

# **Waking Up Before the Rooster Crows—Devising and Implementing a Successful Strategy to Increase Agricultural Energy Efficiency**

*Patrice Ignelzi, Global Energy Partners, Lafayette, CA*

*Suzanne Frew, Global Energy Partners, Lafayette, CA*

*Mark Reedy, Global Energy Partners, Lafayette, CA*

## **ABSTRACT**

While we'd like to think that energy efficiency is making headway in all sectors, it is inevitable that some get short shrift. Agriculture is still in this category. Until recently, this was true even in California where it is more than a \$26 billion industry<sup>1</sup>. For Southern California Edison's (SCE) new Ag Efficiency Plus program, the implementation team designed outreach and recruitment strategies that focus on moving a market sector historically reluctant to embrace change to join the move to save energy.

The target market for this program is agricultural producers of all sizes—from mom-and-pop farms to agribusiness operations, and all varieties—from crop and dairy production to food processors, refrigerated warehouses, and water suppliers. With the forces of nature, regulation, and the economy bearing on it, energy efficiency has had little traction within this market, making it hard to reach.

This paper describes the components of the program design, promotion, recruitment, and enrollment; addressing community considerations specific to this market—such as milk prices and seasonal production schedules—and the influence of other entities working within agricultural communities, from equipment vendors to other efficiency programs. It's all about using the synergies that exist within the customer's supply chain, finding the right place(s) to intercede in the chain, and being there, being there, being there. How to intercede in the right places at the right time and make the budget stretch to be there for the customer is the heart of the challenge and key to the successes we will discuss. The bottom line is that it's long, hard work.

## **Introduction**

Energy efficiency programs targeted to agricultural customers have typically received far less attention than those in other sectors, in part due to the size of the market relative to the residential, commercial, and industrial sectors. But agricultural energy use is no small potatoes (about 950 trillion Btu a year) and helping this market maintain vibrancy is important to us all. Until recently, underserving agricultural customers was true even in southern California despite the fact that this sector accounts for more than 60% of the total U.S. fruit and nut sales.<sup>2</sup> While SCE's agricultural customers have been eligible to participate in SCE's energy efficiency rebate programs, those programs were neither tailored nor promoted to this market. And these customers, though satisfied with SCE's pump testing program, have been historically reluctant to embrace change, making them a relatively hard-to-reach group.

In late 2006, Global Energy Partners, in collaboration with EnSave, launched Ag Efficiency Plus, a new program designed specifically for SCE's agricultural growers and processors and water suppliers. The target market for this program includes: agricultural producers of all sizes, from mom-and-pop farms to agribusiness operations; all aspects of agriculture, from crop and tree farming, ranching, and dairy production to food processors, refrigerated warehouses, and water suppliers. This market consists of

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<sup>1</sup> U.S. Department of Agriculture, *2002 Census of Agriculture*, issued June 2004. California, State and County Data, Vol. 1, Geographic Area Series, Part 5, AC-02-A-5.

<sup>2</sup> *Ibid*, U.S. Department of Agriculture.

approximately 5,000 customers with combined electricity use of about 3.3 billion kWh per year. The program goal is to reduce this annual use by about 1%.

## Ag Efficiency Plus Program Design

### Special Program Features

Ag Efficiency Plus is an incentive and education program. The program goals are firmly focused on reducing electricity use through installation of energy-efficient equipment in agricultural operations. Success is measured in savings generated by documented actions by the program participants, agricultural customers of Southern California Edison.

The program design focuses on identifying electricity-reducing opportunities with and for agricultural customers and on enabling them to install energy-efficient equipment. The two focal points of identifying opportunities and enabling action led to designing two “tracks” for enrolling in the program: audits and incentives. The audits are intended to provide on-site inspections of farm/processing facilities followed by recommendations of specific incentive-eligible measures that could improve the energy efficiency of the operations. The audits are also used to help educate farmers and growers about the measures available to them, the energy and non-energy benefits they provide, and how to identify additional energy-saving opportunities. Anticipating that we could not provide on-site audits to all potential participants, we also developed less formal discussion surveys, which we could conduct on site or by phone. These surveys often are less comprehensive, focus on a specific issue of concern for the customer, or are part of a more focused campaign within the program (such as making sure that dairies know about energy-efficient fan options as summer approaches or contacting farmers about drip irrigation before they put their crops in). Both audits and surveys generate specific measure recommendations.

The incentives are intended to encourage and enable customer action. They were designed to cover all aspects of agricultural activities, including vegetable, grain, cotton, fruit and nut growing; milk production; ranching; produce packing; processing and storage; and also water supply. We incorporated both farm-specific measures (e.g., milk precoolers) and more generally applicable ones (e.g., lights). And we built two categories of measures, consistent with other programs in California—itemized and calculated measures. The itemized measure list has over 150 measures that agricultural customers can choose from.<sup>3</sup> These are measures that are usually off-the-shelf, such as lighting fixtures and fans, and incented at fixed per-item amounts. They also include some that are incented based on size, such as acreage covered or horsepower of the motor affected. Itemized measure savings and rebate amounts are based on workpapers that document results of engineering calculations and/or field-testing of the equipment. The calculated measures are more often tailored to the specific needs of the customer. These tend to be bigger projects, often involving multiple pieces of equipment. Often agricultural processors with refrigeration projects opt for this category because the savings and rebate calculations are based on equipment specifications and operating hours specific to the facility. The calculated measure projects involve a more time-consuming incentive approval process, requiring both pre- and post-inspections and site-specific calculations. By offering the two mechanisms for obtaining incentives on energy-efficient installations, the program includes desirable features for a broad array of projects: fast by choosing off a list, and flexible by allowing custom projects. Table 1 shows some of the measures offered and their respective incentives and estimated savings.

Table 1. Measures Offered Under Ag Efficiency Plus

Application	Measure Description	Rebate	Annual	Unit
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<sup>3</sup> The full list is available at [www.agefficiencyplus.com](http://www.agefficiencyplus.com).

		(\$/Unit)	Savings (kWh/Unit)	Definition
<i>Sample of Itemized Measures</i>				
Lighting	Integrated Sensor in High Bay Fixture	\$20	618	sensor
Lighting	T-8 or T-5 Lamp and Electronic Ballast (T12 replacement)	\$3.50	46	lamp
Irrigation	Well Pump Variable Speed Drive (VSD)	\$1,250	15,945	drive
Irrigation	Low Pressure Impact Sprinkler Nozzles	\$1.15	39.00	nozzle
Motors	Premium Efficiency Motor - 15 HP	\$80	932	motor
Refrigeration	Efficient Multiplex Compressor System	\$300	2,893	tons
Refrigeration	Replacement Air Cooled Condenser	\$175	1,343	tons
Refrigeration	Floating Head Pressure Controller	\$70	900	tons
<i>Calculated Measures</i>				
Lighting	Custom	\$0.05	1.00	kWh
Irrigation	Custom	\$0.08	1.00	kWh
Motors and Other Equipment	Custom	\$0.08	1.00	kWh
AC&R Controls	Custom	\$0.08	1.00	kWh
AC & Refrigeration	Custom	\$0.14	1.00	kWh
Lighting	Custom	\$0.05	1.00	kWh
Irrigation	Custom	\$0.08	1.00	kWh

## Specialized Outreach Approach

The outreach component of Ag Efficiency Plus has a number of distinguishing features as well. First, agricultural customers can enroll in the program either by having an audit or they can go directly to installation of an incentive-eligible measure. With the two tracks, customers who have either never considered energy efficiency improvements or need help in evaluating different project and equipment options can obtain all the assistance they need, from identifying opportunities and understanding benefits of the alternatives to receiving technical advice. And those who have already done their homework and are in the market can get right to equipment selection, installation, and incentive claim. We anticipated conducting 600 audits and processing about 1300 incentive claims to reach the energy savings goal.

The second unusual feature for a full-scale, sector-wide program is that much of the outreach and participant assistance is conducted on site. The program team consists of a call center and field reps. In the design, the call center was set up to address inquiries about the program from equipment vendors and/or customers, make a number of measure recommendations, and provide assistance with the audit and incentive paperwork. The field reps would conduct audits, provide technical advice, make custom measure calculations, and perform whatever inspections might be necessary. Based on what we knew of this market group being hard to reach, we knew that having boots on the ground would be important. We would soon find out just how important.

A third key feature in the program design is the broad scope of the outreach. From the start, program awareness and energy efficiency education was directed to the entire agricultural community. This meant not just the growers and processors but also local equipment dealers and contractors, associations, and even farm lending bureaus. By directing promotional materials, educational sessions, and face-to-face contact to the broader set of agricultural market actors, we wanted to make use of what we know is an influential supply chain for farm equipment decision makers. Even though this is a downstream program, meaning only the end users (farmers and processors who are SCE customers) can receive the incentives, equipment vendors have a great deal of influence in farm equipment decisions and also benefit from a program that encourages new equipment purchases. The marketing plan contains waves of mailings to and live contact

with the customers, the vendors, and the associations. It also includes joint promotion of the program by SCE's account reps and the program implementers. As inducement to help with recruitment and measure installation, reps accrue credit toward individual savings goals from Ag Efficiency Plus projects completed by their assigned customers.

## **Rollout Reality: Lessons Learned**

With the uncontrollable forces of nature, regulation, and the economy, energy efficiency has had little traction with farm producers and processors historically, making this market hard to reach even in the best of circumstances. On top of this, California farmers have been hit especially hard in 2007 (winter freeze, summer drought, and fall fires) together with water allocation cutbacks, so getting their attention and making involvement worth their while has been doubly challenging. Thus, it was important to get both the method and the message right to achieve success in attracting participants and completing projects.

### **Marketing Method**

As mentioned above, we built several means of outreach and avenues for participation into the program design, all with the goal of reducing electricity use through installation of energy-efficient equipment in agricultural operations. In going from the drawing board to the field, we learned to make some adjustments and learned which appeal more to the decision makers and fit the decision making process in this market. After more than a year into the program, we can share some field-tested responses to those ideas:

- Enrollment via audit turns out to be time-consuming and less effective in generating projects than informal on-site visits; only 10% of projects submitted for incentive payment stem from the audits.
- Farmers and processors are a cautious group. Perhaps this is why the more informal contacts, often focused on a specific aspect of the farm operation or that specifically address urgent issues, such as watering restrictions, are more effective than more sweeping audits.
- Farmers have tended to want to see success with one measure at a time. But nothing breeds success like success; and numerous customers install additional measures as their satisfaction with and confidence in our advice builds. Repeat outreach to participants from the call center and/or field rep is important and successful.
- Customers seem happy to make use of the simplicity that the itemized measure category offers. Having the full list of measures available via web and printed claim forms is enough to spur a good number of customers to initiate projects. Even if they ultimately opt for a calculated measure, they like being offered a list.
- More projects are completed when the field team works one-on-one, often on site, with farm and processing operators, makes recommendations, and helps customers fill paperwork. This is not surprising but rather confirms the special value of proactive support for this sector.
- Having a call center plus boots on the ground works well but requires a lot of real-time coordination. A real-time tracking system that accommodates notes from both the call center and field reps, and constant coordination between the two, is used.
- Promotion to and networking with vendors is key to attracting customers to the program, both for getting projects completed with proper documentation that assures incentive approval and for spreading the word among farmers. What started as promotion to this group has evolved into collaboration as vendors notify us of pending projects and we help them ensure that the projects are eligible for incentives.

- Bringing projects through to incentive claim has taken even more field rep support than we had anticipated. Even after laying out substantial amounts of money for installations, in some cases, a significant number of customers might forego submitting incentive claims without an in-person request for signatures on the required paperwork.
- Word-of-mouth among farmers has led to customer-initiated inquiries and program-influenced projects—satisfied customers are leading others to our door. This further underscores the effectiveness of working with customers throughout the process from recruitment to installation to incentive claim. The call center/field rep combination makes that kind of ongoing contact possible and effective.
- Working closely with the utility account reps is extremely valuable and working, thanks to the program feature that rewards reps for savings achieved by their assigned customers. With thousands of candidate customers, leveraging the reps' knowledge and relationship with customers has helped us focus attention on the most promising candidates and facilitated access to them.

### **Crafting a Meaningful Message**

Farmers tend to be a pretty congenial group. Despite their busy schedules, they will often listen politely to what you tell them about energy-efficient equipment and how it can save them money. And then they'll just as politely let you know that now they have *real* work to do. Electric bill reductions and save-the-earth benefits that propel us as implementers to advocate making energy efficiency improvements just are not enough to get a farmer to make changes. What looms large are other costs, like labor and water, and other concerns, such productivity, hazardous waste, water policy, market prices. So we certainly knew that we would have to go through one of those doors to make our case for investing in energy efficiency.

While circumstances facing farm producers and processors make energy efficiency less attention-grabbing, some of the most pressing challenges to California farmers this past year have actually provided us with opportunities to address their primary needs while making the case for participating in the program. For instance, water allocation cutbacks became ever more pressing this year. This forced farmers to think of new ways to keep their crops alive with less water. So while replacing a functioning irrigation system is not something a grower would ordinarily embrace, documented evidence we provided that changing from traditional flood-irrigation or high-pressure sprinklers to low-pressure drip irrigation significantly reduces water use and also recent advocacy of efficient watering strategies that work in conjunction with drip irrigation in publications that farmers trust<sup>4</sup> have combined to attract growers' interest in making the change. With incentives available for drip measures because they reduce electric pumping requirements, we were able to craft an effective message about the Ag Efficiency Plus program specifically for crop, fruit and nut growers: Install drip irrigation to save your crop and, by the way, save electricity.

This seems straightforward enough. But the agricultural market, at least in California, is really a collection of very diverse grower and processor markets—row crop growers, grain growers, fruit and nut tree growers, dairy farmers, hog and cattle ranchers, egg and poultry producers, citrus packers, juicing facilities, wineries, and more. The program message not only needs to tap into what concerns the grower or processor, but has to be quite specific to his/her needs. The irrigation example above is fine for many of the growers, but dairy farmers had a different pressing issue last summer: keeping their livestock alive and producing milk during the killer heat that hit California. Extreme heat is known to lead to decreased milk production and even loss of stock, and the farmers were desperate. For that segment, we needed to highlight that Ag Efficiency Plus offers a variety of energy-efficient circulation fans at a time when dairy farmers were clamoring to buy *any* kind of fan that would provide relief. Accounting for differences in the types and

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<sup>4</sup> Campbell, K. "Drought Strategies: Expert offers tips on irrigation and water management." *AgAlert*. October 10, 2007.

seasonal timing of their various activities, we came up with fourteen separate market segments and a unique message for each.

## **Results: Outreach Efforts Come to Fruition**

In this section, we provide examples of how the outreach process has played out in practice and the different ways in which the program has worked its way into the farm communities. The case studies illustrate how people interact, share information, and make decisions in this market. Some are of projects initiated by direct contact with the farmer or processor, either from our own “cold call” list or by referral from SCE customer account representatives. Another shows the effectiveness of having cultivated relationships with equipment vendors who have their finger on the pulse of these customers’ needs and plans. And we’ve not only had satisfied customers leading others to our door, another recounts the interesting development of a customer leading us to consider additional technology for the program. All the examples underscore the importance of being in the right place at the right time of the farmer’s or processor’s decision-making about operations and equipment purchases. With the program still ongoing, additional stories and projects develop continually, each somewhat unique and confirmation of future opportunities for energy-efficiency improvement in the agricultural market. Some specific examples include:

**Effectiveness of the message to growers needing water reduction.** A walnut grower in Visalia converted his 60-acre walnut orchard from flood to low-pressure drip irrigation on the promise of reducing his water usage. Turns out he also cut his electric pumping costs by 50%. Our message, that he could save water, got this grower’s interest. When we went out and did measurements at the orchard, we were able to help him figure out exactly what and how much to buy. He was happy for the assistance and when we calculated the incentive he could obtain, he immediately agreed to the project.

**Easy participation process makes a happy customer.** A dairy farmer, also in Visalia, insured against milk production loss during the hot summer weather by installing energy-efficient ventilation fans promoted under Ag Efficiency Plus. He told us that by being able to install the fans quickly, he preserved all of his expected milk production. By choosing the energy-efficient fans we recommended, he saved about 125,000 kWh off his electric bill, which made him even happier.

**Irrigation, water issues looming.** A farmer in Ventura County grows a variety of crops, mostly apples now. With several years of drought and constantly rising energy and farming labor costs, his water-thirsty alfalfa crop became less profitable than his apples. About four years ago, once the alfalfa was harvested, he began expanding his apple crop. He kept his existing side-roll sprinkler system to water the trees for the first couple of years of growth, but got interested in converting to a more efficient irrigation system to achieve additional water and labor savings. When he found out how much he could reduce his electric pumping bill and offset some of his initial cost by installing a micro-sprinkler trellis-designed system offered under the Ag Efficiency Plus program, it sealed the deal and got him to act right away. The farmer has since told us that he has reduced his irrigation labor costs by 30-40% and increased his crop productivity by 10%. He is eager to share his experience with other farmers.

**Vendors as partners in promotion.** An irrigation vendor in the Central Valley first learned about the program while installing low-pressure equipment for one of their regular customers. The sales staff immediately recognized the value of leveraging the program by incorporating its benefits in their sales process. Since then, they have worked with the program staff to pre-qualify equipment they recommend so that customers can obtain incentives for the installations. This win-win approach is getting more efficient irrigation equipment out in the field sooner.

**Utility account reps as resource.** Operated by independent contractor implementers, Ag Efficiency Plus has the support of many of SCE’s account reps. They often know of their customers’ remodel plans and pressing challenges. These reps see the relevance of the program in helping them support their assigned

customers and regularly direct us to leads. A significant number of successfully completed projects came about through the efforts of an effective rep-implementer tag team.

**Trust and pro-active participant.** Under the calculated measure category, customers can propose projects to the program to see if they are eligible for incentives. A nursery in Santa Barbara did just that. Bringing documentation on the effectiveness of grow lights in Scandinavia, we were able to calculate the energy savings of these lights and offer this customer an incentive for 23-watt compact fluorescent lights, in place of the 100-watt incandescents he initially planned to install. His satisfaction with the flexibility of the program and with this project, even though it involved several inspections and paperwork, has yielded us an invitation to make a next round of recommendations for implementation in 2008.

## **Conclusion**

Agricultural producers and processors use a considerable amount of electricity in Southern California. There is considerable energy-savings potential in improving the energy efficiency of equipment used by agricultural electric customers. But farmers are busy and ordinarily reluctant to replace working equipment. They also have issues that are more pressing saving energy—like reducing labor costs, coping with watering restrictions, and increasing productivity. We have learned that tapping the energy-savings potential requires a marketing approach that works on their schedule and at their facility and a message that speaks to each type of producer's or processor's non-energy issues.

Lessons from the field have led us to modify the initial plan of recruiting participants largely through audits. The current thinking is that only about 200 audits will be conducted over the three-year program period. Also, the average project size is somewhat larger than anticipated, leading to a downward revision in the likely number of projects it will take to meet the 1% energy savings goal. At the same time, the evident importance of repeat outreach and customer hand-holding has us spending considerably more time out in the field than was originally planned.

By directing program implementation resources heavily toward on-site delivery of the program, and working with vendors to identify farmers who are considering equipment purchases and with the utility account reps to connect with the customers, Ag Efficiency Plus is making headway in converting this energy-savings potential into reality. Lessons learned to date continue to inform the outreach and project activities. There are, undoubtedly more to learn.