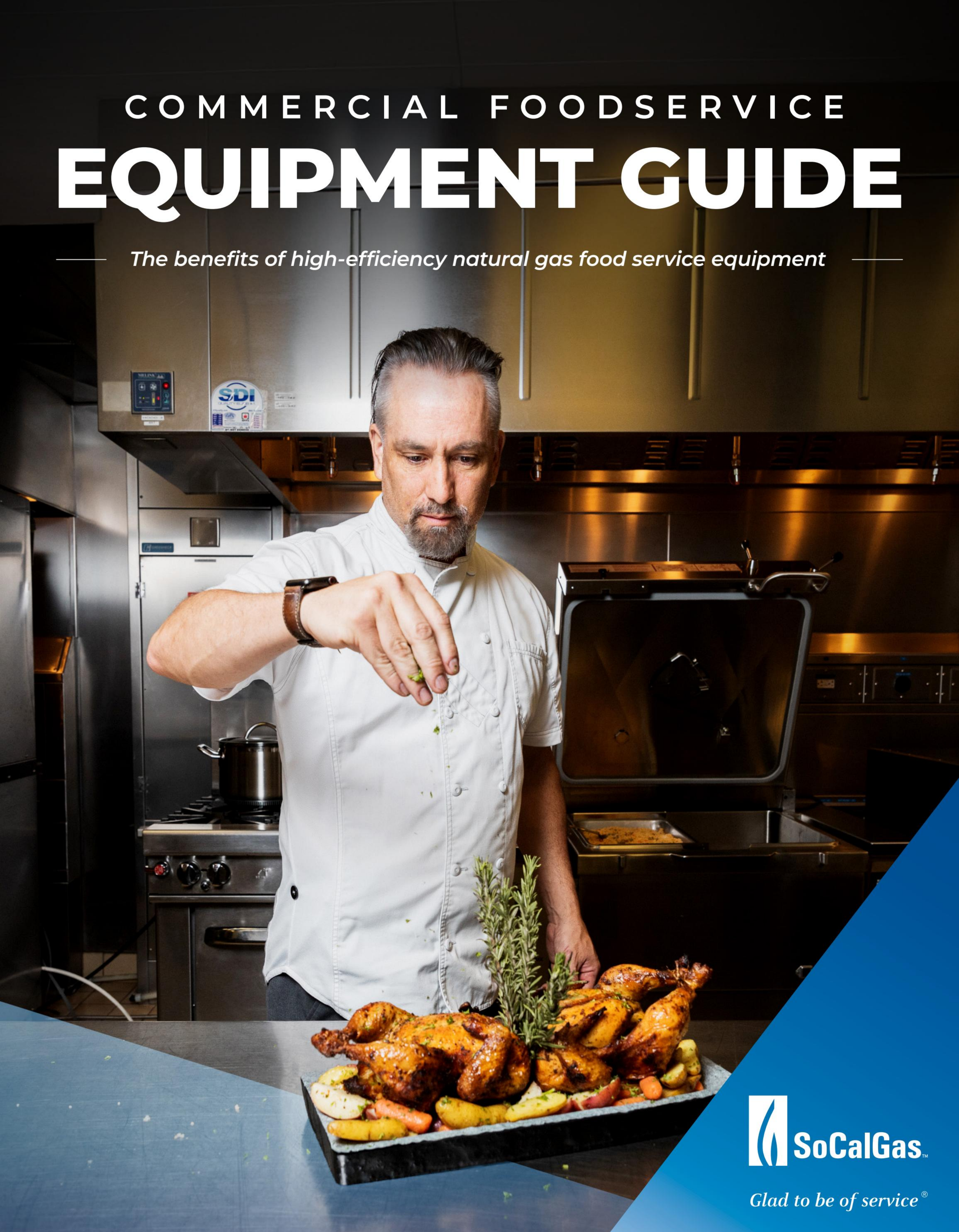
COMMERCIAL FOODSERVICE

EQUIPMENT GUIDE

The benefits of high-efficiency natural gas food service equipment



SoCalGas™

Glad to be of service®

Introduction

Why High Efficiency Matters

For commercial foodservice operators, high-efficiency natural gas cooking equipment can offer practical operational advantages. These types of appliances are designed to use energy more effectively, which can help reduce energy consumption, emissions and overall operating expenses. Many operators also appreciate that high-efficiency models are built to heat quickly and maintain consistent temperatures, which can support smoother workflows and steady output during busy service periods. Over time, these features can contribute to a more productive and effective kitchen setup.

This guide will help you:

- Choose the right equipment for your menu, workflow, and cooking tasks
- Specify high-efficiency equipment in purchasing and bid documents
- Take advantage of resources offered by SoCalGas and the California Energy Wise program, including rebates and *Try Before You Buy* opportunities

CONTENTS

Research Behind High-Efficiency Equipment

How do you know if a piece of cooking equipment is truly high efficiency? The answer lies in standardized laboratory testing, verified data, and an appliance database that allows fair comparison across manufacturers and models.

The Foundation: ASTM Standard Test Methods

Food service testing labs at California's investor-owned utilities, including SoCalGas, have tested hundreds of pieces of cooking equipment over the past three decades. This testing follows standardized methods created specifically for commercial cooking equipment.

These test methods are developed through field and laboratory research, refined in partnership with food service manufacturers, and published by ASTM International, a voluntary standards organization recognized worldwide.

Why Standardized Testing Matters

Think of ASTM test data like the miles-per-gallon ratings on new automobiles. Before MPG stickers existed, car buyers had no reliable way to compare fuel efficiency across different vehicles, and manufacturers had little incentive to improve it. The same was true for food service equipment before ASTM standards. Purchasing decisions were based on guesswork. Manufacturers made marketing claims impossible to verify. Operators had no way to calculate actual operating costs or compare competing models fairly.

Before ASTM testing:

- Equipment selection based on guesswork
- Marketing claims without supporting data
- No incentive for manufacturers to invest in efficiency improvements
- Operators unable to calculate true operating costs

After ASTM testing:

- Equipment selection driven by verified performance data
- Fair comparison across manufacturers and models
- Clear incentive for engineering-driven efficiency improvements
- Operators equipped to make informed purchasing decisions and calculate ROI

From Data to Decisions

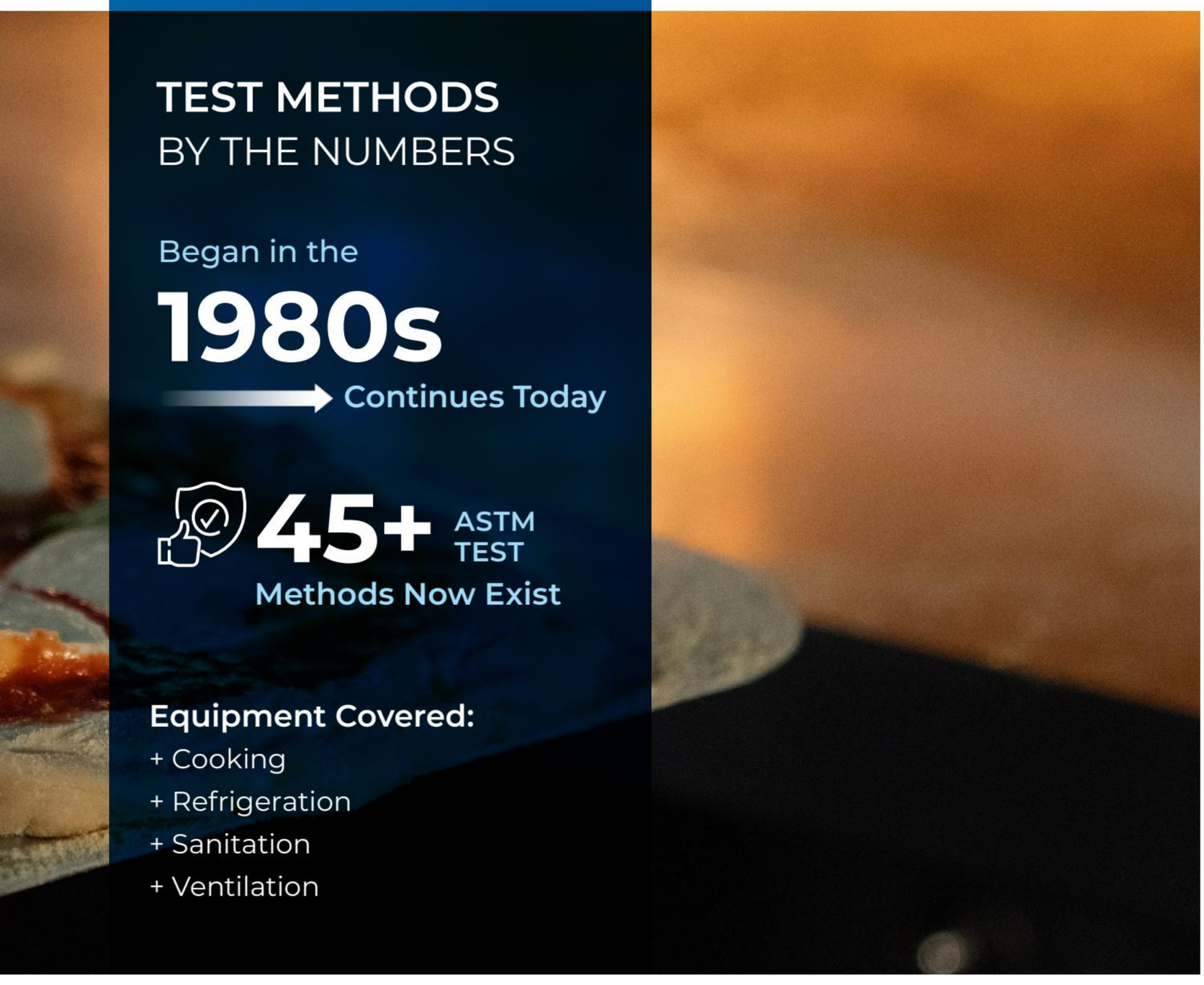
The data created by ASTM test methods allows operators to model how much energy a specific appliance will use under real-world conditions. These models translate directly into return-on-investment calculations, helping operators understand not just which equipment is more efficient, but exactly how much money that efficiency will save.

Unbiased, third-party testing transformed the industry. Engineering now drives equipment design, and operators make purchasing decisions based on facts rather than guesses.

Research Behind High-Efficiency Equipment

Understanding Efficiency

This section explains three related concepts that are essential for making informed equipment decisions: energy efficiency, energy effectiveness, and the connection between efficiency and performance.



Energy Efficiency

Energy efficiency measures how much of the energy you purchase actually cooks your food versus how much escapes as waste heat.

The definition: Energy efficiency equals the useful energy that goes into cooking the food divided by the total energy that came through your meter.

A Simple Example

A commercial fryer uses 100 BTU of natural gas. Of that energy:

- 50 BTU goes into cooking the fries (useful energy)
- 50 BTU escapes into the kitchen as waste heat

This fryer operates at 50% energy efficiency.

The Efficiency Range is Wide

Once researchers began testing equipment using ASTM standards, they discovered dramatic differences within equipment categories. Natural gas fryer efficiency, for example, ranges from 30% to 65% depending on the model.

Why understanding efficiency matters

30% efficient fryer costs roughly twice as much to operate as a 65% efficient fryer for the same food output. You cannot see this difference by looking at two fryers side by side. Only standardized lab testing reveals true efficiency.

Energy Effectiveness

Energy efficiency is informative, but thinking about "energy effectiveness" makes the concept more practical for operators.

The idea: Treat energy as a commodity, an ingredient you purchase just like cooking oil, flour, or produce. Energy effectiveness asks: how much value did I get from the energy I purchased?

Translating Efficiency to Dollars

Return to the 50% efficient fryer example:

- You purchase $1.00 worth of natural gas
- $0.50 of that dollar does productive work cooking food
- $0.50 is lost as waste heat

You are getting fifty cents of value from every dollar spent on energy. The rest is waste. Another way to express this: *energy effectiveness equals the energy you sold (in cooked food) divided by the energy you purchased.*

Energy is an Ingredient

Most operators don't think of energy as an ingredient, but it truly is. Consider ice, one of the most universal items served in restaurants. Ice is nothing more than water and energy combined. The energy used to freeze and maintain that ice is as much an ingredient as the water itself. The same principle applies to every piece of cooking equipment in your kitchen.

High-efficiency gas equipment uses energy effectively. More of every energy dollar goes toward producing food you can sell.

Efficiency is Performance

In the foodservice industry, there's a long-standing perception that high-efficiency appliances may not match the output of traditional, lower-efficiency models. In practice, equipment performance depends on factors such as design, application, and how the appliance is used in the kitchen. High-efficiency models are engineered to support consistent output.

Where the Misconception Comes From

Low-efficiency appliances tend to have higher BTU/h input ratings. The industry has long associated high input ratings with high food production, similar to how horsepower ratings are used to compare automobiles.

But input ratings measure energy consumed, not food produced.

What the Data Actually Shows

High-efficiency appliances can produce as much, or more, food than low-efficiency appliances because they direct more energy into the food being cooked and waste less to the surrounding environment.

Fryer Comparison:

METRIC	35% EFFICIENT FRYER	55% EFFICIENT FRYER
Fries produced per hour	45lbs	75lbs
Cook time per batch	Standard	Approximately 1 minute faster
Energy direct to food	Lower	Higher
Energy lost as waste heat	Higher	Lower

The high-efficiency fryer delivers more energy from combustion into the oil that cooks the fries. This reduces cook time by about one minute per batch, resulting in significantly higher production per hour.

Why This Matters for Your Business

For cook-to-order items like fries, increased production directly impacts:

TURN TIMES	Faster ticket completion
TRANSACTIONS	More customers served per hour
CUSTOMER SATISFACTION	Shorter wait times
REVENUE	More food sold

The bottom line: Efficiency equals performance. High-efficiency equipment costs less to operate and produces more food.

A Common and *Costly Mistake*

The mistake

Choosing equipment based on purchase price alone.

This happens constantly in the food service industry, and it costs operators thousands of dollars over the life of their equipment.

Two Costs, One Decision

Every equipment purchase involves two types of expense:

» **Capital Cost (CapEx)**
The upfront investment: purchase price, financing, and depreciation.

» **Operating Cost (OpEx)**
The ongoing expense: energy, maintenance, and consumables like cooking oil or oven cleaner.

Together, CapEx and OpEx determine the true cost of owning a piece of equipment over its useful life. This total is called the life-cycle cost, and it should drive every purchasing decision.

The Problem

Most operators lack reliable OpEx information at the time of purchase. Without data on energy consumption and operating costs, they default to comparing CapEx alone.

The Result

The lowest-priced item wins, regardless of performance or efficiency.

This approach ignores a critical reality: for energy-intensive cooking equipment, lifetime OpEx typically far exceeds CapEx.

Case Study: Two Griddles

A chain restaurant operator needed to purchase griddles for multiple locations. Two options were available:
The operator chose the $7,600 griddle based on purchase price.

What They Missed

The “cheaper” griddle costs $5,600 more over 10 years.

An additional $1,400 in CapEx would have reduced OpEx by $7,000.

The high-efficiency griddle delivers a 400% return on the incremental investment.

Case Study: Two Griddles

COST FACTOR	STANDARD GRIDDLE	HIGH-EFFICIENT GRIDDLE
Purchase Price (CapEx)	$7,600	$9,000
10-Year Energy Cost (OpEx)	$28,000	$21,000
Total Life-Cycle Cost	$35,600	$30,000

Two Lessons

1 *OpEx is the bigger number.*

In this case study, the standard griddle's 10-year energy cost was nearly four times its purchase price. Even the high-efficiency griddle's OpEx was more than double its CapEx. For energy-intensive equipment, operating cost is the number that matters most.

2 *Small CapEx investments yield large OpEx returns.*

Spending $1,400 more upfront saved $7,000 over the equipment's life. That is a 400% return on a modest incremental investment, far better than almost any other use of that capital.

The Takeaway

When evaluating cooking equipment, always request efficiency data and calculate life-cycle cost. The lowest purchase price is rarely the lowest total cost.

Three Questions Before You Buy

When choosing commercial cooking equipment, operators should ask three fundamental questions and get satisfactory answers to all three before making a purchase.

1 *Is this equipment right for the task?*

The most important consideration is whether the equipment matches your menu. A low oil volume fryer designed for french fries won't perform adequately for fried chicken. A standard griddle built for hamburgers and pancakes won't reach the temperatures needed for a plancha to properly caramelize and brown chicken and beef.

Getting this wrong means poor food quality, frustrated cooks, and wasted capital.

The SoCalGas Energy Resource Center offers a *Try Before You Buy* program. Bring your own ingredients and recipes to test-cook on a diverse inventory of high-efficiency gas cooking equipment before purchasing. This hands-on approach ensures equipment matches your menu, eliminating guesswork and reducing risk.

The first and most important task is to make sure the equipment matches the menu.

2 *What will this equipment cost to operate, and is there a way to lower costs?*

Purchase price is only part of the equation. Energy bills represent **3 to 8%** of most foodservice operations' total operating costs, and unlike food costs, energy savings go directly to your bottom line.

For example, a restaurant operating on a 5% profit margin needs to sell $20 worth of food to generate $1 of profit. But every $1 saved on energy costs drops straight to the bottom line as earnings.

High-efficiency natural gas cooking equipment is the most effective way to reduce energy costs in a commercial kitchen.

3 *How well does this equipment perform?*

Performance means more than food quality. For commercial operators, it means:

Production capacity: How much food can it cook per hour?

Recovery time: How quickly does it return to cooking temperature after a large batch?

Speed of service drives customer satisfaction and throughput, particularly in quick-service and cooked-to-order operations. The more tickets moving through your kitchen, the more revenue you generate.

Choose equipment that cooks the most food, recovers quickly, and does both at the lowest energy cost.

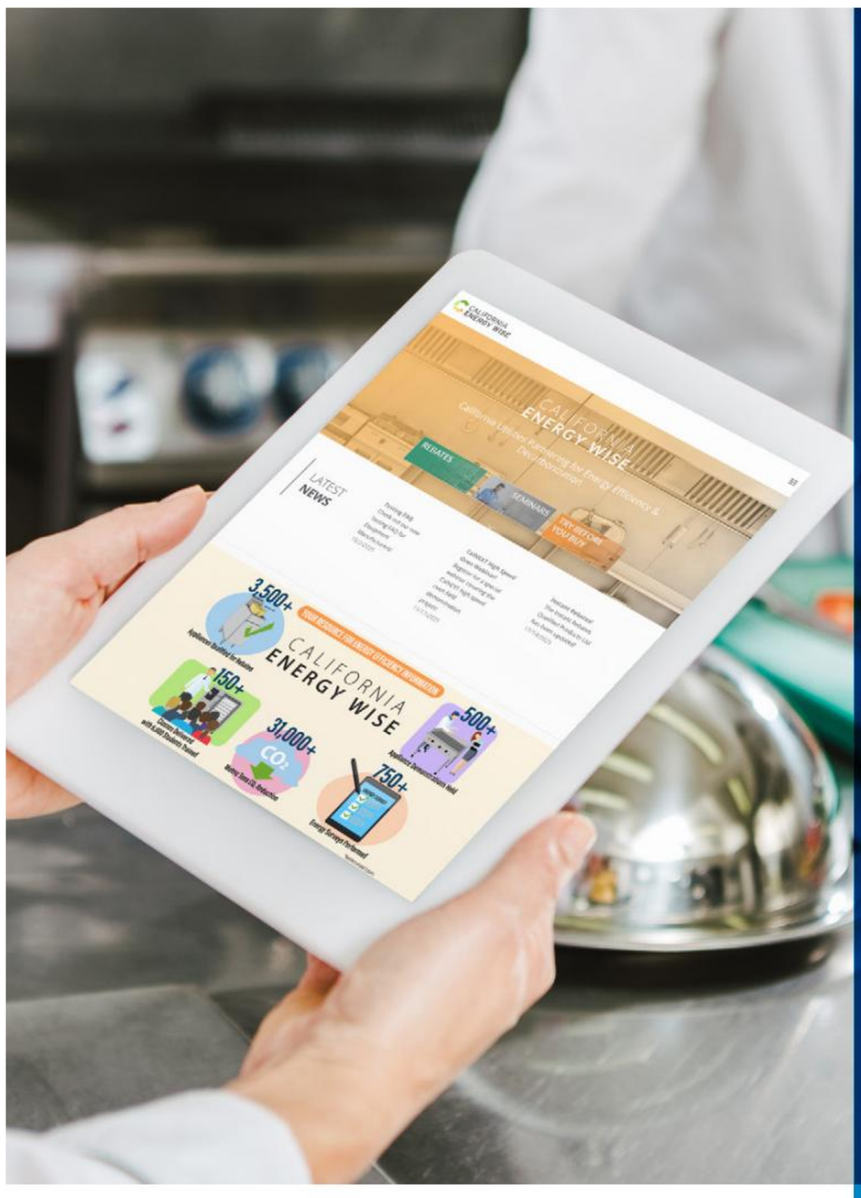
Specifying High-Efficiency *Equipment Online*

Understanding the value of high performance, high-efficiency gas cooking equipment is the first step in creating an energy-effective cookline. The second and most important step is purchasing, installing, and commissioning that equipment.

To ensure high-efficiency equipment actually makes it onto your cookline, you need effective and precise equipment specifications that include energy efficiency and performance data. Fortunately, there is an easy online resource that provides specification language ready to use in contracts and purchasing documents.

The California Energy Wise program offers Instant Rebates when operators purchase qualifying equipment from an enrolled supply source, whether a dealer, manufacturer, or contractor. Qualifying equipment is listed on a Qualifying Products List (QPL), which includes efficiency and performance specifications for each product category.

To specify an efficient natural gas fryer, for example, an operator would visit CAEnergyWise.com, select “Qualifying Products List” from the menu, and choose the “Fryers” tab. At the top of the page, language describes what is required for a fryer to qualify:



“Qualifying natural gas fryer models (vat width < 18-inches) must have a tested heavy load cooking energy efficiency of ≥ 50% and an idle energy rate ≤ 9,000 Btu/h utilizing ASTM Standard F1361. Qualifying natural gas fryer models (vat width ≥ 18-inches) must have a tested heavy load cooking energy efficiency of ≥ 50% and idle energy rate ≤ 12,000 Btu/h utilizing ASTM Standard F2144. Tier 2 qualifying natural gas fryer models must have a tested heavy load cooking energy efficiency of ≥ 60% and an idle energy rate of ≤ 6,100 Btu/h.”

To specify qualifying equipment, an operator can copy this language directly into their specification documents, adding: “All fryers purchased for this project shall meet the following energy and performance requirements…”

Note: For information on natural gas equipment commissioning and maintenance, refer to the SoCalGas Natural Gas Equipment Maintenance Application Guides.

Qualifying Products List

Qualifying gas combination oven/steamer models must have a tested steam mode cooking-energy efficiency of ≥ 41% and convection mode cooking energy efficiency of ≥ 57% utilizing ASTM F2861, and meet the idle rate requirements in Table 1. Qualifying electric combination oven/steamer models must have a tested steam mode cooking energy efficiency of ≥ 55% and convection mode cooking energy efficiency of ≥ 78% utilizing ASTM F2861, and meet the idle rate requirements in Table 1.

NOTE: Program criteria are subject to change.

					Convection Mode				Steam Mode			
Company	Model Number	Size (Steam Pants)	Fuel Type	Preheat Energy (Btu or kWh)	Idle Rate (Btu/h or kW)	Energy Efficiency (%)	Production Capacity (lbs/h)	Cooking Water Use (gph)	Idle Rate (Btu/h or kW)	Energy Efficiency (%)	Production Capacity (lbs/h)	Cooking Water Use (gph)
Alto-Shaam	10-10G PRO	11	Gas	10,476	4,818	60%	130	0	6,266	43%	182	3.0
	10-20G PRO	22	Gas	11,640	6,355	64%	239	1	9,059	51%	312	5.4
	20-10G PRO	20	Gas	18,278	6,552	64%	241	0.4	8,460	55%	323	13.2
	20-20G PRO	40	Gas	23,377	9,397	63%	445	0.8	9,215	57%	542	4.8
	6-10G PRO	7	Gas	6,933	4,725	58%	64	1.2	4,898	41%	113	6.1
	CTC7-20G	16	Gas	6,773	5,517	60%	173	1.3	1,654	52%	161	0.9
	CTP10-10G	11	Gas	10,476	4,818	60%	130	0	6,266	43%	182	3.0
	CTP10-20G	22	Gas	11,640	6,355	64%	239	1	9,059	51%	312	5.4
	CTP20-10G	20	Gas	18,278	6,552	64%	241	0.4	8,460	55%	323	13.2
	CTP20-20G	40	Gas	23,377	9,397	63%	445	0.8	9,215	57%	542	4.8
	CTP6-10G	7	Gas	6,933	4,725	58%	64	1.2	4,898	41%	113	6.1
Angelo Pro	FX122G3**	24	Gas	9,304	7,693	63%	216	1.8	8,696	55%	223	2.6
	FX82G3**	16	Gas	7,387	6,550	60%	145	2	7,334	54%	191	3.7

Table Source: California Instant Rebates Program, Qualified Products List (QPL).

Working With SoCalGas

For Operators and Designers

Operators and designers can work with the SoCalGas team to get advice on the right type of equipment for any facility's menu. They can also test equipment at the ERC as part of the ***Try Before You Buy*** program. This customized, hands-on approach to specification and purchasing lowers risk and ensures operators are matched to the most energy-effective equipment.

For Manufacturers, Dealers, and Representatives

Manufacturers, dealers, and equipment representatives use the ERC to showcase their best equipment. Manufacturers also work with the SoCalGas engineering team to have high-efficiency equipment tested for inclusion on the California Energy Wise Instant Rebates Qualifying Products List.

Beyond testing, manufacturers have collaborated with the SoCalGas team to develop and test new equipment designs that increase performance and energy effectiveness. Manufacturers are encouraged to participate in the creation of ASTM standardized test methods by attending ASTM meetings.

The SoCalGas ERC team is dedicated to helping manufacturers create and sell the most energy-effective gas cooking equipment, which benefits customers and is good for business.

Food Service Equipment Center

SoCalGas Energy Resource Center
9240 Firestone Blvd,
Downey CA, 90241

As a brand-neutral facility, the Food Service Equipment Center is the largest test kitchen for natural gas equipment in the country. Test and compare more than 150 pieces of equipment from over 50 manufacturers.

Learn more at:
socalgas.com/Foodservice

Try Before You Buy

Bring your own recipes and ingredients to our state-of-the-art Commercial Kitchen or Ventilation and Bake Lab. Assess cooking quality, production, ease of operation, and maintenance before you purchase.

Educational Seminars and Webinars

Attend no-cost seminars and webinars on food safety, kitchen ventilation, industry trends, equipment maintenance, kitchen remodels, sustainability for foodservice, and more.

Learn more and register at:
seminars.socalgas.com

Equipment Rebates

SoCalGas offers rebates on qualifying natural gas foodservice equipment that can help offset purchase costs, and your operation may benefit from continued savings through lower operating costs year after year.

Learn more at:
socalgas.com/Business

To make an appointment:
Call: (562) 803-7323
Email: ercfoodsvc@socalgas.com

Message funded by ratepayers

This program is funded by California utility customers and administered by Southern California Gas Company (SoCalGas under the auspices of the California Public Utilities Commission. Program funds, including any funds utilized for rebates or incentives, will be allocated on a first-come, first-served basis until such funds are no longer available. This program may be modified or terminated without prior notice. The selection, purchase and ownership of goods and/or services are the sole responsibility of the customer. Customers who choose to participate in this program are not obligated to purchase any additional goods or services offered by manufacturer, vendor, service provider, or any other third party. **SoCalGas makes no warranty, whether expressed or implied, including warranty of merchantability or fitness for any particular purpose, use or application of selected goods and/or services selected by customer. SoCalGas does not endorse, qualify, or guarantee the work of any third party.** Eligibility requirements apply; see the program conditions for details.

SoCalGas™

Glad to be of service®

socalgas.com

1-800-427-2000