



# Commercial Kitchen Electrification for Policy Makers

Presented by: Michael Slater, PE

Frontier Energy Food Service Technology Center



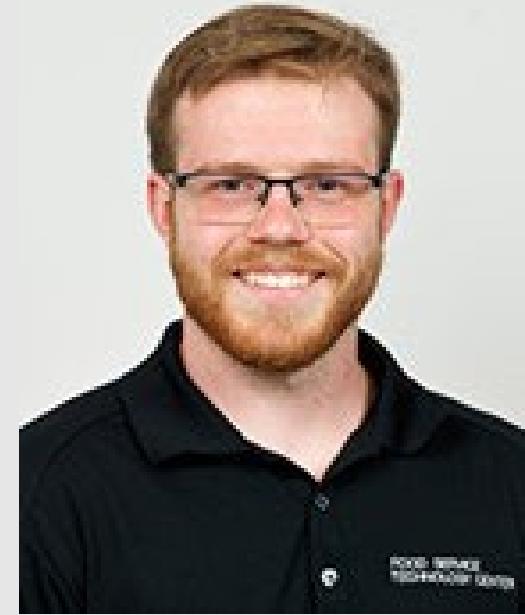
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# The Food Service Technology Center

**FrontierFSTC.com**



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**We are a fuel agnostic,  
mission-driven team**

**The mission is cutting carbon  
and saving water**

## Disclaimer

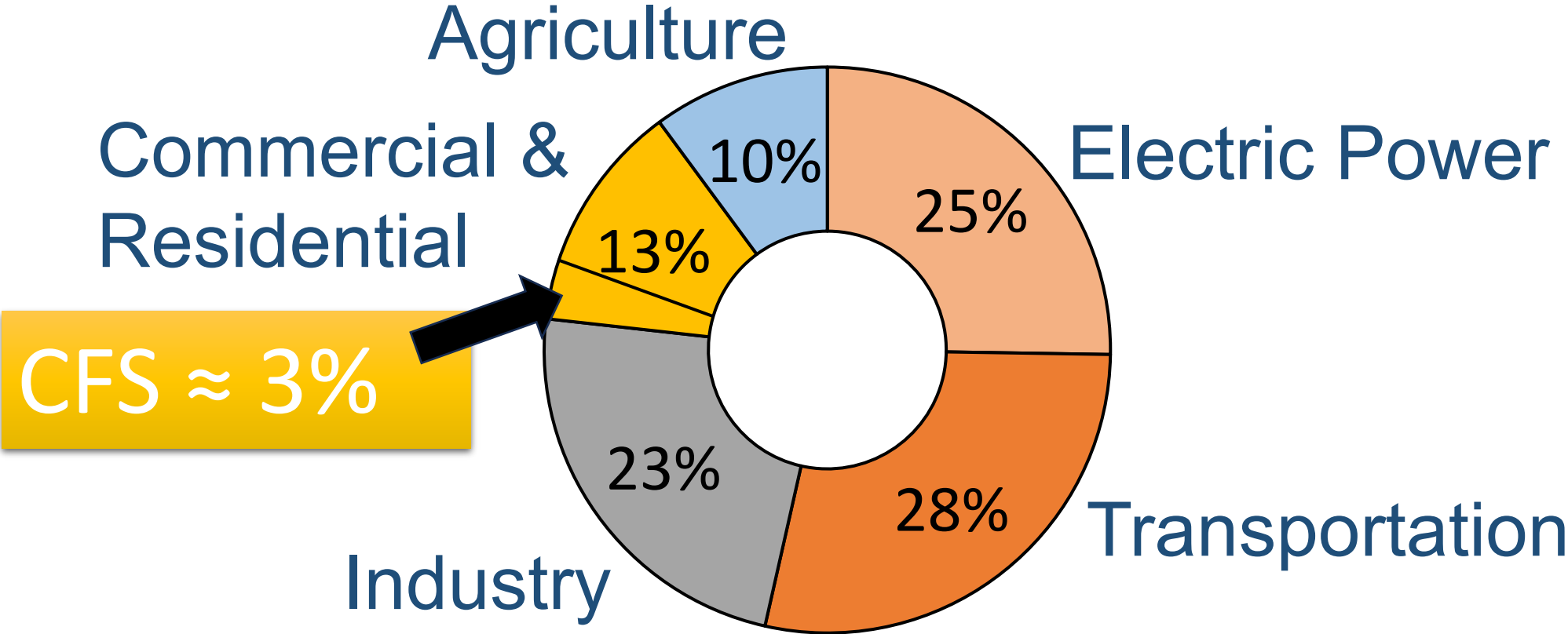
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# Big Picture Perspective:

Commercial Food Service (CFS) is  
the most energy intensive commercial end use

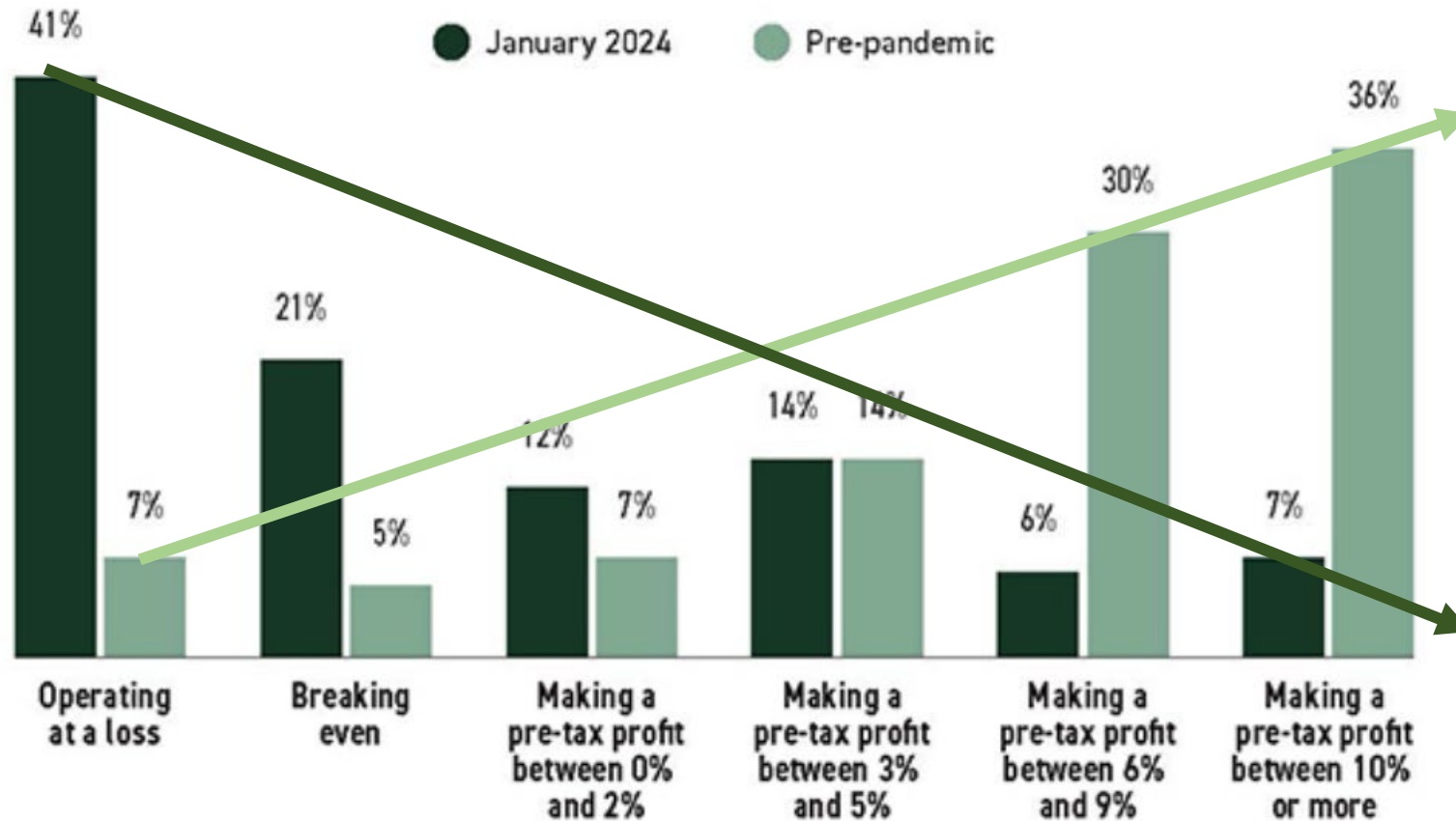
Commercial Kitchens can use 10 X more energy  
per square foot than other commercial spaces

# Food Service is a relatively small, but important, percentage of US Greenhouse Gas Emissions



# Restaurants are Suffering Economically

62% OF RESTAURANT COMPANIES ARE CURRENTLY OPERATING AT A LOSS OR JUST BREAKING EVEN (SHARE OF RESPONDENTS)



Q: Which best describes the current profitability of your overall operations?

Source & Chart: Restaurants Canada

# **Kitchen Electrification - Technology**

Challenges

Performance

Availability

Reality

# Electrification means all-electric kitchens

## The Challenges for Commercial Foodservice?

Requires some behavior change!



Electricity is a more expensive fuel than Gas



# Overcoming the Challenges

Many appliances require no behavior change to go all-electric...for example:



# Overcoming the Challenges

**Much of the equipment is already electric and trends are moving more electric equipment into the kitchen.**



# Overcoming the Challenges

## Induction is a superior technology



# There is a slight misperception that creating All-Electric Kitchens requires All-Induction Kitchens

Induction is just one way of transferring heat that happens to work well for Range Tops

Examples of effective electric appliances that are not induction include:

Broilers



Fryers



Pasta Cookers



Ovens



Steamers



Kettles



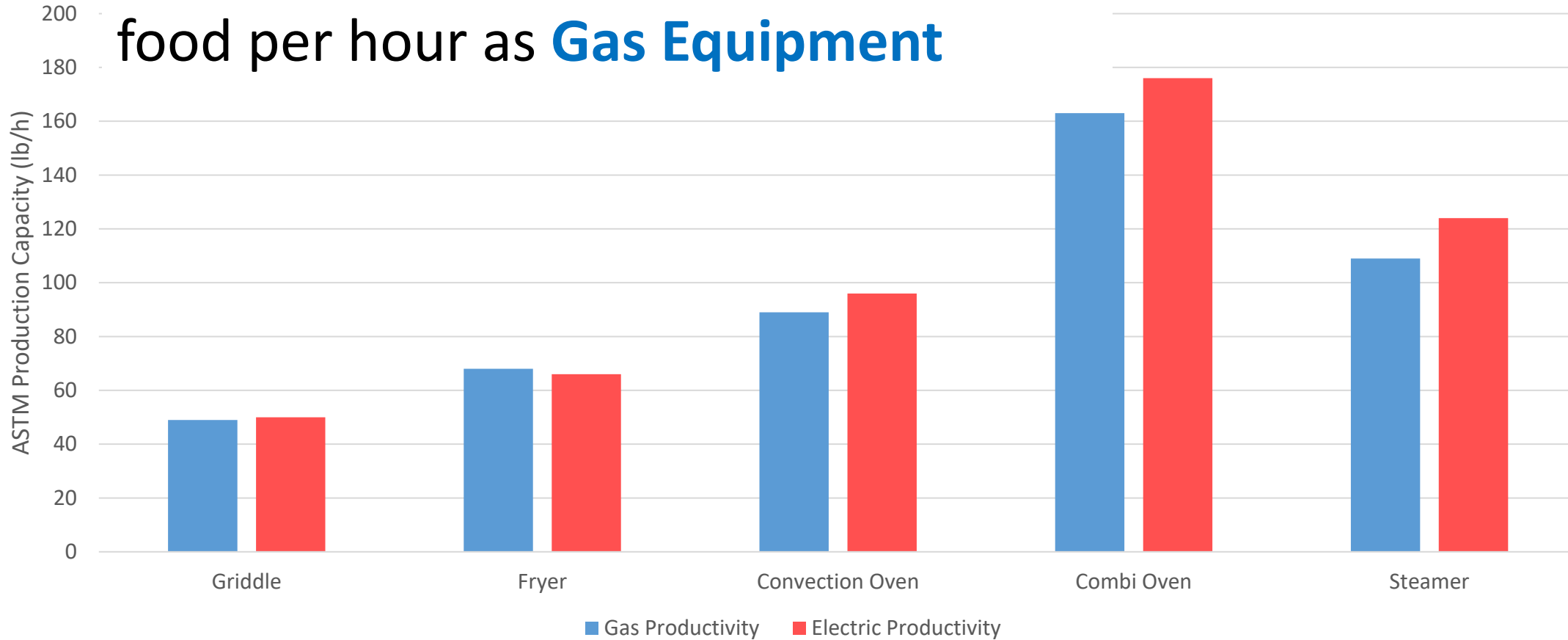
Performance:  
Can electric equipment keep up?

Yes

**TOP 3**

# Efficient Brands

**Electric Equipment** produces as much food per hour as **Gas Equipment**



# Availability





EXIT

CORNER

EXIT





This is the biggest equipment challenge

# **Economics**

Equipment Costs (CapEx)

Energy Costs (OpEx)

Other: Maintenance | Labor

Where to Start Cutting Carbon

# CapEx vs OpEx

For all equipment, except induction, CapEx for Gas  $\approx$  Electric  
& OpEx for Electric is about 2 times greater than Gas



For induction, CapEx for Elec is 2X to 3X greater than Gas  
& OpEx for Electric  $\approx$  Gas



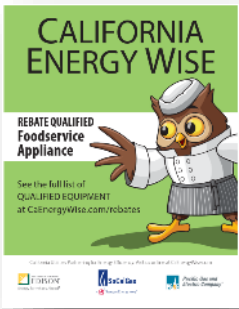
# Base Efficiency Cookline



**CO<sub>2</sub> = 35.2 metric tons/year**

**Fuel Cost = \$24,446/year**

\$1.85/therm, \$0.34/kWh, 89 lb CO<sub>2</sub>/MWh (PGE 2021)



# Efficient Cookline



**CO<sub>2</sub> = 24.5 metric tons/year**

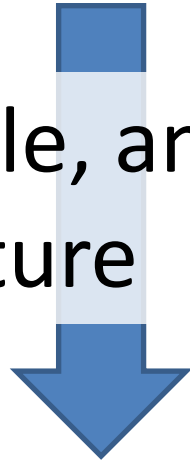
**Fuel Cost = \$16,283/year**

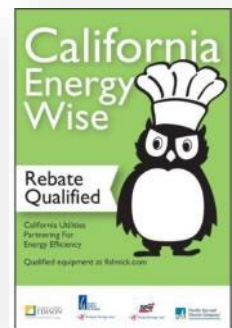
**Savings vs Base = 10.7 tons and \$8,163**

\$1.85/therm, \$0.34/kWh, 89 lb CO<sub>2</sub>/MWh (PGE 2021)



Fast, Small, Flexible, and Energy Efficient:  
Kitchen of the Future





# Hybrid “Kitchen of the Future” Cookline



Gas

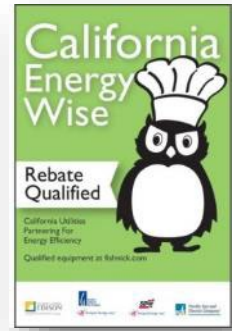
Electric



CO<sub>2</sub> = 12.5 metric tons/year

Fuel Cost = \$7,816/year

Savings vs Base = 22.7 tons and \$16,929



## All-Electric “Kitchen of the Future” Cookline



Electric



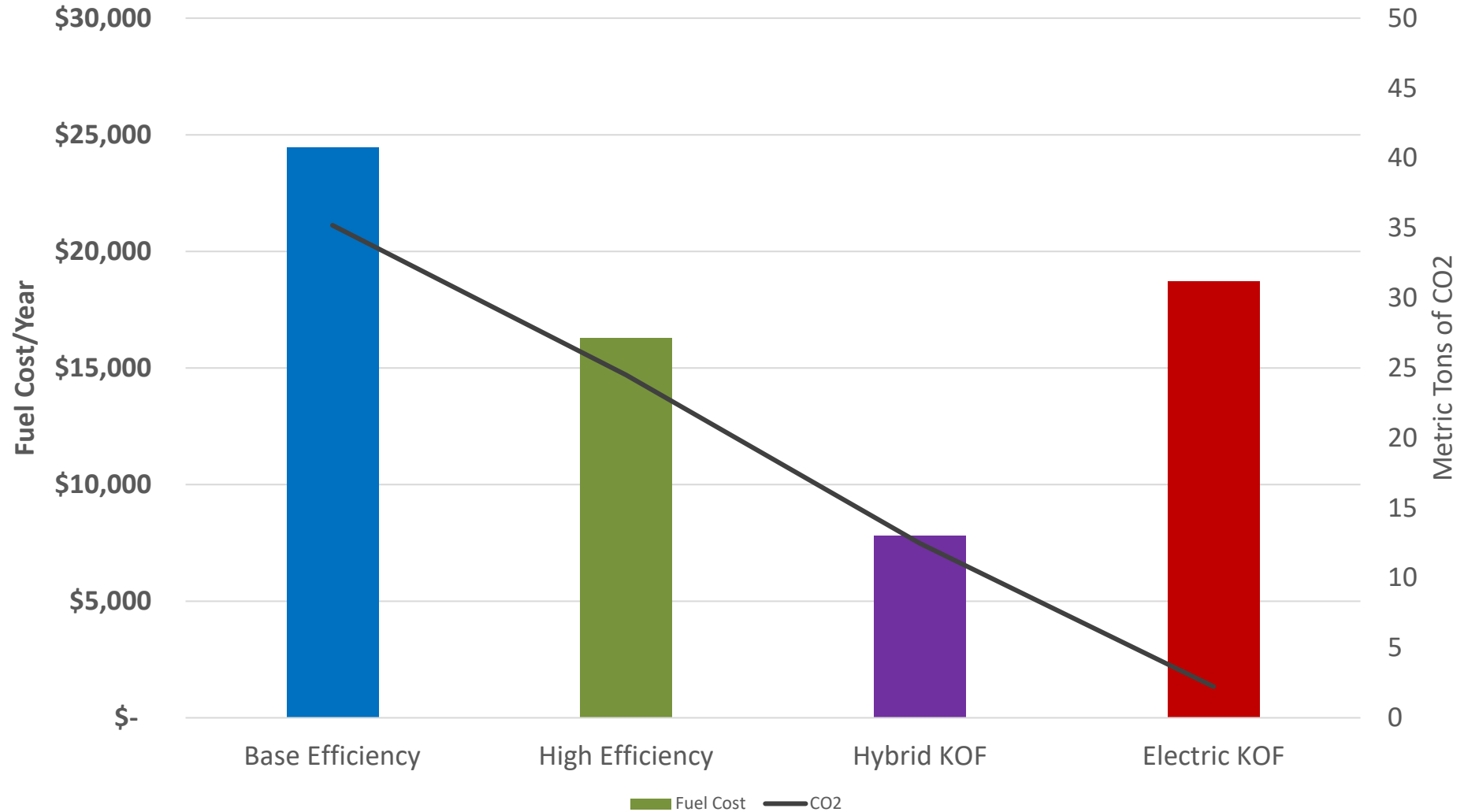
$\text{CO}_2 = 2.2$  metric tons/year

Fuel Cost = \$18,710/year

Savings vs Base = 33.0 tons and \$5,710

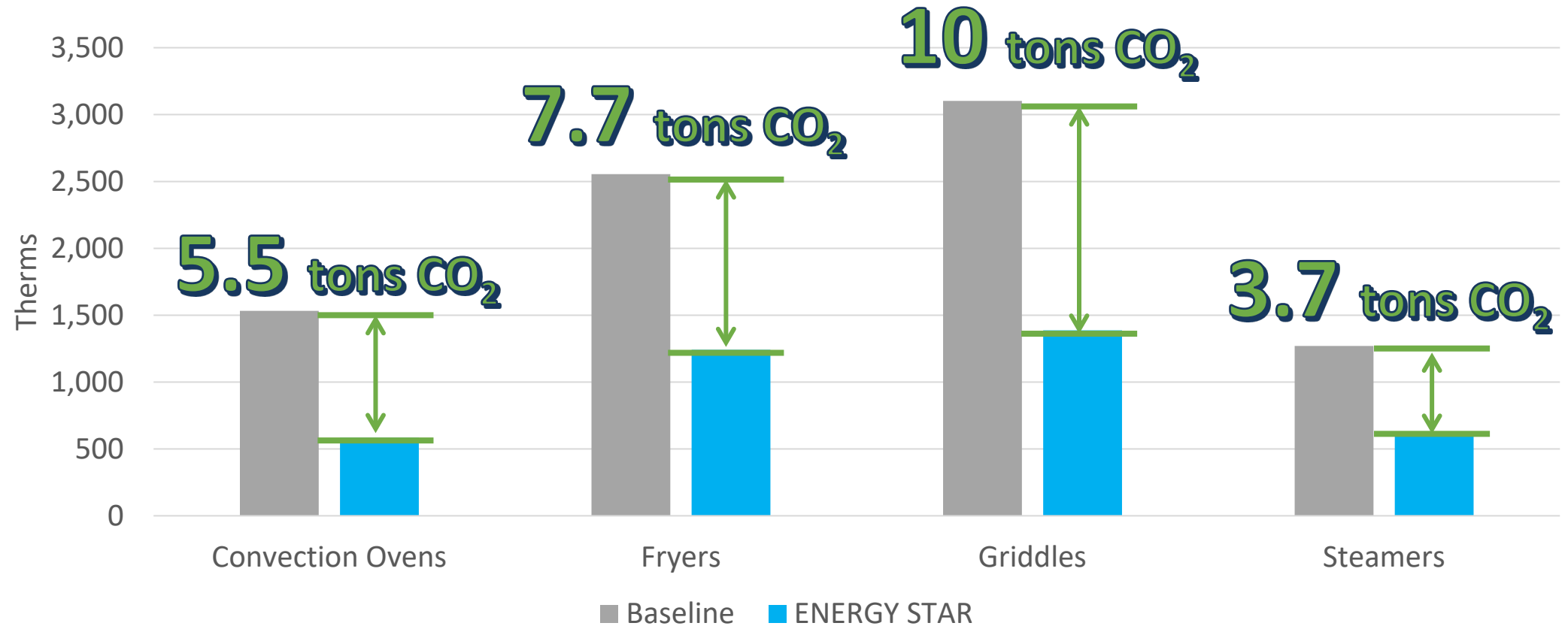


# Big Picture Comparison: Cost vs CO<sub>2</sub>



\$1.85/therm, \$0.34/kWh, 89 lb CO<sub>2</sub>/MWh (PGE 2021)

# Gas Energy Efficiency = Carbon Reduction



\*Based on an average of 30 days monitoring

# Labor and Maintenance Savings

- Potential labor savings from advanced equipment
  - Programmable | Self-cleaning
- Labor savings for cleaning of induction range tops
- Anecdotal savings for maintenance of electric equipment
- Reduced heat to kitchen for induction equipment
- HPWHs can reduce kitchen temperatures

# **Building the Decarbonized Kitchen of the Future Requires Wholistic Design**

- **Smart, high-tech equipment - combination & rapid-cook ovens**
- **High-efficiency cooking, holding, refrigeration, and sanitation**
- **Safer, faster, equipment – induction cooking and holding**
- **Off-peak production – automation, cook/chill, sous vide**
- **Demand controlled ventilation**
- **Advanced plumbing design with HPWH**
- **Optimized HVAC with HP space heating**

Reality:

Energy Efficiency is the most crucial component  
of decarbonization and electrification

# **PG&E Resources**



### ENERGY SURVEYS

Do-It-Yourself Energy Surveys



### DESIGN GUIDES

Performance & Efficiency Guides



### SEMINARS

See What's New



### TRY BEFORE YOU BUY

Love It Before Buying



# CALIFORNIA ENERGY WISE

[CAEnergyWise.com](http://CAEnergyWise.com)



### CALCULATORS

Calculate Energy Cost



### REBATES

Foodservice Equipment Rebates

Available for Demo at the Food Service Technology Center



Available for Demo at the Food Service Technology Center



# California Foodservice Instant Rebates Program



**CALIFORNIA  
ENERGY WISE**

**CAEnergyWise.com**

CALIFORNIA FOODSERVICE  
**instant rebates**<sup>™</sup>



# Induction Cooktop Rebates

63 models spread across 10 different manufacturers  
\$250 Instant Rebate per hob



= \$1,000

# PG&E Customers: Try induction cooking at home!

## Benefits of induction include:

- Faster Heat Up Times
- Precise Temperature Control
- Increased Safety & Kitchen Comfort
- Easy to Clean

Borrow a unit for two-weeks at no cost.  
We cover shipping!

Visit [pge.com/inductionloaner](https://pge.com/inductionloaner) or  
scan the QR code to reserve your cooktop!



# Fill out this form and we will help you register and reserve an induction cooktop



PG&E Induction Cooktop Loaner Program

Hi, Richard. When you submit this form, the owner will see your name and email address.

\* Required

1. Name \*

2. Email Address \*

3. Zip Code \*

Submit

*Thanks!*



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