

**SOLAR 2002 CONFERENCE:  
RENEWABLE ENERGY CONSUMER EDUCATION PROGRAM  
FOR CALIFORNIA**



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## **ABSTRACT**

One barrier to mainstream adoption of renewable energy systems is the lack of awareness among consumers. Many consumers have heard at least some reference to renewable energy at various times in their lives, but they do not know how to incorporate it into their daily lives and they lack the necessary tools to purchase or support renewable energy development.

In order to address these issues, the California Energy Commission implemented a statewide Renewable Energy Consumer Education campaign. The goals of the campaign are to raise consumer awareness of renewables and their benefits, increase purchases of emerging renewable technologies, and develop renewable energy education partnerships. To help accomplish these goals, the CEC awarded several grants projects.

One project, “This Renewable House”, is an example of how the CEC grant program works.

Other states can use the California Renewable Energy Consumer Education grant program as a model to promote renewable energy in their states.

### **1 THE NEED FOR CONSUMER EDUCATION**

The restructuring of the electricity industry in California five years ago gave consumers more opportunities and choices to manage their energy bills. Yet, as with any change, there are uncertainties and risks. Consumers are in a position to take advantage of these new opportunities, but they must stay informed in this developing marketplace.

One of the choices made available to electric customers was the opportunity to select a direct access provider that supplies electricity through the grid to consumers. Switching your electricity service provider (ESP), like switching your telephone company, offers an easy way for consumers to adopt renewable energy. Switching ESP’s certainly is easier, at least initially, on the pocket and has less perceived risk for the consumer, compared with making the choice to install a renewable energy system for a home or building.

However, the “energy crisis” in California caused most ESP’s, such as Green Mountain Energy, to withdraw service options for consumers in California. Subsequently, in September 2001, direct access was suspended. For now, if you want to power your home with renewable energy, only one choice remains in California -- installing renewable energy equipment.

Even before the energy crisis hit, renewable energy marketers found themselves caught in a “catch 22”. On the one hand, they were awaiting consumer demand to “pull”

the market for renewable energy<sup>1</sup>. On the other hand, these companies needed to sell their goods and services to keep their businesses viable.

While, numerous surveys have confirmed widespread public interest in renewable energy<sup>2</sup>, hurdles identified by the California Energy Commission (CEC) included:

- Lack of awareness about choice and how to switch.
- Fear of switching – losing reliability.
- Automatic rate reduction and compensation transition charge.
- Price premium for renewable energy.
- Indistinguishable electrons: paying for a public good, not a private good.
- Inertia/effort to research renewable energy alternatives.
- Lack of knowledge regarding the environmental impacts of electric generation and the benefits of renewables.
- Distrust of power companies; wariness of “greenwashing”.
- Cynicism about making a difference.

Switching ESP’s is one decision for consumers. But when a consumer considers investing several thousands of dollars in their own solar or wind energy systems, other hurdles arise:

- Lack of knowledge regarding the equipment and its technology application and availability.
- A perception that the installation processing is difficult and complicated.
- Difficulty in finding a qualified installer.
- Lack of trusted references from (friends, neighbors, etc.) that have installed their own solar or wind systems.
- High initial investment, with return on the investment unclear.

For many consumers, selecting and installing renewable energy is a wise decision. Equipping consumers with facts and information can help people reach their decisions. And many of the hurdles listed above can be lowered through consumer education.

To help minimize these barriers, the CEC solicited and awarded grants projects that promote renewable energy

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<sup>1</sup> “Renewable Energy Consumer Education Marketing Plan”, California Energy Commission, February 1999. Page 19.

<sup>2</sup> Market studies include those listed in the Notes of the “Renewable Energy Consumer Education Marketing Plan”, California Energy Commission, February 1999.

technologies or provide consumer education and information on emerging renewable energy products or services. These projects were designed to reach their intended targets including residential, commercial, institutional, educational, government, energy cooperative, and media markets.

## **2 GRANT PROGRAMS PLAY A UNIQUE ROLE**

The CEC awards grant funds to enhance or benefit an applicant's existing or proposed strategy. Eligible projects should have a goal of providing information to consumers about renewable energy technologies.

The Renewable Energy Consumer Education program has limited funding so the grants program represents a way to leverage value through strategic alliances and partnerships with organizations connected to renewable energy in California. This approach aims to leverage the Commission's expertise and reputation with additional knowledge, networks, and resources.

The grants program encourages work through alliances with a wide variety of manufacturers, retailers, installers, utilities, support groups, and the media, thus serving as a conduit for growth and a "seed" for future work by these industry stakeholders.

Properly structured, grant programs can help consolidate industry messages, allowing the soft voice of new industries to compete against the often -loud voices of large, entrenched industries.

A grant is unique. It is not a contract with the state to perform work under government direction. Rather, grantees are relatively free to research and produce work on their own, with only a Statement of Work serving as a guide.

The CEC holds little editorial supervision during the course of grant work. However, in selecting grantees, the CEC ensures that applicants and projects meet the eligibility criteria. The CEC carefully reviews candidates and proposals to insure they are likely to produce work which is balanced in its presentation, avoiding to the maximum extent possible, discriminating among renewable energy products, manufacturers or the like.

Consumer education is an important part of the process toward wider adoption of renewable energy. Learning the benefits of conserving energy, and new sources of energy often requires a mental shift. This mental shift is often just as important as any lifestyle shift required.

Social marketing involves social change, an intangible product. There are stages to adoption of social change. It takes time and the right approach to accomplish the desired changes. A campaign should target the appropriate audience, the message should be sufficiently motivating, the

campaign should be well funded, and individuals or groups that are targeted should be given a way to respond constructively; the campaign should present target adopters with inducements to act now.

The "truth" is a relative term that is a product of its context – truth is relative. The context of consumer information today is characterized as one where the voice of large corporations bellows loudly. This is not always bad or unwanted, but one needs to be conscious of the context in which they are fed information. Skewed information can have a devastating effect on new initiatives, such as the programs to encourage wider adoption of renewable energy.

The important message for consumers to hear is not whether distributed generation is better than centralized power generation, or whether solar or wind energy is better than hydro, natural gas, coal or nuclear. In some cases one solution is better than the other, in other cases the reverse is true. More importantly, consumers need a steady stream of practical, balanced, accurate, and factual information from which they can make their own choices, decisions, and determinations. It is in this spirit that the grant program was founded and administered by the CEC.

## **3 LESSONS FROM ELECTRIC VEHICLES**

When attempting to motivate consumers to adopt new systems and practices, education plays a facilitating role. Electric vehicles (EV) serve a good case study of the important role of consumer education. There are many parallels to California's attempt to increase adoption of renewable energy.

The mandates for EV's were put in place in the early 1990's by the State of California. Later the EV mandates were stalled, by five years, from 1998 to 2003. This program delay was in many ways realistic, given the large-scale shift in technology, infrastructure and consumer education required to accommodate EVs. But throughout the EV program, "consumer education" put forward by the major automakers was a pervasive factor.

Today, the average consumer in California knows what they know about EV's largely due to the education afforded them by automakers paying to get their messages in the heads of consumers. Even ten years after the EV mandates were put into place, few consumers have actually driven an EV.

Due to the influence of automakers, the message most consumers heard was biased toward the automaker's perspective. This automaker perspective, by most EV advocate's accounts, was aimed at eliminating the EV mandates, or at least buying automakers more time.

A bill enacted in September 1996 established new energy policies in California to support the renewable energy market. Funding for the Renewable Energy Program is

being collected from the ratepayers of the three largest investor owned utilities in California.

Like the automaker response to EV's, electric utilities are not readily accommodating grid-tied renewable energy installations. The resistance from utilities usually comes in the form of interconnection agreements. Rather than actively facilitating and promoting renewable energy, often utilities provide only minimal staffing for interconnection agreement processing, and inspections. Recently, a bill was put forward by California legislators to require utilities to process interconnection agreements within a limited amount of time.

And, with few exceptions (Los Angeles Department of Water & Power and Sacramento Municipal Utility District being two) renewable energy is not marketed nor promoted by utilities. At this point in time, utilities prefer to promote energy conservation and peak load shaving, so their generating capacity can be more efficiently utilized. Another reason why many utilities may not be promoting renewable energy is that utilities do not necessarily have enough renewable energy products to offer to their customers. So utilities may be wary of losing their customers to a renewable energy ESP.

Since the EV mandate was originally enacted into State law, more than 10 years ago, automakers have come to realize that clean cars may not be so bad for their businesses after all. Consumers are finally being offered the cars, and like them.

Today you can buy hybrid-electric and electric automobiles from major manufacturers. The facts are now speaking for themselves, as automakers like Toyota and Honda realize the potential of hybrid-electric cars and are gearing up to fill consumer demand – in the hundred of thousands of units per year. Toyota actually spends considerable marketing dollars promoting their Prius hybrid car. Ford's Th!nk division is also starting to promote and offer electric cars, based in part upon what it realizes is consumer demand for such products.

It took ten years for EV's to start to reach mainstream markets. It wasn't until automakers had hybrid and electric cars that they saw as good for their business that these products began to be actively promoted and produced. Consumers have also gained considerable knowledge over the years, making electric vehicles a more acceptable option in the minds of consumers. One should expect power utilities to take a similar course of action with renewable energy.

The lesson here, is that when creating programs that have societal benefits, some times established industries can not be expected to promote fundamental shifts in their business – especially in the early stages of the industry transformation. It is not until a market “pull” is quantified

that these industry participants are apt to change from a reactive to an active stance.

Therefore, to keep renewable energy initiatives on track, it is important for consumer education to be carried out in a manner that offers a balanced and realistic perspective, which is not skewed toward one particular point of view. One should not expect that perspective to come from established industries threatened by change.

On the other hand, one should expect the small and medium-size companies banking on the growth of renewable energy to actively promote their goods. However, this most likely requires a cooperative, collective effort by these entities to reach the scale that just a few large power utilities can reach with their marketing power. In this respect, Government can, and should, lend a helping hand, in the best interests of promoting an industry shift for the benefit of society.

#### **4 THIS RENEWABLE HOUSE**

*This Renewable House* is a multi-faceted consumer educational project funded under the CEC's Renewable Energy Consumer Education grant program. The project aims to demystify renewable energy for the home and building owner. The centerpiece is a 30-minute television how-to show that aired in the Spring of 2002 on public television stations in California.

To provide the widest consumer reach possible, additional outlets and supporting features of the program include:

- A public service announcement (PSA), featuring Lee Iacocca, was released to TV and radio stations in California, aimed at increasing traffic to the program's web site and the California Energy Commission's *Energy Call Center* (1-800-555-7794);
- *Free* rental of an extended home video (VHS and DVD) version through major video rental stores and Technical Partners. This home video program includes the PBS show together with highlights of commercial sites installing renewable energy;
- A website ([www.calenergy.org](http://www.calenergy.org)) established to supplement and expand the program content, including a contractor database and lead referral system;
- Articles submitted to media, building industry and architect trade publications; and
- Public relations activities in coordination with Underwriters and Technical Partners.

In the making of *This Renewable House*, the grantee was required by the CEC and Public Television to follow strict

guidelines designed to avoid undue influence by industry or advocacy groups. The objective was to develop a balanced perspective, and to effectively communicate this information to consumers.

To be effective, the project also needed to reach a critical mass. This was accomplished by bringing together several entities into one project. Project participants included the CEC, Public Television, radio and TV stations throughout California, video rental stores, non-profit entities such as EPRI and Global Possibilities, celebrities such as Lee Iacocca, building industries associations, and renewable energy equipment manufacturers such as Xantrex and Astropower.

## **5 THE CONTEXT THAT DROVE DECISIONS**

Work on the show got underway in the summer of 2001, just as the California energy crisis was expected to result in “rolling blackouts” across California. Utility prices had already risen, and a few utilities had filed bankruptcy. There was a lot of finger pointing going on.

The State implemented the “Flex Your Power” campaign and ran advertisements requesting consumers to conserve energy. Governor Gray Davis was facilitating the expansion of new power generators, securing long-term contracts for power, and threatening to sue energy suppliers and traders. Billions of dollars were at stake, not to mention the California economy. But with challenges come opportunities.

The California Energy Commission (CEC) has in place an Emerging Renewable “Buydown” Program. The Buydown program pays for up to 50% of the cost to install solar, wind and other renewable energy systems, to offset customers’ electrical needs. Various utilities and localities also offer similar incentives to customers who install renewable energy on their premises. Yet research showed that few Californians’ knew about the incentives and remained uncertain about adopting the technology.

In 1999, Y2K concerns had generated a good deal of interest in renewable energy technologies. Consumers were concerned about energy price spikes and reliability. The California “energy crisis” also sparked demand for renewable energy. Buydown applications increased by 500% during the energy crisis. Installers and manufacturers were backlogged, many by as much as six months, with sales. Yet, while these were viewed as strong sales for the renewable energy industry, the revenues were meek in comparison to the aggregate energy dollars spent by California consumers.

For three months the show’s staff researched its topic, prepared scripts and interviews, hired production staff, and scheduled filming. As fate would have it, filming started on September 11<sup>th</sup>, a date that was scheduled weeks in advance.

Lee Iacocca was to be featured in a public service announcement to promote the show’s website and the CEC’s Energy Call Center. Mr. Iacocca graciously carried on with the show despite the terrorist attacks witnessed on television earlier that morning. Everyone involved felt the day’s work was the right thing to be doing. Now more than ever, national security, the ensuing war and energy seemed to be intimately linked in the American psyche.

By the end of 2001, the show was being readied for broadcast. The Associated Press reported the top ten stories of 2001. The September 11<sup>th</sup> terrorist attacks topped the list. The energy crisis had smoldered into a debate about energy industry deregulation. The energy crisis had slipped from a top concern, to ninth position in the minds of the public and the press.

For decades, the renewable energy industry in America has been plagued with fits of starts and stops. A lot appeared to have happened since filming began. To gauge consumer reactions, some follow up calls were made to solar and wind energy installers interviewed earlier in the year. They reported that business was still good. About this same time, a Gallup poll confirmed the American people’s near-universal support for development of alternative energy sources, including solar, wind, and fuel cell technology. In the Gallup poll, more than nine out of ten Americans (91%) expressed their favor for alternative power sources.

The energy crisis had not slid out of America’s mind. It had simply assumed its rightful position as the bookend to a long list of current events that are linked directly or indirectly to energy. If anything, the “war on terror” had helped to keep renewable energy in the minds of Americans. The growth curve for renewable energy continued to go up, but remains only a fraction of the size of the energy industry as a whole in California.

## **6 SEEKING THE TRUTH**

In the making of *This Renewable House*, over the course of several weeks, about 100 different people were interviewed, and actual visits were made to approximately 20 installers and homeowners who were adopting renewable energy. Some people that had decided against installing renewable energy were also interviewed.

The production staff went on the road thinking the visits would be with a portfolio of persons who would provide a snapshot of the mainstream renewable energy market in California.

The first casting call was with Brad, who had recently sold his Dot Com. Now Brad was in southern California, starting a new business in solar energy. He discussed his new business, so our staff could consider what might be filmed as part of the television program. *This Renewable House* is

about installing renewable energy in your home and Brad is eager to be part of the show.

Brad's office is his home. It looks half moved in, or perhaps moved out. Brad jumps into a well-rehearsed description of his business plan. He's evangelizing, raising money, and considers even a TV producer fair game. Brad is full of vision, and he means well. He's arranged for a wealthy neighbor to invest in a new solar system. Renewable energy isn't just for the wealthy, but this will be Brad's first solar job and the large job helps kick off Brad's business.

Brad's was one of many companies listed on a website of renewable energy installers that were researched. No qualifications were listed on that particular website. And, the list was alphabetical -- many of the new companies on the list started with "A". They also tended to be the companies that responded quickly to the casting call, and pursued the producers aggressively. Companies were screened through E-mails and telephone dialogues before meeting them.

After the first round of interviews, veteran companies in the industry were contacted. Some manufacturers were diligent and accommodating to our requests for information. Others failed to even return calls. In the end, industry leaders Astropower and Xantrex proved helpful.

These companies discussed their efforts to develop a qualified network of installers through new training and certification programs. They also discussed their new initiatives to offer "kit" systems that were designed to simplify the installation process and open the market to average homeowners.

These companies then steered us toward contractors that were qualified, professional and experienced in their work. Perspectives from these and other installers provided further insight into the selling process, and the role purchase incentives, and new industry initiatives play in the day-to-day business of running a renewable energy equipment installation company.

The main feature of *This Renewable House* is to document the selection and installation of solar energy in an existing home. For this activity an installer was selected who had over ten years of experience. They owned trucks, displaying large color company logos. Their staff arrived to estimate the installation in logo shirts, and in a company car also prominently displaying their logo. It was the other end of the spectrum, making a nice contrast to Brad's start-up operation. We chose this installer, utilizing a selection process that many homeowners had described to us as a successful course of action.

## 7 PURCHASE INCENTIVES

What we saw in the making of *This Renewable House*, having interfaced over a period of time with real live consumers and contractors, is that purchase incentives, like the CEC's Buydown, do make a difference -- they work. Part of their charm is the psychological aspect -- the feeling of a sale going on. But it is good economics that make the difference and create demand. Energy independence and environmental causes have their value too, but it still takes good payback on an investment to convince most people their choice is wise. Good economics can cut through a lot of noise.

It is true that the CEC Buydown and other incentives will pay up to 50% of the installed cost. But, based on the applications received by the CEC, the actual buydown turned out to be more like 45%. In some cases, buydown funds received were even lower, between 30% and 40%, due to higher installation costs. The incentive amounts are related to the installed equipment size. So high installation costs reduce the relative amount of incentive funds one can receive.

Homeowners are calculating 10-15 year economic paybacks on their investments in renewable energy systems. This is equipment that typically has 20 to 25-year system life. The payback is acceptable for most homeowners. For businesses, the economics are even more favorable, and sometimes wind is more favorable than solar energy.

Over time, the incentives may likely be reduced or go away. They are meant to be temporary stimulus measures to support the development of the renewable energy industry. So, in order for the industry to continue to grow, costs must come down further, relative to other forms of energy. Otherwise, this strong start is apt to fizzle out.

The energy crisis, concerns over America's security, and the Buydown converged in 2001 to put renewable energy on a new growth curve. These events shaped the context in which consumers make decisions. Our hope is that any future reductions in incentives dovetail nicely with industry efforts to reduce costs, so the economics of the equipment remain favorable. Like any fledgling industry, steady growth for a few years helps to create "the tipping point" -- the point at which growth has matured the industry into a mainstream option for consumers.

The industry is working in a variety of ways to make their products more competitive, even without government incentives. Equipment costs are coming down dramatically as manufacturing volumes increase and manufacturing technologies mature. Other industry initiatives are aimed at simplifying installation, and its cost. The industry is making rapid progress and one should expect that to continue.

At this time, local, state and federal incentives play an important role. And, because it is our nation's security and the health of our economy that can benefit, the government and municipal utilities are playing a fitting role.

## **8 IMPORTANT EDUCATIONAL MESSAGES**

Despite initial reservations about Brad and his new solar energy business, through the eight months of research and filming, we did not hear of a single horror story. In fact, there wasn't even much talk from homeowners of problems with their installers or equipment. Homeowners that used contractors to install their systems were reporting quick, relatively painless and trouble-free installations.

In contrast, when we ran across someone that was installing their grid-tied renewable energy system himself or herself, we noted relatively long delays and complications. We came out of the project absolutely convinced that anyone looking at grid connected systems should use a qualified contractor. Don't attempt to do it alone. Of course there are exceptions, but as a general rule of thumb we would not recommend a self-installation.

Take the time to select a good, qualified contractor. There are many experienced companies and people out there, and the list is growing. Our show's website was designed after reviewing several other renewable energy sites on the Internet. The shows site, [www.calenegery.org](http://www.calenegery.org), provides tips for selecting a contractor, and accesses consumers to a database of installers in California. It's a free, public service website.

Since installing solar energy system at the show home, the energy bills were reduced from about \$50 a month, on average, to under \$10 a month. The system was installed in less than a week and has been trouble free from the start. In fact, much of the show was produced using energy from our solar home, even during power outages, thanks to battery backup.

## **9 MEASUREMENTS OF SUCCESS**

The California Energy Commission understands the importance of consumer education. Results from their programs are real and tangible. It was the CEC's "Flex Your Power" consumer education campaign that helped California conserve energy at record levels. On January 17, 2002, Governor Davis reported that Californians had reduced its total electricity use by 6.7 percent compared to 2000.

The program, *This Renewable House*, its website and the PSA's were just entering the marketplace at the time this paper was being prepared. The actual results will not be known until later in the year. However, it is being scheduled to air on all thirteen PBS stations in California at least once, and in primetime slots. The website, is also

starting to receive "hits" (thousands per month), and this traffic is expected to improve markedly as the PSA gains air time. The availability of a home video version, at numerous video stores in California, will help to further the awareness level of consumers on renewable energy technologies.

One reason why this project may already be successful is because of the good relationships and influence the project has built with various entities and other grantees involved in the renewable energy industry. Their willingness to support the industry was demonstrated by making this project possible. Others have planned to include this project in their programs wherever suitable.

Early estimates suggest *This Renewable House* will be effective in meeting its objectives.

After the CEC's campaign went in effect and the demand for renewable energy systems start to rise, buydown funds will become eventually exhausted. Perhaps this is the clearest mark of success.

It is highly possible to change consumer behavior when a campaign is well planned and implemented effectively. However, a successful campaign also depends on a consumer's readiness to adopt a particular change, and this readiness varies at different times. Four years ago, when the CEC's Renewable Energy Program began, consumers were uncertain about renewable energy. A recent survey of California homeowners indicates that more than 65 percent of those surveyed are familiar with renewable energy systems and more than 50 percent would be willing to pay more for a home already equipped with solar or wind technology. This is a very good indication that the consumer level of awareness and resulting demand for renewable energy is on the rise.

These are exciting times for renewable energy in the state of California, which has historically been a leader in renewable energy generation. Governor Gray Davis announced a plan to increase the State's renewable energy generation to 17% by the year 2006. Increasing consumer awareness is the key to help move the industry and its infrastructure forward, and promote mainstream adoption of renewable energy.