



ENERGY STAR® FOR COMMERCIAL KITCHENS: HELPING CUSTOMERS MANAGE COSTS THROUGH ENERGY SAVINGS

The U.S. Environmental Protection Agency (EPA) is providing this guide to introduce energy efficiency program sponsors to ENERGY STAR offerings for commercial kitchens and to share best practices for program design, implementation, and evaluation based on the experiences of other Commercial Food Service programs throughout the United States.

WHY COMMERCIAL KITCHENS

Restaurants use about 5 to 7 times more energy per square foot than other commercial buildings like office buildings; and retail stores and high-volume quick-service restaurants (QSRs) can use up to 10 times more energy per square foot. Energy efficiency program administrators can help commercial food service (CFS) operators rein in operating costs by reducing energy and water use with ENERGY STAR certified CFS equipment. By choosing ENERGY STAR certified equipment, commercial kitchens can save energy without sacrificing service, quality, style or comfort—all while making significant contributions to a cleaner environment.¹

DELIVERING SOLUTIONS IN COMMERCIAL KITCHENS

Promoting the installation of energy-efficient equipment in commercial kitchens is an important part of a comprehensive energy efficiency program. ENERGY STAR certified CFS equipment saves significant energy and delivers meaningful financial benefits to food service establishments. Utility costs are a significant operating expense for the CFS industry, just under parity with their average profit margins—which, for full and limited service restaurants, were between 3 and 6 percent of sales in 2010.² Due to rising energy costs, food service operators may be increasingly receptive to program administrator assistance in improving energy efficiency and reducing related utility bills.

ENERGY STAR certification currently is available in eight product categories: commercial hot food holding cabinets, solid and glass door refrigerators and freezers, fryers, steam cookers, ice machines, ovens (convection and combination ovens), griddles, and dishwashers. These energy-efficient products offer energy savings of 10 to 70 percent over standard models, depending upon the product category. Three of the product categories—commercial dishwashers, ice machines, and steam cookers—also offer significant water savings. In fact, ENERGY STAR certified connectionless steam cookers can offer a 90 percent reduction in water consumption compared to standard models, saving 160,000 gallons of water and \$1100 annually. ENERGY STAR provides a comprehensive and cost-effective platform for promoting greater equipment efficiency and related best practices to commercial kitchen operators. Results from two ENERGY STAR award winning programs are highlighted below:

Outfitting an entire commercial kitchen with a suite of ENERGY STAR certified equipment can save 340 Million British thermal units per year (MBtu/yr) and about \$4,500 per year

- California's four investor-owned utilities (IOUs)—Pacific Gas & Electric Company (PG&E), Southern California Edison (SCE), Southern California Gas (SoCalGas), and San Diego Gas and Electric Company (SDG&E)—offer a coordinated statewide incentive program with strong results, achieving annual electric savings of around 8 million kilowatt-hours (kWh) and annual natural gas savings of around 550,000 therms.³
- The Energy Trust of Oregon's (ETO) CFS program achieves annual savings of nearly 1.2 million kWh and over 190,000 therms by partnering with dealers that sell CFS equipment directly to restaurants.⁴

PROGRAM DESIGN AND IMPLEMENTATION

A key factor in effective program design is understanding the market barriers to greater adoption of energy-efficient equipment and developing strategies to overcome these barriers. Common barriers in the CFS market include:

- **Hard-to-reach market**—The CFS market is highly fragmented, with a diverse array of equipment supply channels and end use sectors.
- **Lack of readily available supply**—CFS equipment suppliers typically compete on low prices and therefore may stock only a limited supply of energy-efficient products. This barrier is compounded by customers who make short-term purchasing decisions due to the need to replace equipment quickly when it fails.
- **Incremental costs**—ENERGY STAR certified CFS equipment is generally more expensive than standard equipment and can cost significantly more than refurbished models sold in the used equipment market.
- **Lack of knowledge**—Equipment suppliers and end users might not be aware of energy-efficient products, might have misperceptions about tradeoffs between energy efficiency and performance, or both.

The following sections describe the CFS equipment market in further detail and discuss program strategies for addressing the key barriers listed above.

Understanding and Engaging the CFS Market

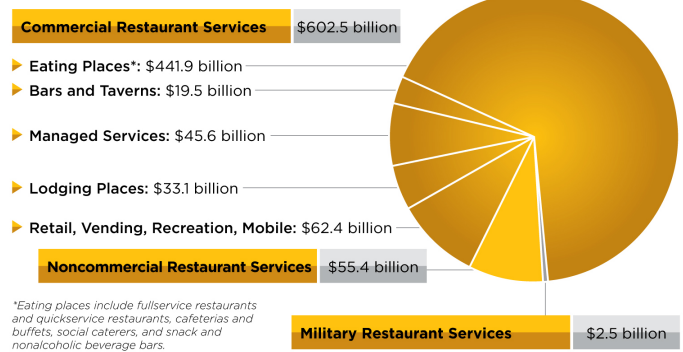
Food service establishments include commercial and noncommercial entities and diverse business sectors. According to the National Restaurant Association (NRA)'s 2013 Restaurant Industry Forecast, total restaurant-and-foodservice sales are projected to be \$660.5 billion for 2013. Commercial establishments (including full-service restaurants, QSRs, cafeterias, caterers, bars and taverns, lodging facilities, and retail stores) make up \$602.5 billion or 91.2 percent while noncommercial restaurant services make up about \$55.4 billion or 8.4 percent. Military restaurant services make up the remaining \$2.5 billion.⁵

In addition to the diverse business sectors that comprise the food service industry, the CFS equipment market is complicated by multiple equipment distribution channels including:

- Dealers that sell CFS equipment directly to individual restaurants, but may also handle contracts with larger restaurant chains and other institutions.
- Distributors that primarily supply bulk quantities of equipment to dealers and sell commodity equipment (e.g., ice machines, counter-top fryers) directly to end users.
- Manufacturers that sell through representatives (reps) and also sell directly to large end users such as national restaurant chains.

Adding It All Up: \$660.5 billion

Projected restaurant-industry sales in 2013



Source: National Restaurant Association 2013 Restaurant Industry Forecast

- Consultants that assist in designing new or renovating existing commercial kitchens, typically working with restaurant chains, hotels, hospitals, and universities.

(Additional information on supply channel actors and strategies for influencing them can be found in the text box on page 3.)

Due to the complexity of the CFS market and potential for widespread variability between service territories, program administrators should consider conducting a market assessment to:

- 1) Understand the major sectors and primary distribution channels influencing the CFS equipment market in their service territory,
- 2) Develop estimates of likely program uptake for each sector taking into account the uniqueness of each sector (e.g., while restaurants are often the largest segment, they are often the hardest segment to influence), and
- 3) Establish program baseline conditions (e.g., determine the current market share for an efficient product and the best estimate of market share over time absent a program).

ITW Food Equipment Group

ENERGY STAR Award Winner ITW Food Equipment Group (ITW FEG)—the parent organization of independent companies such as Hobart, Stero, Vulcan, Traulsen, and Wittco—understands the importance of supporting customers in their drive to cut costs and consume fewer resources. ITW has responded by certifying more than 60 percent of its product line as of 2012. Through its partnership with EPA, ITW highlights the high efficiency and low water consumption of its products that have earned the ENERGY STAR. ITW has integrated energy management education and ENERGY STAR messaging into sales force and employee training, and encourages the promotion of ENERGY STAR certified products to end users, dealers, and consultants.

See related discussion under *Measurement and Verification*, page 7.

Another best practice is to engage equipment suppliers and other key stakeholders, such as chain restaurants, large and small restaurant operators, and their trade associations, during program design. Engaging stakeholders early in the planning process can help program administrators better understand stakeholder business models and help gauge receptivity to potential education, marketing, and incentive strategies.

Continuing this dialogue during program launch, particularly with supply-side market actors, is essential to ensuring that they are familiar with program incentives, policies, and procedures and can effectively communicate key information to their customers. During these meetings, it is important to communicate both the mechanics of how the CFS program works (e.g., how to process a rebate submission form) and the business benefits of program participation. To increase participation, program sponsors should consider fulfilling rebates through dealer point of sale systems.

An ENERGY STAR certified commercial refrigerator or freezer can save a restaurant from \$60 (refrigerators) to more than \$300 (freezers) annually and between \$550 and \$3,300 over the lifetime of the equipment. These savings are significant when one considers the slim profit margins in the restaurant industry. If a restaurant operates with a profit margin of around 3.5 percent (the industry average), it will need to make roughly \$4,000 in sales to earn \$150 in profit.

Improving Availability of ENERGY STAR Certified Equipment

In the retrofit market, purchasing often occurs when existing equipment fails, and the top priority is getting new equipment online quickly. Decisions on product selection and purchase are usually driven by product availability, price, and advice from the equipment supplier. Unfortunately, many suppliers do not stock or promote efficient equipment due to price premiums which vary by product category. However, there is a growing trend in operator demand for energy-efficient equipment.

Supply Channel Actors

Dealers—Dealers often sell CFS equipment directly to individual restaurants, but many also handle contracts with larger restaurant chains, schools, hospitals, prisons, government facilities, and other facilities. Some dealers display their products in showrooms and may stock popular or lower-cost models that may not be energy efficient. Others make energy-efficient equipment a core piece of their business and marketing strategy (those dealers may specifically look to bid on project contracts that are focused on energy-efficient design). Smaller dealers may join buying groups so they can compete more effectively with larger dealers, but large dealers find value in joining buying groups as well.

Individual restaurants can be the most difficult for utilities to reach, so building relationships with food service dealers is a great way to engage these restaurateurs and other CFS equipment purchasers. Dealer incentives, and cooperation with buying groups to promote these incentives, could be an effective strategy to improve stocking and sales of energy-efficient equipment.

Distributors—Distributors primarily supply bulk quantities of equipment to dealers and sell commodity equipment (e.g., ice machines, fryers) directly to end users. Since distributors usually supply dealers, developing a good working relationship with distributors helps funnel energy-efficient CFS products into dealer showrooms. In addition, some restaurant food distributors sell CFS equipment and should also receive program outreach.

Manufacturers and Reps—CFS equipment manufacturers generally sell products through their reps, although manufacturers may also sell directly to large end users such as national restaurant chains. Though all supply channels gravitate toward inexpensive, fast-moving pieces of equipment, a key value proposition for engaging reps is the up-sell potential of high-value, high-efficiency equipment. Sales of high-quality products earn reps a higher commission and generate long-term value for the customer, often leading to repeat business.

Design Consultants—Design consultants assist in the planning and design of new or renovated commercial kitchens, typically working with large or chain-owned restaurants, hotels, universities, and hospitals. Consultants are typically focused on the overall design and aesthetics of the space and controlling project costs, often making back-of-the-house equipment a lower priority. In addition, they often have established relationships with buying groups and may receive incentives for selling certain equipment that may not be energy efficient. Conducting targeted outreach to design consultants helps to ensure that energy- and water-efficient CFS equipment is considered in these types of projects. Emphasizing the quality and performance of equipment designed to earn ENERGY STAR certification, plus the opportunity for program rebates, will help to engage design consultants.

A 2012 industry survey found that 75 percent of operators say they believe purchasing energy-efficient equipment will improve their bottom line and 68 percent show a willingness to pay more up front for energy-efficient equipment because it will save their businesses money in the long run.⁶ Consistent with this sentiment, NRA surveys show that 55 to 71 percent of restaurant operators across all segments plan to invest in energy-saving kitchen equipment in 2013.⁷ But this growing demand may go unmet if ENERGY STAR options are not available when equipment breaks down.

The following are important strategies for motivating suppliers to sell and stock ENERGY STAR certified equipment:

Make the business case—It is important to educate suppliers on the value proposition for promoting ENERGY STAR certified CFS equipment to their customers. While efficient equipment may have a higher first cost, the acquisition cost of CFS equipment is only the tip of the iceberg in terms of total cost of ownership. Better made equipment that saves energy and water and lasts longer compensates for any initial difference in purchase price. It is also important to highlight non-energy benefits of efficient products such as water savings, reduced noise, reduced waste heat, and other quality and performance features. Businesses that can effectively up-sell high-end equipment can increase their bottom line.

Sales incentives—Midstream incentives, including salesperson incentives or “spiffs,” can be effective at motivating equipment suppliers to promote the multiple benefits of energy-efficient products, rather than steering customers to low-cost products. Puget Sound Energy (PSE) and SDG&E offer a “spiff” for each completed incentive application submitted by an equipment supplier.

Program Highlight

PSE’s \$30 spiff rewards equipment suppliers for submitting completed incentive applications to the utility on behalf of the customer. In exchange, the supplier discounts the purchase price by the amount of PSE’s customer rebate, so the customer receives an incentive at the point-of-purchase. Suppliers are reimbursed for the customer rebate and get an additional \$30 for their time and effort. This approach has led to higher turn-in rates for incentive applications and fewer paperwork errors.

Partner networking—EPA’s network of manufacturers, dealer partners, and other industry stakeholders are interested in finding out about equipment incentives available through utilities and other efficiency program sponsors. Southwest Gas worked with EPA to leverage the ENERGY STAR brand in marketing materials and to connect with manufacturers, dealers, and other stakeholders to develop a target mailing announcing its program offerings.

Offering Customer Incentives to Overcome First-Cost Barriers

The incremental cost of some ENERGY STAR certified equipment can be a significant barrier to purchasing. In general, the incremental cost is highest for fryers, hot food holding cabinets, steamers and commercial dishwashers; moderately high for commercial refrigerators and freezers, griddles and ice machines; and lowest for ovens.

Equipment rebates—To overcome the incremental cost barrier, the majority of program administrators targeting this market offer prescriptive rebates for the purchase of certified equipment. When determining incentive levels it may be useful to take into consideration that ENERGY STAR certified CFS competes not only with less efficient new equipment but also with a substantial used equipment market. As of November 2012, the following incentive ranges were available from the online ENERGY STAR CFS equipment incentive finder tool.

Table 1: Range of Incentives Offered by Program Sponsors for ENERGY STAR Certified Equipment

Product	Incentive Range
Fryers	\$60-\$1,350
Griddles	\$25-\$600
Ovens	\$100-\$1,000
Hot food holding cabinets	\$110-\$900
Refrigerators and freezers	\$20-\$1,975
Steam cookers	\$40-\$2,000
Ice machines	\$20-\$850
Dishwashers	\$50-\$3,000

Some programs promote comprehensive kitchen efficiency upgrades by offering bonus incentives for the purchase of two or more pieces of qualified equipment. In one program model, the customer is eligible for the usual per-unit equipment incentive, plus an additional \$100 if they purchased two or more pieces of qualifying equipment, or \$300 if they purchased three or more pieces of eligible equipment at a time. This strategy can be particularly effective when targeting commercial kitchen renovation and new construction opportunities.

The following are common best practices related to incentives:

- Tie incentive levels to ENERGY STAR whenever possible, even when offering tiered incentives for higher efficiency levels. This is critical to ensuring that products will deliver on energy performance—all models are required to be certified by third parties in order to receive the ENERGY STAR designation.

- Keep the incentive application processes simple and straightforward. To increase participation, program sponsors should consider fulfilling rebates through dealer point of sale systems. PG&E saw ENERGY STAR commercial fryer rebate submissions increase greatly when they moved to point of sale rebate processing.
- Maintain relatively consistent incentive levels from year to year, trending downward as market penetration increases.
- Ensure suppliers and buyers have easy access to a list of certified models and related incentive levels. ENERGY STAR qualified product lists are available on each of the specific product pages at: www.energystar.gov/cfs.
- Consider a statewide approach that simplifies access to information about incentive programs for both customers and distribution channel actors, who are critical for spreading the word about these programs.

For example, to streamline information for food service operators throughout the state of Illinois, the Illinois IOUs and the Department of Commerce and Economic Opportunity developed a fact sheet featuring available incentives and contact information for each participating organization in the state. The fact sheet was featured in the April 2012 edition of Food Industry News, which has a circulation of over 20,000 bars, restaurants, and distributors across Illinois. See Figure 1.

Figure 1: Example of Co-Branded Marketing Document



This Illinois statewide CFS flyer highlights the offerings of all electric and gas utilities and the Department of Commerce and Economic Opportunity, making it easier for customers and suppliers to understand incentives.

- Promote your program and incentives through the online ENERGY STAR CFS Incentive Finder and Incentive Guide (www.energystar.gov/cfs/incentives).
- Educate customer call centers about program offerings, procedures, and where to direct customers for additional information.

Program Highlight

To effectively serve the diverse set of CFS market participants, the programs sponsored by the **California IOUs** offer an array of services including site audits, equipment testing, and new restaurant plan review, as well as regular energy efficiency seminars for food service professionals.

Audits—Offering free or reduced-cost audits for commercial kitchen facilities is another form of incentive that can be useful for helping customers identify and correct operational inefficiencies. Audits also encourage customers to take advantage of program rebate offerings when equipment purchases are needed. Customers are more likely to make smart decisions about CFS appliances if they have time to research options and secure the necessary capital to purchase new equipment before existing equipment breaks down. Many utilities offer audits to national restaurant chains as part of the menu of services they receive as managed accounts.

Audits help to develop the customer relationship and can be offered for a nominal fee or at no cost to the customer. Some programs make a free audit contingent upon implementation of a minimum number of energy- and water-saving recommendations. Immediate energy savings benefits can be achieved by conducting direct installation of low-cost measures (e.g., high-efficiency pre-rinse spray valves*, gaskets on refrigeration equipment, or installing high efficiency bulbs). To ensure that the program is viewed as a credible resource, it is critical that auditors be knowledgeable about the unique challenges and business realities of CFS operations, and deliver realistic recommendations. A recent evaluation by the PG&E's Food Service Technology Center (FSTC), an industry leader in commercial kitchen energy efficiency and appliance performance testing, found that in order to deliver the most value to food service operators, audit reports should include detailed information on costs and savings associated with the recommended improvements.⁸

Educating the Marketplace

As of January 2013, there are more than 100 ENERGY STAR CFS manufacturing partners and a diverse array of certified models available—including more than 2,000 certified products across eight product categories.

* EPA's Watersense program is developing a specification for pre-rinse spray valves and anticipates publishing the final specification for Commercial Pre-Rinse Spray Valves in Fall 2013. Additional information can be found at: <http://www.epa.gov/watersense/products/prsv.html>.

Despite improvements since EPA introduced ENERGY STAR specifications for CFS products, lack of knowledge about efficiency opportunities among end users and equipment suppliers remains a barrier. In addition, misperceptions about tradeoffs between efficiency and performance continue to inhibit greater adoption of energy-efficient CFS equipment.

The following strategies have been effective for getting information to end users to overcome these barriers:

Target marketing—Program information needs to be timely and relevant in order to motivate operators to take action. For this reason, program administrators often develop targeted marketing strategies and messaging for each major market segment—restaurants, hotels, schools, hospitals, etc.—taking into account business cycles and major industry events in timing promotions and outreach.

Examples of industry events:

- *National Restaurant Association Show*
- North American Association of Food Equipment Manufacturers Association (*NAFEM*) Show and *industry calendar*
- Foodservice Equipment Reports *calendar*
- Food Equipment Distributors Association (FEDA) *calendar*

Training and equipment demos—Equipment suppliers may have little experience selling energy-efficient equipment, and they and their customers may be confused by different efficiency claims in the market or think energy efficiency comes with a tradeoff in productivity or product features. ENERGY STAR certified CFS equipment comes with no tradeoffs in

Program Highlights

1) CenterPoint Energy (MN) uses its Commercial Food Service Learning Center in Minnesota to provide hands-on education to trade allies about the benefits of high-efficiency equipment. CenterPoint is also a member of several food service trade associations.

2) Distributor Saratoga Restaurant Equipment Sales (SRES) leveraged cooperative marketing opportunities through **NYSERDA's Small Commercial Kitchen Pilot** and increased sales of qualified equipment by 50 to 900 percent, depending on the product. Promotional efforts included a showroom event and equipment demonstration, tags on qualified equipment, and direct mail. SRES also streamlined the application process by filling out rebate paperwork on the customer's behalf.

3) As part of their program outreach activities, the four California IOUs attend the annual Western Food Service and Hospitality Expo in Los Angeles. The show is a great way for California program sponsors to engage with trade allies and to reach their key audience: restaurants.

Program Highlight

Energy Trust of Oregon developed a highly successful document modeled after CFS dealer handbooks (folders with equipment specification and sell sheets) that dealers typically take on the road. The handbooks contain all the relevant information that a dealer would need to sell ENERGY STAR equipment, such as:

- What is energy efficiency
- What is ENERGY STAR
- Incentives available in Oregon
- A territory map showing where incentives are available
- Qualified product lists
- Tables of energy, water, and monetary savings for energy-efficient equipment (e.g., fryers, ice machines, refrigerators)
- Ancillary benefits of ENERGY STAR equipment
- Incentive application forms

features or performance. In fact, manufacturers use high quality components and employ innovative designs to meet ENERGY STAR's strict efficiency requirements. Equipment demonstrations and hands-on training can be particularly effective in demonstrating energy, water and design features.

Some programs have dedicated demonstration facilities for this purpose while others work to assist suppliers in developing their own equipment demonstrations. For example:

- PG&E's FSTC evaluation found that in-person and online webinar training seminars (e.g., educational outreach to market actors and customers in the form of workshops, seminars, trainings, and speaker engagements) were a good way to build relationships with food service operators, leading to energy savings impacts over time.⁹
- New York State Energy Research and Development Authority's (NYSERDA) Small Commercial Kitchen Pilot successfully used cooperative marketing dollars to assist suppliers in developing their own equipment demonstrations. Promotional efforts included a showroom event and equipment demonstration (see text box on page 7).

Cooperative marketing—CFS programs can take advantage of cooperative advertising, showroom promotions and other collaborative marketing efforts with equipment suppliers. Programs often provide marketing collateral such as point-of-purchase banners, tags or stickers to identify rebate-eligible equipment, and informational flyers and brochures. Providing cooperative advertising funds is also an effective approach as it allows businesses the flexibility to market and advertise their ENERGY STAR certified products in a way that is best aligned with their business model. For example, equipment suppliers that join Alliant Energy's trade ally network are eligible for reimbursement of education and trade show expenses, subject

to utility pre-approval and other requirements. For CFS products that save energy and water—commercial dishwashers, ice machines, and steam cookers—a growing number of energy and water utilities are pursuing opportunities for cooperative marketing, joint program implementation, or both.

Communications and outreach—A robust communications plan utilizing multiple channels including newsletters, a dedicated commercial kitchen webpage, targeted mailings, personal contact, seminars, and electronic communications increases awareness of program opportunities. Personal contact (“face time”) is extremely important for implementing a successful program. CFS market and supply channel actors often need additional support from utilities before stocking, promoting, and selling energy-efficient CFS equipment. Program administrators can contact EPA for assistance in identifying trade allies and developing outreach materials. Program administrators should also consider holding regional program sponsor round tables to enhance program design and approach, similar to what the Northeast Energy Efficiency Program sponsors did. Utilities including the New York State Research and Development Authority (NYSERDA), Efficiency Vermont, National Grid (MA/RI/NY), United Illuminating, Consolidated Edison, Public Service of New Hampshire (PSNH), and the New Hampshire Electric Cooperative organized a series of peer-exchange round tables to facilitate the sharing of their experiences and discuss opportunities for regional program collaboration, such as collective outreach to regional QSRs.

Trade association outreach—CFS programs can leverage existing trade association networks to raise awareness of program opportunities and boost participation by customers and suppliers. Program administrators should consider joining local and state restaurant associations as well as trade associations serving food service equipment suppliers to stay abreast of developments in the industry. Administrators can take advantage of outreach opportunities available through trade shows, meetings, and monthly publications. Informational seminars, industry conferences, and well-crafted articles are also excellent ways of reaching decision-makers.

Train the trainer—Since account management representatives are generally the front line sales force for utility or other energy efficiency incentive programs, some partners have begun training them on the benefits of ENERGY STAR certified CFS products. For example, American Electric Power Ohio (AEP Ohio) reached out to EPA and received help developing a training program on ENERGY STAR CFS for its account managers.

Motivating Behavior Change and Continuous Energy Performance Improvement

In addition to purchasing energy- and water-efficient equipment, there are a number of operational best practices that program administrators can share with food service operators. *The ENERGY STAR Guide for Restaurants* provides an overview of the benefits of purchasing energy-efficient equipment, recommendations for saving energy in commercial

Program Highlight

PG&E has developed a Food Service Edition of the Smart Business Rebate Booklet identifying over \$41,000 in rebates for the food service industry with \$9,000 for ENERGY STAR products. The booklet provides information on nearly two dozen ways that PG&E can help customers save energy in commercial kitchens. The booklet tells customers how to apply for rebates, how to access education and training through PG&E’s Food Service Technology Center, and how to develop an energy management plan using PG&E’s online tool, SmartEnergy Analyzer™.



kitchens, recommendations for using equipment more efficiently, and general equipment maintenance tips. Program administrators can use this guide as part of their education efforts with commercial kitchen customers.

Operators can also save with EPA’s WaterSense® program which is a voluntary partnership program that seeks to protect the future of our nation’s water supply by offering people a simple way to identify water saving products. The WaterSense program is developing a specification for commercial pre-rinse spray valves and anticipates publishing the final specification in the Fall of 2013. Additional information can be found at: <http://www.epa.gov/watersense/products/prsv.html>.

A key to continuous energy performance improvement is assessing progress on a regular basis. Another tool that program administrators can promote to commercial kitchens to help them reduce their energy use is EPA’s online energy management and tracking tool, *ENERGY STAR Portfolio Manager*. With Portfolio Manager, operators can track their energy and water use over time, calculate their kitchen’s greenhouse gas emissions, and verify efficiency improvements.

MEASUREMENT AND VERIFICATION

Measurement and verification (M&V) activities including market assessment, performance monitoring, and impact evaluation are central to the success of energy efficiency programs.

Baseline Assessment

During the program planning process, program administrators should develop a baseline market assessment of the energy savings potential from commercial kitchens. This baseline will allow program managers to set realistic savings goals and design programs that are well-suited for the target market. Understanding market potential and the market penetration of energy-efficient CFS equipment is well worth the effort, providing valuable insights into how the program should be delivered, and what incentive levels would be cost-effective and successful at moving the market.

Many program administrators quantify kWh savings potential by customer segment. Some market assessments employ a survey process to develop baseline assumptions. At a minimum, a market assessment will identify the number of independently-owned and franchised restaurants, hospitality businesses, and large institutional users of CFS equipment (e.g., hospitals, schools, prisons) within the service territory, and provide general information on the baseline equipment installed in such facilities. Growth projections for key end-use sectors and annual run time for qualified equipment are also important metrics to include.

Program Tracking

Developing and maintaining a program tracking system is important for measuring program progress and energy savings. Program administrators have found the following indicators useful in tracking program performance over time: energy savings (kWh and kW) from approved incentive applications; level of rebate activity by product type; level of rebate activity by customer type (restaurant, hospitality, etc.); trade ally participation; and program costs.

Incentive applications are an important source of information for collecting basic information not only to justify rebate payment, but also to inform future program impact evaluation. The following are commonly required inputs:

- Customer contact information
- Type of facility (restaurant, hotel, etc.)
- Equipment type
- Manufacturer
- Model number
- Equipment cost
- Number of qualified units installed
- New installation or retrofit
- Proof of purchase (including serial number)
- Trade ally contact information (if trade ally incentives are offered)

Process and Impact Evaluation

CFS programs are typically subject to two types of evaluations: process evaluation and impact evaluation. Process evaluations review program design and implementation to assess what elements of the program are working well and identify opportunities for improvement. Impact evaluations estimate the energy and demand savings that directly result from a program. The *Energy Efficiency Program Impact Evaluation Guide*, a resource of the State and Local Energy Efficiency Action Network, is useful for learning more.

PROGRAM COST EFFECTIVENESS

While ENERGY STAR certified CFS equipment can provide substantial energy savings opportunities and programs can be operational within a two to four month period, seeing significant progress in terms of program participation may take as long as one year given the fragmented nature of the

It is important to keep in mind the significant lag time between implementing a program and achieving program results. According to PG&E, CFS incentive programs take approximately 12 months to demonstrate changes in equipment stocking, selling, and purchasing behavior.

distribution channel and the purchasing patterns associated with this equipment. The CFS equipment market can also be affected by broader economic conditions with the resale market increasing in importance during market downturns. As such, while the CFS market often receives targeted outreach, for program planning and cost analysis, CFS equipment is typically included in a larger menu of measures broadly targeted to the commercial sector. Measure-level cost-effectiveness analysis, conducted during program planning, requires data on incremental measure cost, per-unit savings (kW, kWh, therms), annual hours of operation, and measure life. Program administrators typically base hours of operation assumptions on the type of facility where the equipment is installed (e.g., full service restaurant, quick service restaurant, hospital, school). As refrigeration measures are weather-sensitive, savings assumptions may vary based on the climate zone where the equipment is installed.

Measure-level data are available from a number of public sources, including the following:

- The Database for Energy-efficient Resources (DEER), maintained by the California Energy Commission and California Public Utilities Commission: www.energy.ca.gov/deer.
- Michigan Energy Measures Database: http://www.michigan.gov/mpsc/0,4639,7-159-52495_55129---,00.html.
- Program work papers filed by the California IOUs, available through the Energy Efficiency Groupware Application: <http://eega2006.cpuc.ca.gov>.
- Minnesota Technical Reference Manual: <http://mn.gov/commerce/energy/topics/conservation/Design-Resources/Deemed-Savings.jsp>.
- PG&E's FSTC Web site: www.fishnick.com
- NYSERDA also has a Deemed Savings Database, available by request.

Table 2 presents program cost effectiveness results for PG&E's existing program, which includes incentives for ENERGY STAR certified CFS equipment. These calculations include the equipment incentive and administrative costs, and are estimated for the useful life of the equipment and discounted to net present value using an 8.79 percent company discount rate. The program administrative cost per kWh is estimated at \$0.06 for the 8.79 company discount rate.¹⁰

Table 2: Estimated Program Cost Effectiveness

	Pacific Gas & Electric Company (PG&E)
Implementation Period (years)	2.75
Implementation Dates	01/10 to 09/12
Total Rebated Units	8,196
Total Therms Saved	594,789
Total KWh Saved	14.6 million
Levelized CCE - Natural Gas (\$/Therm)	\$0.51
Levelized CCE - Electricity (\$/kWh)	\$0.06

ENERGY STAR SUPPORT FOR CFS PROGRAMS

In order to take full advantage of the ENERGY STAR platform for CFS programs, program administrators sign an *ENERGY STAR Partnership Agreement* with the EPA. The ENERGY STAR Program has an established national network of program administrators, equipment manufacturers, and marketing support firms that can provide advice and technical assistance during program start-up and implementation. Examples of support and resources include:

- **Specifications**—ENERGY STAR specifications currently cover eight CFS equipment types and more than 65 product categories (including professional displays, televisions, and water heaters that may also be relevant to food service operators). Information on new specifications and revisions to existing specifications is available at: www.energystar.gov/specifications.

Figure 2: Example of Co-Branded Incentive Booklet



Be creative when publicizing your progress! The Iowa Restaurant Association (IRA) has collaborated with three ENERGY STAR utilities in Iowa to leverage the ENERGY STAR Guide for Restaurants and feature it as a tear-out in the December 2011 edition of the IRA's Food & Beverage Quarterly. The above is a release of the final IRA mailing, which EPA showcased in the April 2012 CFS Newsletter.

- **Marketing tools and resources**—Downloadable logos, equipment-related information, and educational tools like the *ENERGY STAR Guide for Restaurants* allow program administrators to customize materials, while using high-quality ENERGY STAR graphics and language to describe energy efficiency opportunities in commercial kitchens. See the Iowa co-branded guide in Figure 2.
- **Training resources**—A variety of materials are available to support program training activities, including customizable train-the-trainer presentations and opportunities for online or in-person training. Refer to the ENERGY STAR Training Center at: www.energystar.gov/training/cfs.
- **Partner matchmaking**—ENERGY STAR facilitates introductions between energy efficiency program administrators and manufacturers, equipment suppliers, and restaurant associations to support program marketing and outreach.
- **Savings calculators**—EPA offers a single calculator tool to estimate life cycle energy, water, and cost savings for each category of ENERGY STAR certified CFS equipment available from the following webpage: www.energystar.gov/cfs/savingscalc.
- **Partner and product lists**—Regularly updated lists of equipment models that have earned the ENERGY STAR support rebate verification activities and are available at www.energystar.gov/cfs. Refer to the list of ENERGY STAR CFS dealer partners on the “Where to Buy” List at: www.energystar.gov/cfs/wheretobuy. The complete list of manufacturers can be located at: www.energystar.gov/partnersearch.
- **Incentive locator tools**—The CFS Incentive Guide (Excel file) and the searchable CFS Incentive Finder (which allows users to search by zip code) are both available at: www.energystar.gov/cfs/incentives.
- **CFS Quarterly E-newsletter**—This quarterly electronic publication is distributed to industry stakeholders, end users, equipment suppliers, and efficiency program administrators and highlights industry news and events, ENERGY STAR specification development updates, and member and product spotlight segments. See “Newsletters” at: www.energystar.gov/cfs.
- **Case studies**—Success stories highlight dealers, utilities, and commercial kitchen operators saving energy and money with energy efficiency. Case studies include Saratoga Restaurant Equipment, Kessnich’s Ltd. (both equipment dealers that collaborate with utilities to sell ENERGY STAR certified products) and the National Grid Commercial Kitchen Efficiency Program. All of these are available at: www.energystar.gov/cfs.

RESOURCES FOR ADDITIONAL INFORMATION

The following links are useful resources for energy efficiency program administrators that would like to learn more.

ENERGY STAR and EPA Resources

- ENERGY STAR for Commercial Food Service: www.energystar.gov/cfs
- ENERGY STAR Commercial Buildings Partnership Program: www.energystar.gov/buildings
- ENERGY STAR Portfolio Manager: www.energystar.gov/benchmark
- ENERGY STAR Small Business Network: www.energystar.gov/smallbiz
- ENERGY STAR Purchasing and Procurement with Product Savings Calculators: www.energystar.gov/purchasing
- EPA WaterSense: www.epa.gov/watersense

Other Useful Programs & Associations

- PG&E's FSTC: www.fishnick.com
- CEE program resources: <http://www.cee1.org/content/cee-program-resources>
- NRA: www.restaurant.org
- NRA's Conserve Sustainability Education Program: <http://conserve.restaurant.org>
- Green Restaurant Association: www.dinegreen.com
- NAFEM: www.nafem.org

PROGRAMS PROMOTING ENERGY STAR CERTIFIED CFS EQUIPMENT

Selected efficiency programs offering rebates for ENERGY STAR certified equipment include:

- Alliant Energy: www.alliantenergy.com/SaveEnergyAndMoney/Rebates/BusIA/030564
- Ameren Illinois: www.actonenergy.com/for-my-business/explore-incentives/commercial-kitchens-incentives
- Avista Utilities: www.avistautilities.com/business/rebates/washington_idaho/Pages/incentive_7.aspx
- Commonwealth Edison: www.comed.com/business-savings/small-business/Pages/restaurant.aspx
- The Energy Trust of Oregon: www.energystar.org/buildingefficiency/restaurants.html

- MidAmerican Energy: www.midamericanenergy.com/kitchen
- New York State (NYSERDA): www.nyserda.org/Commercial_Industrial/CommercialKitchens/default.asp
- Nicor Gas: www.nicorgasrebates.com/bus/rebate-information/cke
- Pacific Gas & Electric Company: www.pge.com/mybusiness/energysavingsrebates/incentivesbyindustry/hospitality
- Puget Sound Energy: www.pse.com/solutions/forbusiness/pages/comRebates.aspx?tab=4&chapter=4
- San Diego Gas & Electric Company: www.sdge.com/foodservice
- Southern California Edison: www.sce.com/RebatesandSavings/SmallBusiness/ExpressEfficiency/FoodServiceEquipment

SOURCES

- 1 PG&E Food Service Technology Center.
- 2 National Restaurant Association and Deloitte and Touche LLP. 2010 Restaurant Industry Operations Report. Washington, DC, pages 9.
- 3 Personal communication, Pacific Gas and Electric Company, February 28, 2013.
- 4 Personal communication, Energy Trust of Oregon, July 9, 2008.
- 5 National Restaurant Association 2013 Restaurant Industry Forecast.
- 6 FE&S Magazine Survey. 2012 <http://www.fesmag.com/research/industry-forecast/10228-fe-s-2013-foodservice-equipment>.
- 7 National Restaurant Association 2013 Restaurant Industry Forecast.
- 8 PA Consulting Group (2008). Pacific Gas & Electric: Process Evaluation and Strategic Assessment of the Food Service Technology Center. Available at: http://www.calmac.org/publications/PGE_FSTC_Eval_Report_-_Final_Feb_14_2008.pdf
- 9 PA Consulting Group (2008). Pacific Gas & Electric: Process Evaluation and Strategic Assessment of the Food Service Technology Center. Available at: http://www.calmac.org/publications/PGE_FSTC_Eval_Report_-_Final_Feb_14_2008.pdf.
- 10 Pacific Gas and Electric Company. E-mail communication and data sharing, January 2013.

ENERGY STAR[®], a program sponsored by the U.S. EPA and DOE, helps us all save money and protect our environment through energy-efficient products and practices. Learn more. Visit www.energystar.gov.

