

# Plug Load Replacement Study

**Caffé 817**  
Oakland, CA

## Little by little...

Cafés have notoriously thin margins. As such, even the smallest improvements to café operations can have a significant impact on their bottom lines. Caffé 817 in the heart of Old Oakland is no different. Given their menu composition of sandwiches, soups, and coffee drinks, most of the cooking and holding equipment at Caffé 817 is categorized as unventilated “plug loads” or equipment powered by means of an ordinary AC plug. On their own, plug loads can seem to represent a small energy draw, but collectively, they can add up to a substantial chunk of the total energy use for small businesses like cafés. With several plug load appliances, Caffé 817 sought to gain an understanding of their current energy profile and upgrade their equipment to see potential energy and cost savings.

As a result, Caffé 817 was a perfect partner for the *Electric Plug Load Savings Potential of Commercial Foodservice Equipment* study to research existing foodservice plug load energy use and demonstrate energy savings through strategic equipment replacement. Frontier Energy, Inc., working in conjunction with Pacific Gas & Electric Company (PG&E), conducted the technical study as part of the California Energy Commission's Public Interest Energy Research (CEC-PIER) through the Electric Program Investment Charge (EPIC) program.



**Original wet-well soup warmer (left) alongside the replacement induction dry-well soup warmer (right).**



Frontier Energy researchers metered and monitored three appliances for energy use. After a month of baseline collection, researchers replaced the old appliances with energy-efficient alternatives. Frontier trained staff on how to take advantage of the new technologies to demonstrate the true savings potential of the replacement technology.

### BEFORE:

- Caffé 817's existing plug load line consisted of a 7-quart wet-well soup warmer, a solid flat top hotplate, and a conveyor toaster.
- In total, the appliances consumed about 35 kWh/day.

### AFTER:

- Caffé 817's cooking and holding line now consists of a 7-quart induction dry-well soup warmer, an induction hotplate, and a programmable conveyor toaster with an energy-saving setback mode.
- The three plug load appliances now consume about 23 kWh/day

Caffé 817's makeover resulted in an estimated annual energy cost savings of \$635.

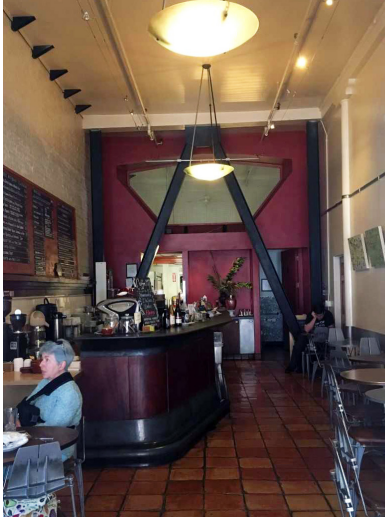
## Annual Operating Costs<sup>1</sup>

Pre-Makeover Costs	\$1,882
Post-Makeover Costs	\$1,247

<sup>1</sup> Electric utility rates based on \$0.15/kWh and 363 operation days per year.



## Quick Guide to Caffé 817 Savings



**Caffé 817 interior.**



**Replacement induction hotplate with stock pot.**



**Replacement conveyor toaster with programmable controls and energy setback mode.**

	EQUIPMENT UPDATE	ENERGY SAVINGS	BENEFITS
<b>MAXIMIZED PLUGLOADS</b>	Replaced one 7-quart wet-well soup warmer with an induction dry-well soup warmer	49%	More accurate temperatures, higher soup yields, easier to maintain & clean
	Replaced original solid flat top hotplate with an induction hotplate	59%	Improved heat transfer, faster preheat, reduced energy use
	Replaced standard conveyor toaster with a "smart" conveyor toaster	13%	Energy-saving mode, programmable recipes, increased product consistency

Caffé 817's original 7-quart wet-well soup warmer represents the soup-holding technology of choice for most restaurant kitchens. However, over the past few years, the rise of induction technology has begun to offer a more efficient cooking alternative to the old "tried-and-true" methods. Induction soup wells typically offer better holding temperature uniformity and accuracy, resulting in more consistent product quality and higher yield. The replacement soup well at Caffé 817 reduced the average daily soup warmer energy use by 49%. Staff were particularly happy with its ease-of-use since they no longer had to worry about the water level in the soup warmer. Now staff could simply transfer the soup to the warmer and press a button, minimizing the possibility of error. The replacement also made the soup station easier to maintain and clean.

***"It's nice not having to think about water level. You can just throw the soup right in and not worry about it."***

The original solid flat top hotplate was replaced by an induction version with similarly positive results. The replacement reduced hotplate energy use from 18.2 kWh/day to 7.4 kWh/day, a savings of 59%. This single replacement accounted for approximately \$586 in annual energy savings. The induction hotplate heats up faster than the traditional version, allowing for potentially quicker speeds of service.

Another commonly overlooked energy-saving opportunity for plug load equipment is idle energy reduction. A sizable portion of plug load energy cost for a restaurant is spent keeping the equipment in a ready-to-use state, despite extended periods of inactivity. To explore the savings potential of minimizing idle energy use, Frontier Energy researchers replaced the baseline conveyor toaster with an advanced programmable version. The replacement toaster features sensors and programs that automatically switch the toaster to a lower energy standby mode after 30-minutes of inactivity. When new product is loaded, the toaster turns back on at full power and extends the total toasting time by a few seconds as appropriate for the item to receive ample toasting. Using this energy-saving feature meant that the toaster could save energy during inactive periods without compromising product quality or significantly affecting service times.

Throughout the day, the conveyor toaster switched in-and-out of the energy-saving mode without affecting Caffé 817's workflow or service. Though the café kitchen was consistently busy, the replacement toaster still minimized the idle energy waste, reducing the average energy rate by about 13% during the café's operating hours. The smart conveyor toaster saved the café energy while increasing product consistency with its programmable recipe feature.

Through three plug load appliance replacements, Caffé 817 is saving a total of about \$635 in annual energy costs. Staff gave feedback that the new equipment was easy-to-use and maintain with improved functionality and product yield. Plug load appliances, though small, can be replaced with smarter, more efficient alternatives that can demonstrably reduce a small kitchen's utility bills.