff (Martin Kushler, Steven Nadel,

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² Schlegel and Associates, LLC, 1167 Samalayuca Drive, Tucson, AZ 85704

³ Lawrence Berkeley National Laboratory, Building 90-4000, Berkeley, CA 94720

and Dan York). Each panelist received copies of all nominations for review and ranking. While the panel used a rough scoring system initially as a means to help rank and select programs, the decisions to select a program for one of two awards—“exemplary program” or “honorable mention”—were all reached through discussion and consensus. ACEEE staff and the external panelists conducted additional research on programs as necessary to supplement the information provided in the program nominations. While the panel relied on as much objective data and descriptive material as possible, ultimately the decisions were subjective based on group discussion of available information and collective judgments regarding each program.

The panel did not necessarily select programs for awards in all categories of programs received. Rather, the objective of the panel's selections first and foremost was to select those programs it felt merited recognition for their achievements and that offered excellent models for emulation and replication by others.

A secondary objective of the expert panel was to try to achieve a set of programs that covered each major customer sector (residential, commercial, and industrial) and were reasonably diverse in other important characteristics, including type of organization and type of program. But we emphasize that while the expert panel hoped to achieve such a diverse mix of programs, the ultimate test for selection of each program was that it had to represent “best practices” in the perspective of the panelists.

RESULTS

Response to ACEEE's call for nominations of best practices programs was overwhelming. We received far more nominations (about 130 total) than we had expected (perhaps 50). We view this as a positive sign of the quantity and quality of work ongoing around the nation to reap the economic and environmental benefits of energy efficiency. The overall quality of the nominations was high, which combined with the large number of nominations made the task of selecting programs from among this set much more difficult than initially anticipated.

The appendix first links to a list of programs selected as either “exemplary” or “honorable mention.” This program list links to profiles on these programs, identifying them as either “exemplary” or “honorable mention.” For convenience, the program profiles are grouped in the appendix according to the type of program (for example, “Residential Lighting”). Next, to provide complete information, a link to the list of other programs nominated is supplied in the appendix.

ACEEE believes strongly that each nominated program is noteworthy. It means that either someone associated with the program or working directly on the program (self-nominations were accepted and encouraged) felt that the program was of very high caliber according to the set of factors we publicized. ACEEE views all the nominations as *winners*—there were no *losers* among this large set of nominations. Each of these programs is providing the winning benefits of energy efficiency to a wide variety of customers, from homeowners to large industrial facilities.

We purposely did not define the categories of programs that were eligible for consideration in the nomination process. We wanted to encourage submission of a wide variety of energy efficiency program types for consideration. By prescribing categories up-front we felt we might stifle the nomination process, possibly discouraging nominations of innovative programs that might fall outside the boundaries of such defined program categories. Overall, ACEEE found that this open-ended process did indeed encourage submission of innovative programs in areas that would have been difficult to define or prescribe (such as SMUD's Shade Tree Program or California's Statewide Codes and Standards Advocacy Program).

However, the open-ended nature of the solicitation for nominations also resulted in nominations for two types of programs for which the expert panel did not feel qualified to evaluate. These types of programs were: (1) kindergarten through grade 12 (K-12) energy education programs, and (2) research, development, and demonstration (RD&D) programs. The expert panel dealt differently with each of these program types.

For the K-12 programs, the panel felt that these types of programs fell too far outside the boundaries of the kinds of utility and public benefits energy efficiency programs that generally seek resource acquisition (RA) or market transformation (MT). ACEEE did not actively seek program contacts and nominations in the field of K-12 energy education. Consequently, the expert panel was uncertain that the nominations received were necessarily the best of this type, although each of these nominations appeared very worthy of consideration. Furthermore, while the expert panel generally believed that K-12 programs are valuable and complement the other types of programs offered to energy customers, the panel did not feel qualified to evaluate and judge these types of programs as it did not have extensive experience in this area. The panel excluded programs in K-12 energy education from selection for honors.

For the RD&D programs, the panel concluded that these programs were much more closely related to the RA and MT programs that were the primary targets for this awards and recognition project. Such programs often have led to new technologies that then were promoted through RA or MT programs. However, the expert panel also felt that RD&D programs warranted different treatment because of their very different characteristics and program objectives. The expert panel did not feel qualified to render judgments as to "exemplary" RD&D programs. Instead, the panel concluded it was appropriate to recognize the four RD&D programs nominated as "honorable mentions" based on their successes.

Award Categories: Exemplary and Honorable Mention

ACEEE initially planned to recognize a relatively small set of programs (perhaps 15–20) as exemplary. But as a result of both the much higher number of nominations received and their overall high quality, ACEEE decided to create two categories of awards—exemplary and honorable mention. The distinction between these two categories is perhaps a small one, based solely on the collective judgment of the expert panel using the factors listed earlier as to which category an honored program best fits. For example, a program that appeared to be very innovative and promising might have been too new to have a sufficient record of results upon which to evaluate its level of success. In such a case, the expert panel might have

awarded the program an honorable mention—a program worth noting and monitoring as it has a greater amount of time to operate and achieve results. In other cases, a program might have been a huge success and very innovative, but since has been supplanted by a newer program or is no longer offered. Again, this type of program was recognized as an honorable mention.

Analysis of Nominations

While a primary objective of this project was to recognize outstanding programs and provide brief profiles of each individual program selected, another objective was to analyze the nominated programs as a group representing current best practices. Today's energy efficiency programs have evolved based on 20–30 years of experience gained through utility and related energy programs first offered in the 1970s. The best programs of today then embody and reflect this extensive history and experience with providing programs and services to customers to improve the efficiency of energy use within their homes, buildings, facilities, and factories.

ACEEE received nominations from programs serving customers in a total of 31 states, from Washington to Florida and from Arizona to Maine—and even Alaska and Hawaii. We also received nominations for a handful of national level programs. This result demonstrates that quality energy efficiency programs are serving customers across the United States.

Three regions accounted for particularly large shares of program nominations—the Pacific Northwest (Washington, Oregon, Idaho, and Montana), the Northeast (the Middle Atlantic States and New England), and the state of California. All three of these regions have long records of utility and public programs to support energy efficiency. The Northeast and Northwest are served by regional market transformation organizations. California has an extensive set of utility and public programs supported by its system benefits charge passed in conjunction with its restructuring legislation. Other regions and states that showed reasonably strong showings in terms of the numbers of nominations were the Midwest and Texas. This result mirrors recent ACEEE research that examined state trends in utility and public benefits energy efficiency programs (York and Kushler 2002).

In addition to wide geographic diversity in the nominations, we also had great diversity in the types of organizations that fund, administer, and implement programs that were nominated. The types of organizations nominated for their programs include:

- Utilities: investor-owned, municipal, federal, and cooperatives
- State public benefits programs
- Regional market transformation organizations
- Private businesses
- Nonprofit organizations
- Municipal government
- State government

- Federal agencies
- “Collaboratives” of various types of organizations

The types of programs nominated showed wide variation as well along three main dimensions: (1) sector served, (2) targeted end-uses and technologies, and (3) program services. Sectors served by nominated programs covered the full range of customers, namely residential, commercial (small and large), industrial, agricultural, institutional, and municipal. Targeted end-uses and technologies covered the full spectrum, including lighting, HVAC, industrial processes, appliances, building envelope, compressed air systems, wastewater, industrial motors/drives, and traffic signals. The types of program services similarly covered a broad spectrum, including financial incentives (rebates), technical assistance, consumer education, marketing, customized services, professional education, performance contracting/bidding, appliance recycling, and technical support for codes and standard development.

An important observation on the types of programs nominated is that there was a relatively balanced mix of both resource acquisition and market transformation programs. Both types of programs are part of energy resource portfolios helping to meet the energy needs of the customers they are serving.

Collective Impacts and Costs of the Selected Programs

While the programs nominated and selected for this project represent only a portion of all energy efficiency programs offered across the United States, these programs are having significant impacts and represent a large investment in energy efficiency. For example, the set of programs honored as exemplary reported over 2,000 GWh of annual energy savings in 2002 and their cumulative annual energy savings achieved, including prior years of operation, is over 20,000 GWh. These programs reduced peak demand by over 500 MW from measures implemented in 2002 alone. The total costs of this set of programs in 2002 were about \$250 million. Clearly, these efficiency programs are an important component of energy resource portfolios for many utilities and states

Observations and Common Traits of Leading Programs

In reviewing the set of nominated programs, we observed a number of common traits in many similar programs, as well as other noteworthy features that help define “best practices” for today’s top energy efficiency programs. We highlight these observations below.

- *“Comprehensive” approaches are being taken in all customer segments.* By comprehensive, we mean services targeted not just to a small set of end-uses, but rather that seek to improve the energy efficiency of entire buildings or industrial processes by examining the systems and technologies that function together within the buildings or processes. Programs and services for large industrial and commercial customers have long taken a comprehensive approach due to the unique and specialized needs of these customers. But we also observed comprehensive approaches taken in residential programs, including low-income customers, commercial new construction programs,

agricultural programs, and small commercial programs. The reason is obvious—and not new to energy efficiency professionals. Taking a comprehensive approach can yield more savings at less relative cost. Synergies of energy savings can be realized when complementary actions are in use together.

- *Customized services and customer-focused approaches are common.* A large number of programs across sectors are clearly working to address customer needs and offer user-friendly and customer-focused services. Customized services reflects growing recognition of the unique needs of customers within a given customer class. “Cookie cutter” or “one-size-fits-all” approaches are not well suited to meeting customer needs in many markets.
- *Programs sell more than energy efficiency.* While saving energy through energy efficiency is clearly the overall objective of most programs, to realize these savings requires that the products and services promoted offer other attributes that meet customer needs. For residential customers, these include comfort, enhanced home value, convenience, superior product performance, and cost savings. For commercial and industrial customers, these include improved productivity, improved quality of and reduced costs for operations and maintenance services, greater reliability, improved aesthetics, and comfort.
- *There are also very successful programs that are tightly focused on a single technology or service.* Despite some apparent trends toward comprehensive and customized programs, there are clearly very successful programs that target a single end-use technology (such as residential lighting, residential windows, commercial HVAC, and compressed air) and such targeting also can be a very effective strategy in certain cases. But while the focus of many programs may be narrow, we also observed that the approaches used to market the product or service tend to be comprehensive and well integrated, relying on a variety of tactics to promote the technology and gain customer acceptance.
- *Program marketing and support services are essential for program success.* The programs profiled here are exemplary because they have achieved high participation rates and substantial savings. Good marketing is an essential ingredient in achieving these participation rates and good training and technical assistance is needed to achieve high savings. These are two factors that differentiate exemplary programs from the ordinary.
- *Financial incentives (including rebates) have not gone away.* When the program model of market transformation emerged in the early 1990s, there was a certain train of thought that suggested that with such programs, rebates and other types of financial incentives would no longer be necessary or used within energy efficiency programs. As is quite apparent from the set of nominated programs, rebates and other types of financial incentives are still an important and integral part of many programs, including some that are labeled market transformation. Financial incentives are clearly an important marketing tool. What may have changed somewhat is that financial incentives are not always going to the customer, but in some programs they go to other market participants, such as retailers or home builders.
- *Resource acquisition as a program objective has not gone away.* Along with the emergence of market transformation as a program objective and model, there also arose a train of thought that suggested that resource acquisition was outmoded and not a legitimate program objective any longer. Our set of nominations helped confirm the more

prevalent view today that resource acquisition can still be an important part of energy resource and energy program portfolios. We observed some programs that specifically targeted very near-term energy and demand savings as a strategy to help relieve wider energy resource shortages, such as occurred in the summer of 2001 in California, the Northeast, and other regions of the country.

- *Market transformation is a significant program objective and program model.* We received a large number of nominations for market transformation programs, and many of these are having significant impacts on their targeted markets. These programs are helping to achieve relatively high market shares for their targeted products and services, whether these are new homes, CFLs, clothes washers, efficient commercial HVAC systems, or commercial lighting. Residential market transformation programs tend to target specific products and technologies. In commercial and industrial markets, programs are seeking to transform professional practices, whether for building operations and maintenance, building design, production processes, or management of compressed air systems. More information on the results of market transformation programs will be available in a forthcoming ACEEE report on this subject (Nadel et al. 2003).
- *Utilities are still major providers of energy efficiency services.* Electric and natural gas energy utilities (whether operating in restructured, competitive markets or in traditional, regulated markets) continue to be the largest delivery mechanism for energy efficiency programs in the United States. Indeed, utility-administered programs comprised a major fraction of all the nominations we received. In many cases, utilities are working together as collaboratives with a variety of partners in order to have a greater impact on the targeted markets.
- *Non-utility programs are increasing.* The number of non-utility program administrators and providers is increasing across the nation. Some states (such as New York, Oregon, Vermont, and Wisconsin) have established new non-utility organizations or charged existing non-utility organizations with administering and implementing energy efficiency programs.
- *Partnerships and collaboratives that bring together a wide variety of market actors are keys to achieving significant market impacts.* We observed that a common trait of highly successful programs is that they rely on numerous partnerships, alliances, and collaborations that bring together diverse organizations that share a common interest in achieving a significant market impact, whether for products (such as residential lighting equipment) or for services (such as building operator training).
- *Effective “supporting” programs and services are important in order to achieve program success.* As we discussed earlier, we received nominations for a couple categories of programs that fall a bit outside the boundaries of both resource acquisition and market transformation programs (namely research, development and demonstration programs, and K-12 energy education programs). Related to these are more general consumer education and professional education programs (such as college, university, and technical schools). Clearly these supporting programs work in concert with those programs focused on a specific end-use technology or service. RD&D programs help identify and develop the next generation of energy-efficient technologies, and K-12 and more general consumer and professional education programs help the next generation of consumers and energy professionals become better informed about energy use and management.

- *ENERGY STAR*[®] features prominently in many of these programs. The U.S. EPA/DOE *ENERGY STAR* program is a very central element in the majority of the programs nominated in this project. *ENERGY STAR* clearly provides a platform and standard for energy efficiency that enables local, state, and regional programs to have significant impacts in targeted markets. *ENERGY STAR* has become more and more widely recognized as the brand for energy efficiency, which is a huge boost to program marketing and customer purchase behavior.

CONCLUSION

This project clearly demonstrates the wide range of high-quality energy efficiency programs that are being offered in various areas of the United States today. These programs are working with energy customers of all types to improve the energy efficiency of their homes, buildings, and factories. Exemplary programs are being offered across the full range of customer technologies and services tied to energy use and by a broad spectrum of organizations. What is common across all the programs profiled in this report is their success in reaching customers with their messages and changing behavior, whether regarding purchasing new appliances, designing new office buildings, or operating existing buildings. By doing so, these programs are providing enormous economic and environmental benefits, in their specific state or locality, as well as for the nation as a whole. Other areas of the country that do not have such energy efficiency programs would do well to emulate these excellent examples.

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APPENDIX: NOMINATED AND SELECTED ENERGY EFFICIENCY PROGRAMS

Below is a link to profiles of all programs selected for recognition as either exemplary or an honorable mention. Each profile contains a short narrative that provides an overview of the program, its performance, and lessons learned, and summary information about the program (including contact information). The profiles are arranged according to program type (for example, “Residential New Construction” and “Professional Education”). The program categories contain both exemplary and honorable mention programs. We have grouped the profiles this way to make it easier for readers to find out information on best practices according to these broader program categories. We also have clustered the exemplary and honorable mention profiles together because we believe that all the programs selected for recognition are excellent examples of programs for others to emulate.

The primary sources of information for these program profiles were the program contacts listed along with other staff from the administrative organizations listed in the profiles. ACEEE thanks all these program contacts—managers, consultants, corporate communications staff, and others—for their valuable assistance in developing concise, accurate information on their programs. A caveat with this acknowledgement is that the program information and data are largely self-reported. ACEEE has not attempted to independently verify the accuracy of the reported data as this was beyond the project scope.

We encourage readers to contact the persons listed for each program for more information about that program, and also to check out the program information available on the websites listed in the summaries.

Exemplary and Honorable Mention Program Profiles

Other Programs Nominated