Cooking in Healthy Electrified Commercial Kitchens (CHECK)

Restaurant Webinar

August 15th, 2023

Josh Shapiro, Governor

Richard Negrin, DEP Secretary

DEP Energy Programs Office (EPO)

- Work with citizen's groups, businesses, trade organizations, local governments and communities to innovate, educate, prevent pollution, & provide financial/technical assistance
- Guide Pennsylvanians on energy conservation & efficiency, as well as expand use of renewable & alternative energy solutions

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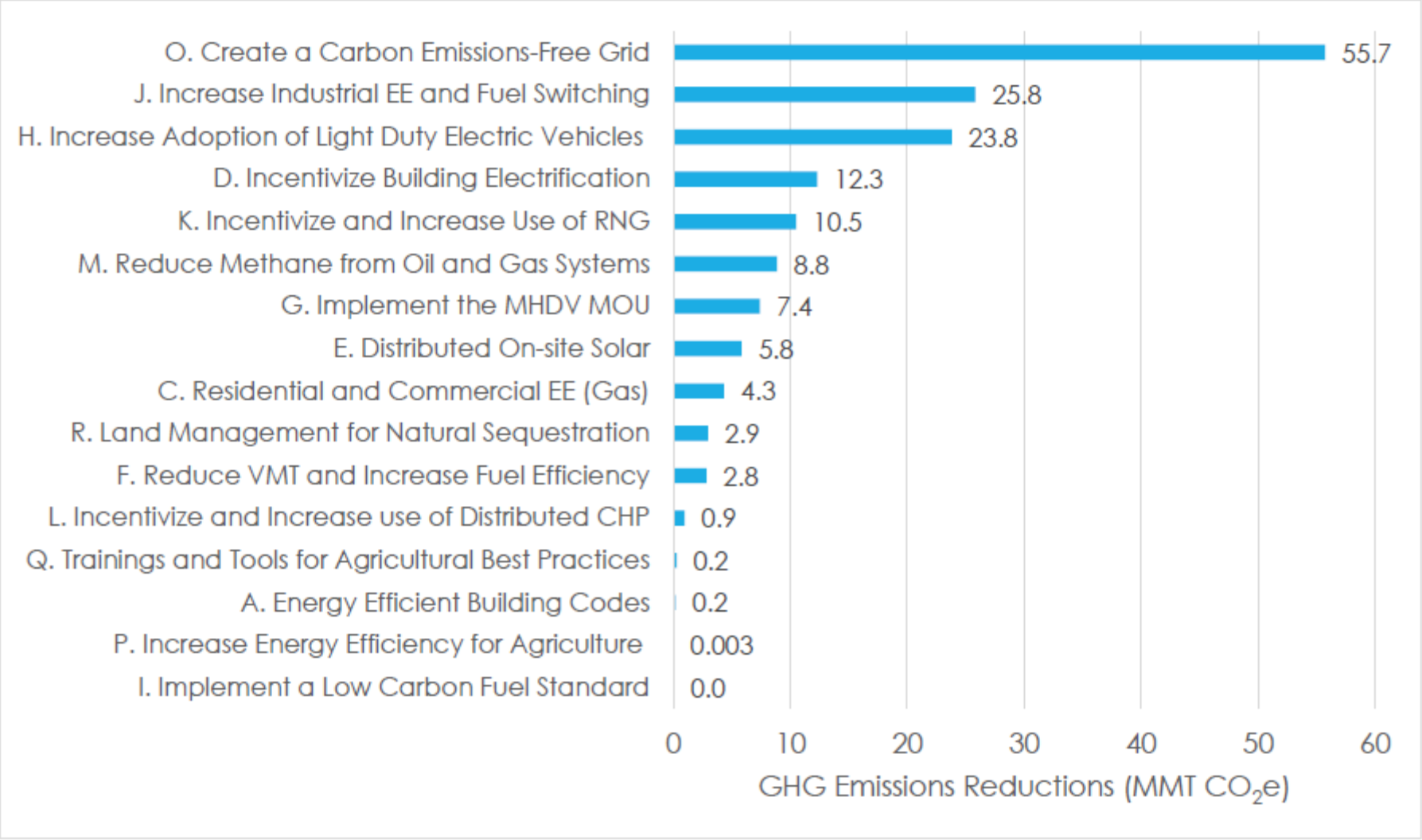
Why Electrification?

Figure 18. GHG reductions from strategies in 2050, compared to business as usual ($MMTCO_2e$)



CHECK: Overview

- Education and rebate **pilot** program
- Goal: Help commercial kitchens in Pennsylvania become healthier places to work via energy efficiency and electrification
- Applicant must view a recorded/live CHECK webinar or attend an in-person workshop to apply for the rebate
- Official launch of the rebate was on October 1, 2022
- Second round of rebates launched July 5, 2023

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CHECK Education Program

Training provider:

Chef Chris Galarza,
Forward Dining Solutions

Two training <u>options</u>:
Webinars:

- Live session on 8/15
- Recordings available on CHECK webpage

In-person workshops:

- 9/15 in State College
- One still in planning!

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CHECK Rebate Program

Funding basics:

- Approximately $140,000 in available funding
- Up to $8,500 per applicant
- Available on first-come, first-serve basis with EJ focus
- Projects can be existing buildings or new construction
- Must apply for rebate prior to purchasing equipment

Eligible applicants:

- 501c3 community service nonprofits
- Not-for-profit hospitals
- K-12 schools
- Higher education institutions
- Restaurants

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CHECK Rebate Program

Table 1. CHECK Rebate Amounts

Technology (all equipment must be combustion-free; electric-only)	Eligible Equipment	Maximum Rebate Amount Per Applicant
ENERGY STAR certified commercial cooking equipment	Steam cooker, fryer, combination oven, convection oven, griddle, hot food holding cabinet	Up to 50% of purchase cost **$4000 max**
Ventilation	Demand control kitchen ventilation system	Up to 50% of purchase cost **$7,500 max**
Induction cooking equipment	Range, cooktop, wok, griddle	Up to 50% of purchase cost **$7,500 max**
Associated electrical infrastructure upgrades to accommodate additional load from induction equipment	Electrical equipment (circuits/breaker/wiring for new load)	Up to 50% of infrastructure costs **$1,000 max**

***Max rebate amount per applicant is 8,500 USD**

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How to Apply

- Online applications accepted via DCED's Electronic Single Application website: https://www.esa.dced.state.pa.us/Login.aspx
- Step-by-step application instructions on CHECK webpage
- Open through December 31st, 2023*
- Product specs and price quotes must be uploaded with application
- You must apply BEFORE purchasing or installing equipment

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How to Redeem Voucher

- Successful applicants issued a rebate voucher that secures the approved rebate amount for **180 days from date of issuance**
- Following equipment installation, voucher recipient must provide required documentation to DEP prior to voucher expiration date to receive rebate funds:
  - Before (if applicable) & after photos
  - Equipment invoice(s)
  - Proof of payment

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Act 129 Incentives

First Energy

Commercial Food Service Equipment	Instant Discount Amount
Commercial Electric Griddle	$500
Commercial Electric Fryer	$500
Commercial Ice Machine 0-500 lbs	$590
Commercial Ice Machine 501-1000 lbs	$980
Commercial Ice Machine over 1000 lbs	$1,100
Commercial Electric Combination Ovens	$1,500
Commercial Electric Convection Ovens	$500
Commercial Electric Steam Cookers - 3 pan	$300
Commercial Electric Steam Cookers - 4 pan	$400
Commercial Electric Steam Cookers - 5 pan	$500
Commercial Electric Steam Cookers - 6 pan	$600
Commercial Hot Food Holding Cabinets - full size	$500
Commercial Hot Food Holding Cabinets - 3/4 size	$375
Commercial Hot Food Holding Cabinets - 1/2 size	$225
Commercial Dishwasher - high temp, under counter	$125
Commercial Dishwasher - high temp, door type	$200
Commercial Dishwasher - high temp, single tank conveyor	$300
Commercial Dishwasher - high temp, multi tank conveyor	$500
Commercial Dishwasher - low temp, under counter	$75
Commercial Dishwasher - low temp, door type	$150
Commercial Dishwasher - low temp, single tank conveyor	$150
Commercial Dishwasher - low temp, multi tank conveyor	$250

PPL

MEASURE	DESCRIPTION	CAPACITY	DISCOUNTS
Combination Oven		10 to 14 pans	$2,000 per unit
		16 to 20 pans	$4,000 per unit
Convection Oven	Half		$40 per unit
	Full		$300 per unit
Dishwasher (Electric water heating is required)	**Undercounter**		
	Low temp		$350 per unit
	Stationary Single-Tank Door		
	Low temp		$2,000 per unit
	High temp		$1,500 per unit
	Single-Tank Conveyor		
	Low temp		$1,500 per unit
	High temp		$1,200 per unit
	Multi-Tank Conveyor		
	Low temp		$2,500 per unit
	High temp		$3,500 per unit
	High-Temp Pot, Pan & Utensil		
Steam Cooker	Full size	5 or 6 pans	$3,000 per unit
Fryer	Standard	12–18 in.	$350 per unit
	Large vat	18–24 in.	$500 per unit
Griddle	Minimum 3 feet wide		$500 per unit
Hot Food Holding Cabinet	Heated or insulated glass or solid doors	**Volume Category**	
		< 13 pans	$100 per unit
		13 to 28 pans	$500 per unit
		> 28 pans	$1,000 per unit

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For More Information

CHECK rebate guidelines & online application instructions:

https://www.dep.pa.gov/CommercialBuildings

For questions or to be placed on CHECK email distribution list:

RA-EP-CHECKProgram@pa.gov

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Thank you!

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DEP Energy Programs Website: www.dep.pa.gov/energyprogramsoffice
DEP Website: www.dep.pa.gov

FDS & PA DEP PRESENT

CHECK Program: Restaurants Webinar

08/15/23

Chef Chris Galarza
Founder – Forward Dining Solutions

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PUSHING SUSTAINABLE KITCHEN DESIGN FORWARD

About Forward Dining Solutions

FORWARD DINING SOLUTIONS LLC
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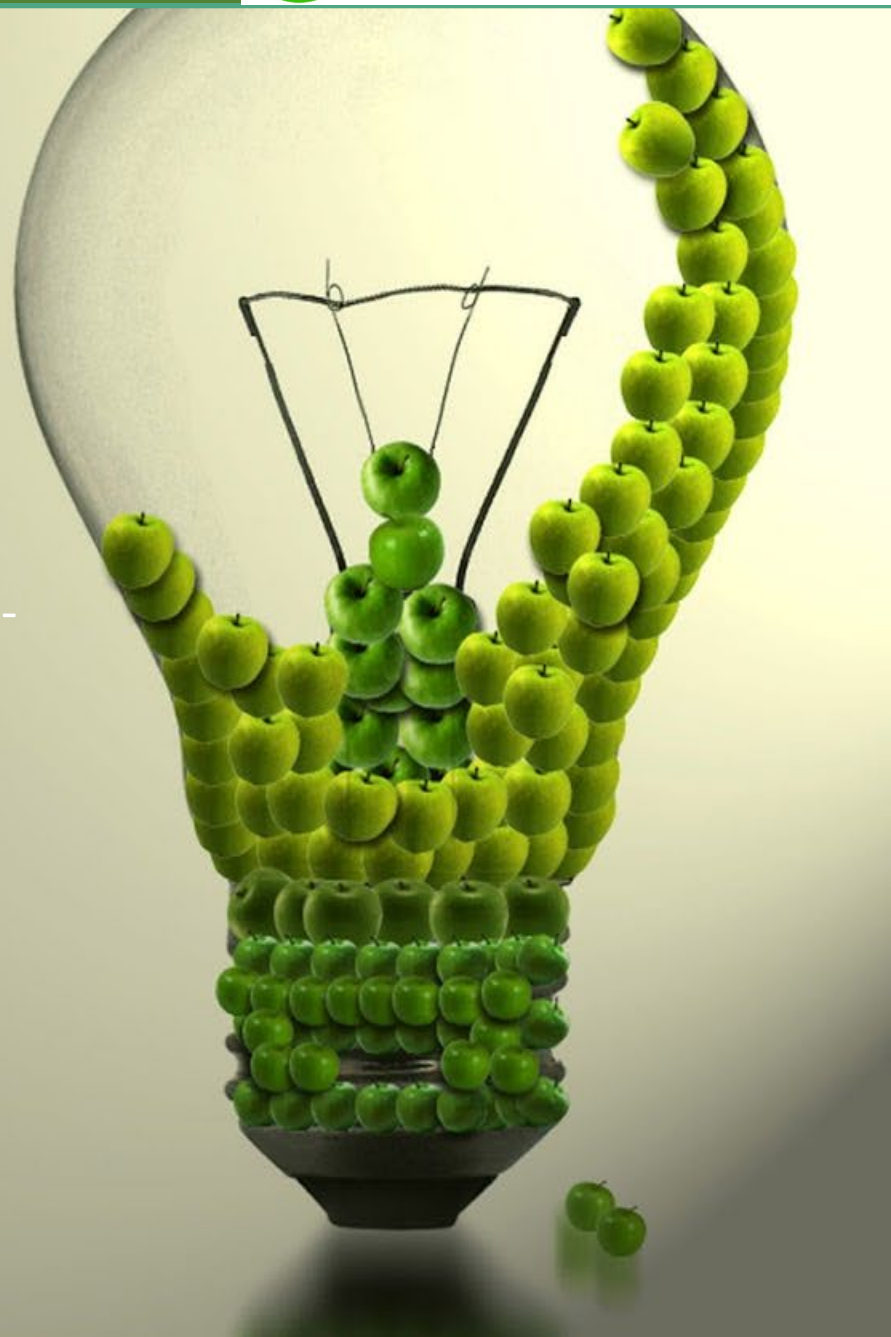
"Helping Designers Sustainably Build Kitchens of the Future"

What Sets us Apart?

- First and **ONLY** firm focusing on commercial kitchen electrification
- Chef owned company experienced in all facets of dining from 5-Star 5-Diamond resorts to small scale restaurants
- Experience working with multi-disciplinary teams to achieve sustainability goals
- Now able to fully decarbonize your entire building!!!



CURRENT EVENTS

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NRDC

OUR WORK OUR EXPERTS OUR STORIES GET INVOLVED ABOUT US DONATE

EXPERT BLOG › PIERRE DELFORGE - ALUM

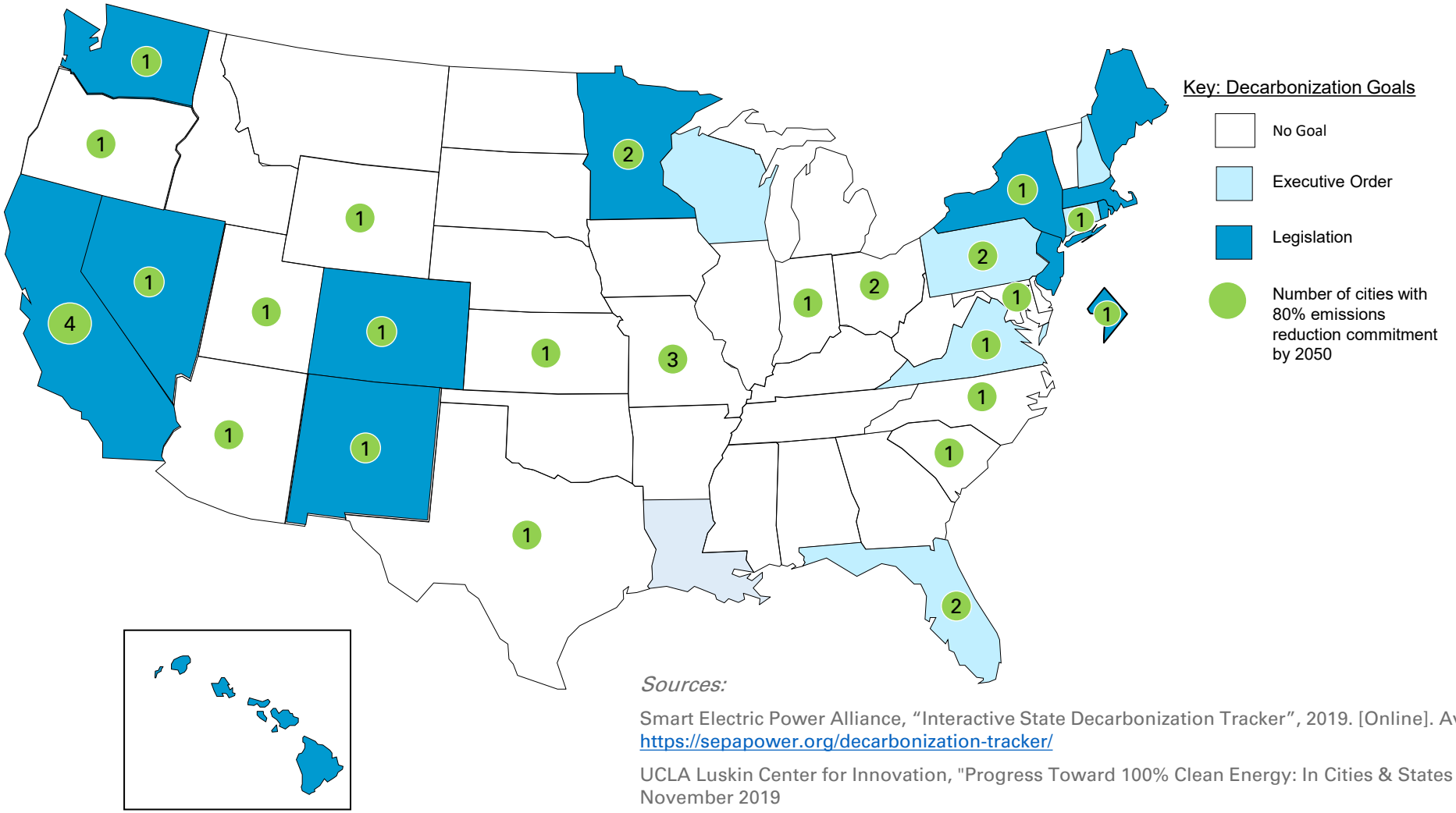
Berkeley Passes Nation's Ist All-Electric Building Ordinance

July 17, 2019 | Pierre Delforge - Alum

Source: Restaurant-Hospitality.com

Source: FastCompany.com

States and cities lead the way--commitments to reduce carbon emissions by at least 80% by 2050



Sources:

Smart Electric Power Alliance, "Interactive State Decarbonization Tracker", 2019. [Online]. Available at: https://sepapower.org/decarbonization-tracker/

UCLA Luskin Center for Innovation, "Progress Toward 100% Clean Energy: In Cities & States Across the U.S." [PDF] November 2019

ACEEE, "Community-wide Efficiency Goals", https://database.aceee.org/city/community-wide-energy-efficiency-goals

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OPERATIONS > WORKFORCE

Biden proposes first safety standards to protect workers exposed to extreme heat

Hotter summers means more dangerous conditions for farm, delivery and kitchen workers

Source: Restaurant-Hospitality.com

Energy Star won't recommend any gas appliances on its next 'most efficient' list

Only electric versions of water heaters, furnaces, and dryers will get the ultimate efficiency award.

Source: FastCompany.com

Current Events

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Ithaca, New York becomes first U.S. city to begin 100% decarbonization of buildings, an urban climate change milestone

Source: CNBC.com

REPORT | 2022

Population Attributable Fraction of Gas Stoves and Childhood Asthma in the United States

By Talor Gruenwald, Brady Seals, Luke Knibbs, H. Dean Hosgood III

What do secondhand smoke and gas stoves have in common? They both are associated with about 12 percent of current childhood asthma in the United States. Yet, while most people understand the negative health effects of secondhand smoke, many still don't realize the public health hazard from this common appliance, despite decades of studies showing the negative effects.

New peer-reviewed research from RMI, the University of Sydney, and the Albert Einstein College of Medicine shows that 12.7 percent of current childhood asthma in the United States can be linked to gas stove use. And in some states, that number is much higher.

Source: RMI

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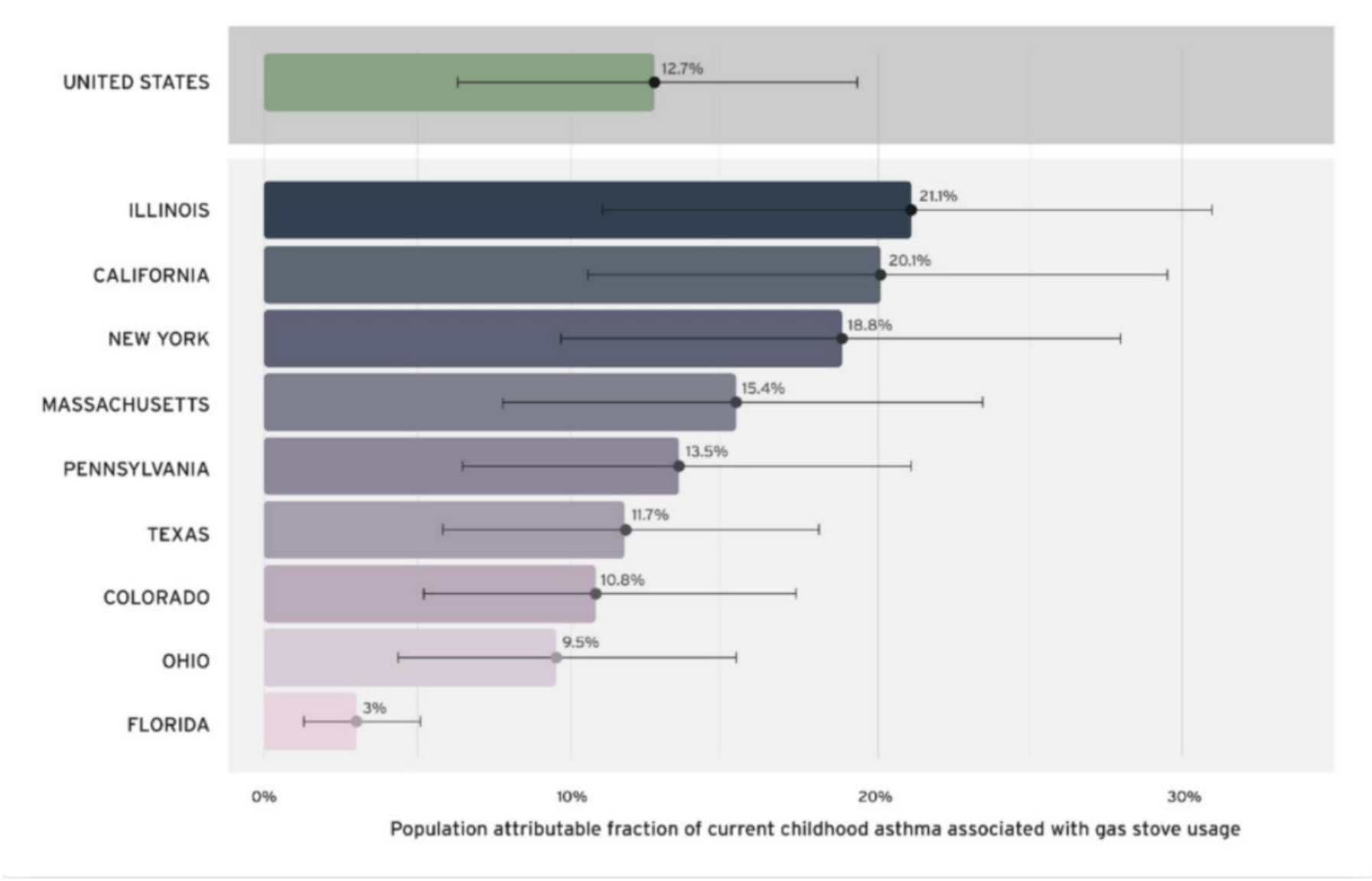

Source: RMI

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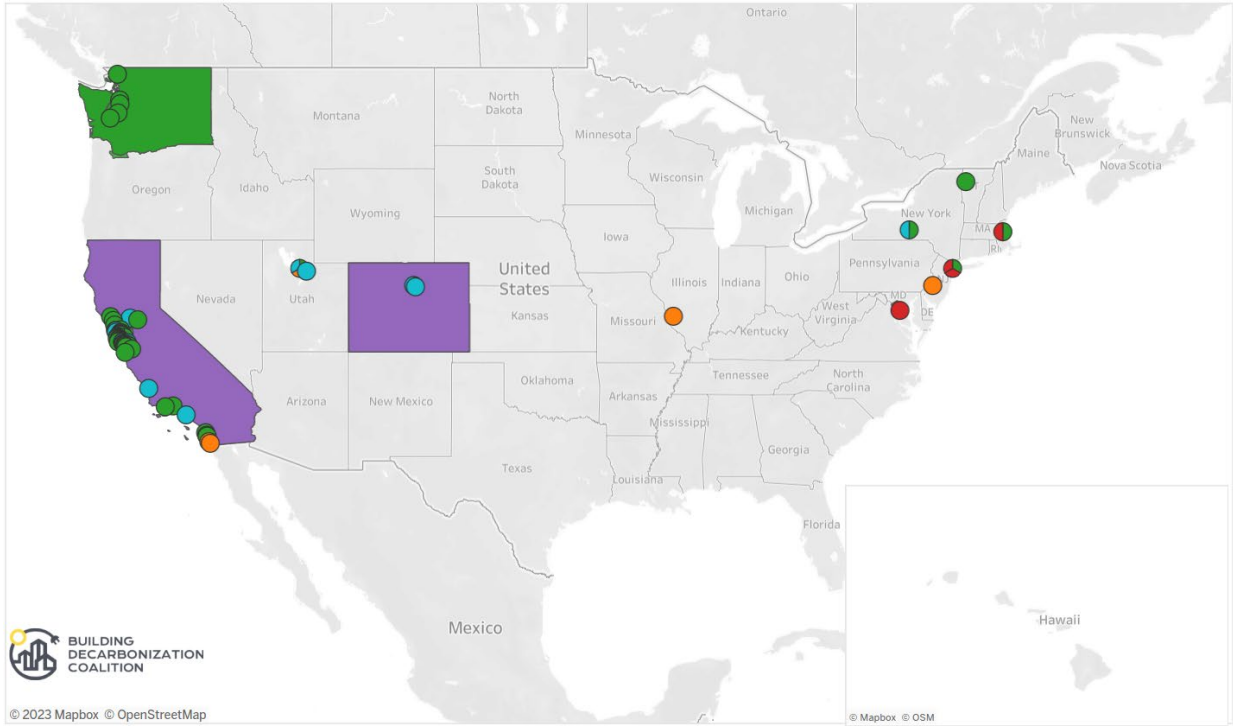

104	**Local governments** have adopted policies that require or encourage building electrification
10	**States and DC** have local governments that took action on building electrification
35 Million	**People** live in a city or county with building electrification policy
$35 Billion	**In potential health savings** in these states as they electrify further
57%	**Greenhouse gas savings** for the average house over 10 years in states where local governments have adopted these policies

ble: RMI • **Source:** Building Decarbonization Coalition

IMAGINE IF...

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Source: Nissan

Electric Kitchens & Induction Cooking

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What is Induction?

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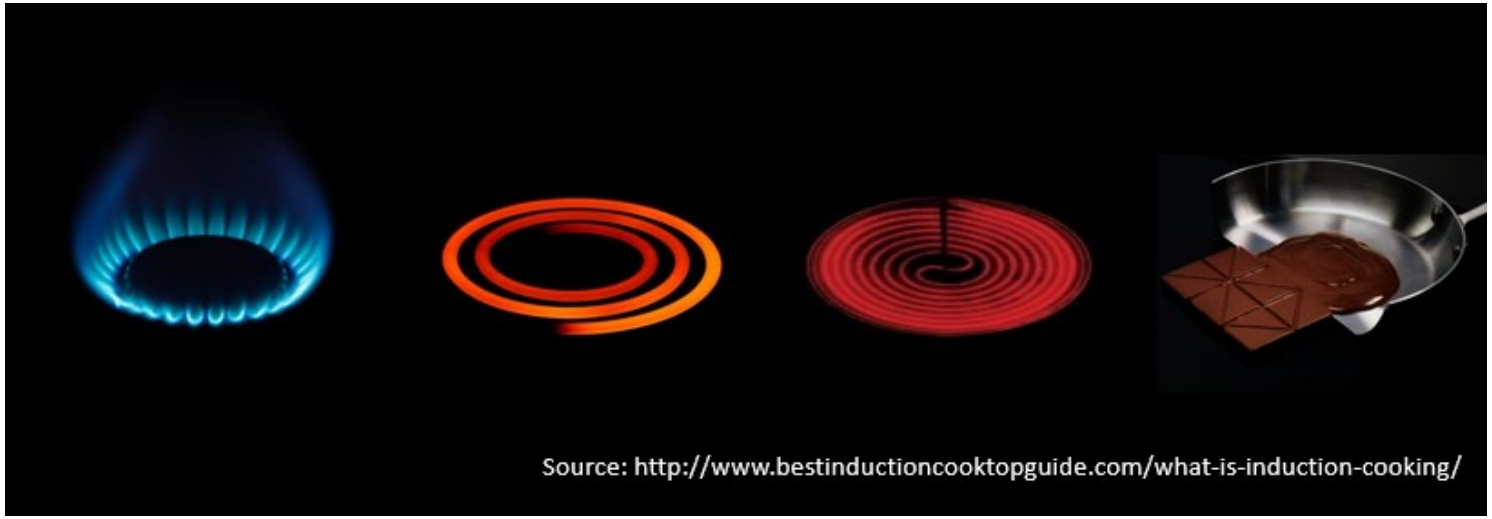
What it's not…

It's not Gas
It's Not Coils
It's not Radiant

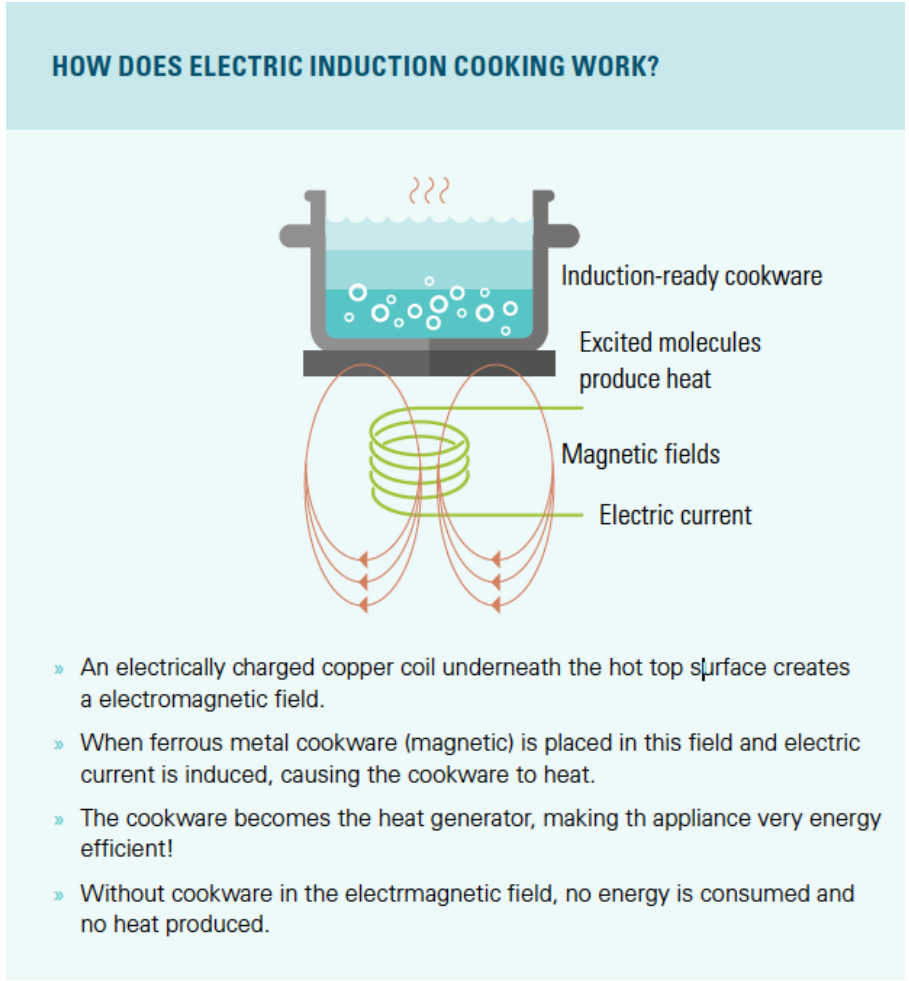
Source: Home-Tech



What it is…

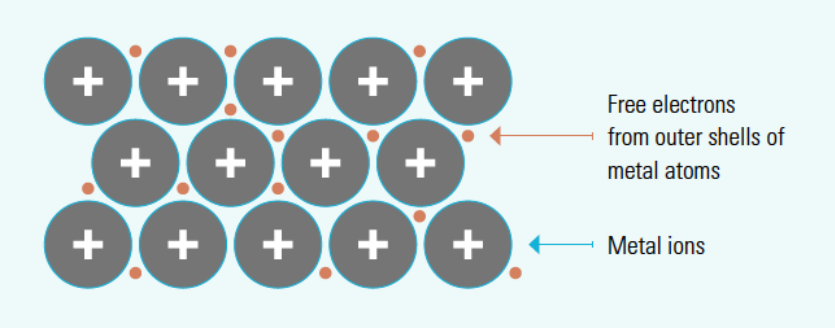
A safer and quicker way of cooking
A way of cooking using electro magnetic current to heat your cooking vessel
An easy way to meet your sustainability goals as well as save $$$

How does induction work?



Source: William J. Worthen Foundation

- Microwave?
- Uses Electromagnetic current to oscillate the ferrous molecules in the pan creating molecular friction
- Works with Molecular Structure of Pan
- ***Electric Resistive vs Induction***



Source: William J. Worthen Foundation

Induction Cooking Pro's & Con's

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Pro's

Very High efficiency (80-93% vs 35%)
Heats up quickly
Precise temperature adjustments
No Idling equipment
No combustion (No CO!!)
Dramatic improvement to thermal comfort
Extended Life of Pots/Pans (No Warping!)

Con's

Initial Cost
Compatible cookware
Electrical capacity (retrofit hurdle)

Equipment - What sort of solutions exist?

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Electric Combi Oven

Induction Griddle

Electric Induction Range

Electric Water Heater

Electric Fryer

Electric Broiler

Electric Steamer

Source: William J. Worthen Foundation

Induction – Refining Tradition

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An electric Tandoori Oven by Golden Tandoors
www.goldentandoors.com

An Induction Wok
https://leadstov.com/commercial-kitchen-equipment-induction-wok-range-for-bulk-cooking/

Wok Production Comparison

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100,000 Btu/h

Efficiency = 19%

Production = 124 lb/hr

5 kW

Efficiency = 91%

Production = 117 lb/hr

Source: Fishnick

Gas Vs. Induction Cooking

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Vs.

Gas

- 50% Efficient (2.0 KW – 1.0 KBTU) *at best
- 38.6# of food per hour
- Needs time and elbow grease to clean
- Can cause burns and fires

Induction

- 90%+ Efficient (1.1KW – 1.0 KBTU)
- 70.9# of food per hour
- Easy to Clean
- Safe to use

Source: Fishnick

Quick Comparison

Range:

30kBtu/h burner at 35% = 10kBtu

5kW at 85% = 14kBtu/h

Wok:

100kBtu/h at 20% = 20kBtu

3.5kw at 91% = 11kBtu/h

5kW at 91% = 15kBtu/h

12kw at 87% = 35kBtu/h

Source: Fishnick

Induction Comparison: Annual Energy Cost

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Assumptions: 360 days/yr.
15 hrs/day
$1/therm
$.17/kwh

$1,123 per year

6 burner range
25,000 BTU burner

$1,114 per year

represents 6 hob unit

Source: Fishnick

Thermal Comfort in Commercial Kitchens

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Thermal Comfort in Typical Kitchens

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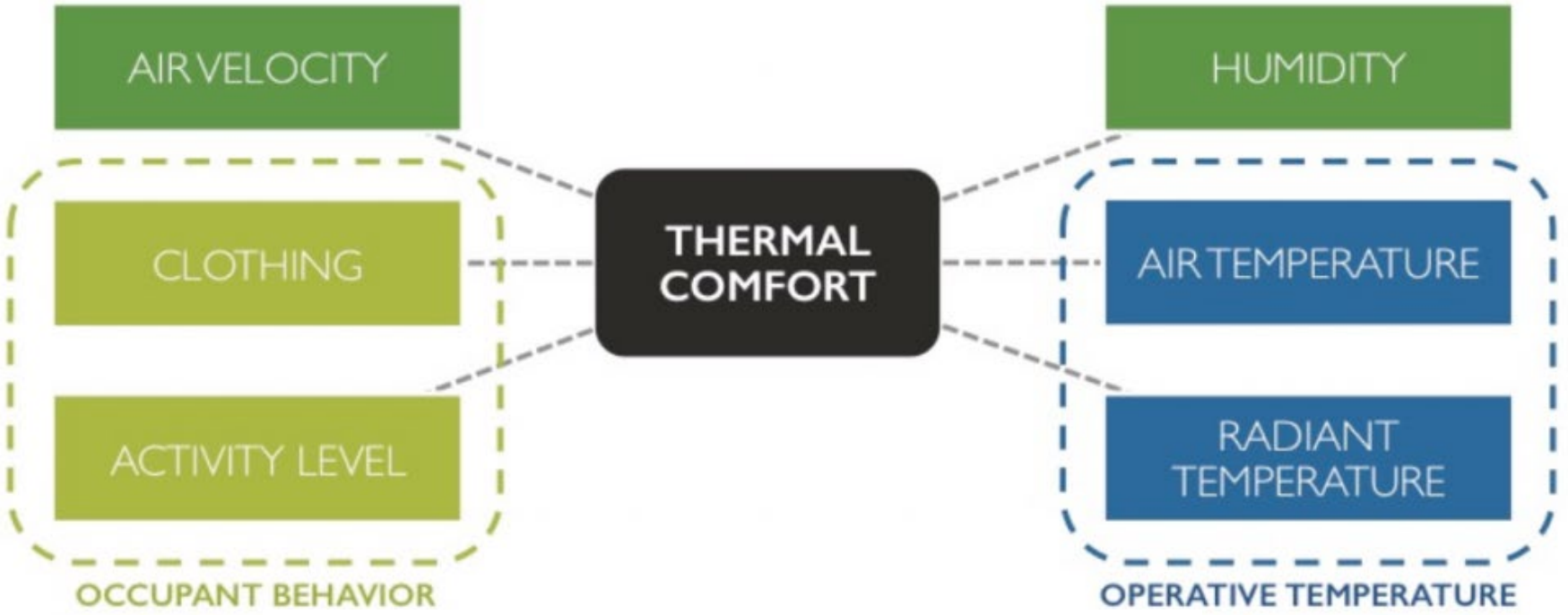

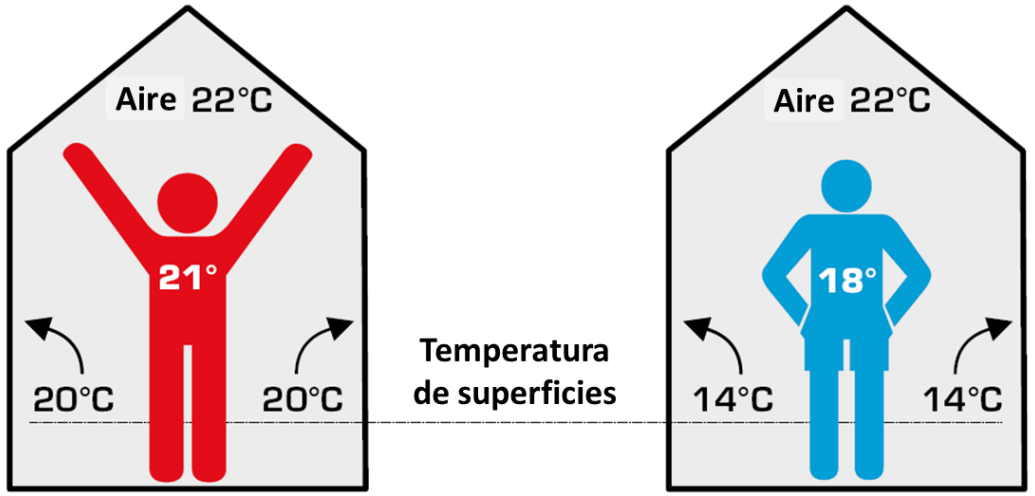

Source: ASHRAE

Thermal Comfort in Typical Kitchens

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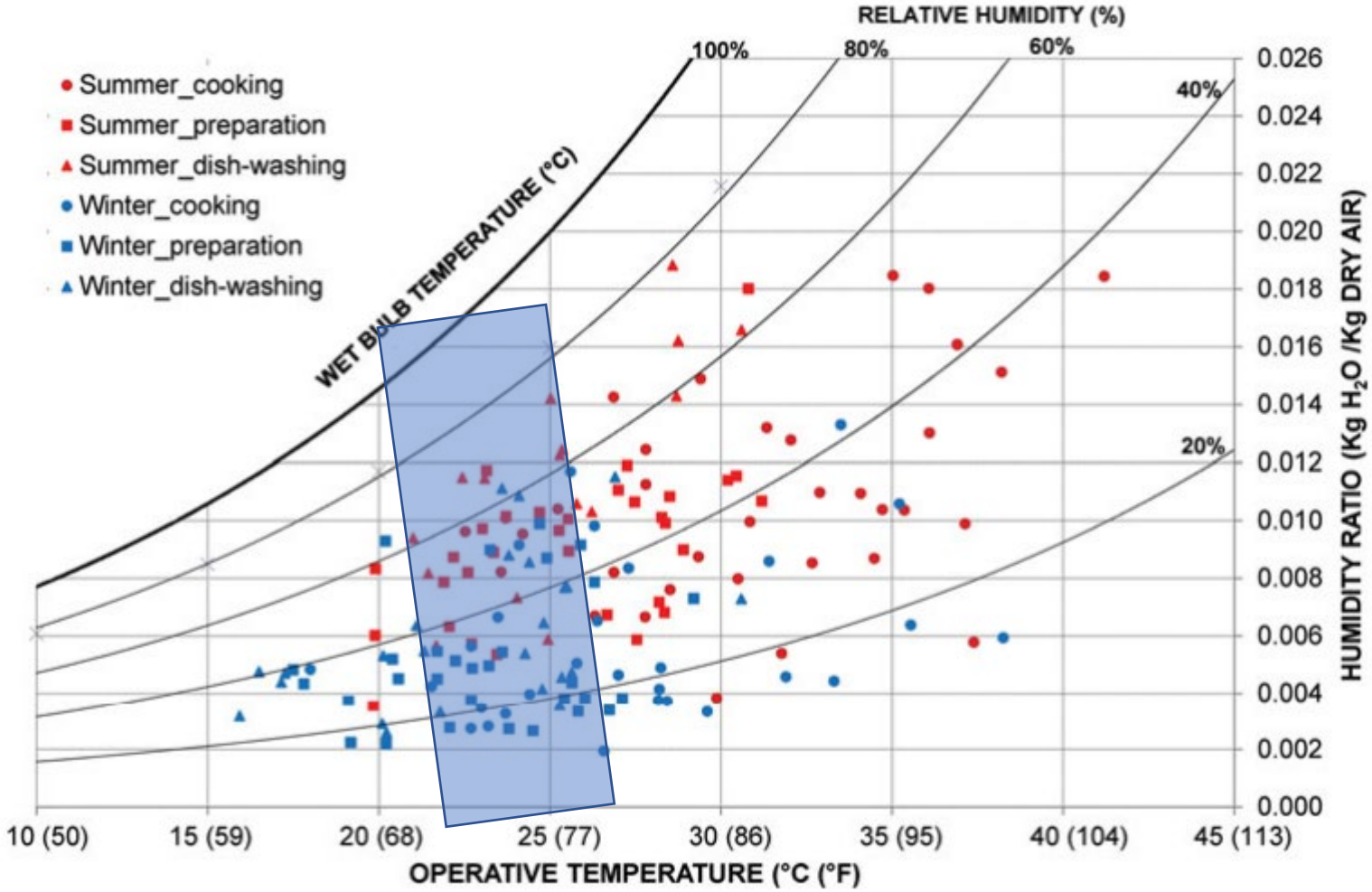
ASHRAE RP-1469 Thermal Comfort in Commercial Kitchens

- >100 Kitchens in U.S., one week test
- All climate zones represented
- Comparison of Summer and Winter



Source: ASHRAE

Quality of Life Differences

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Source: EcoCanopy

Source: WRNS

THERMAL COMFORT IN TYPICAL KITCHENS

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NEWS »

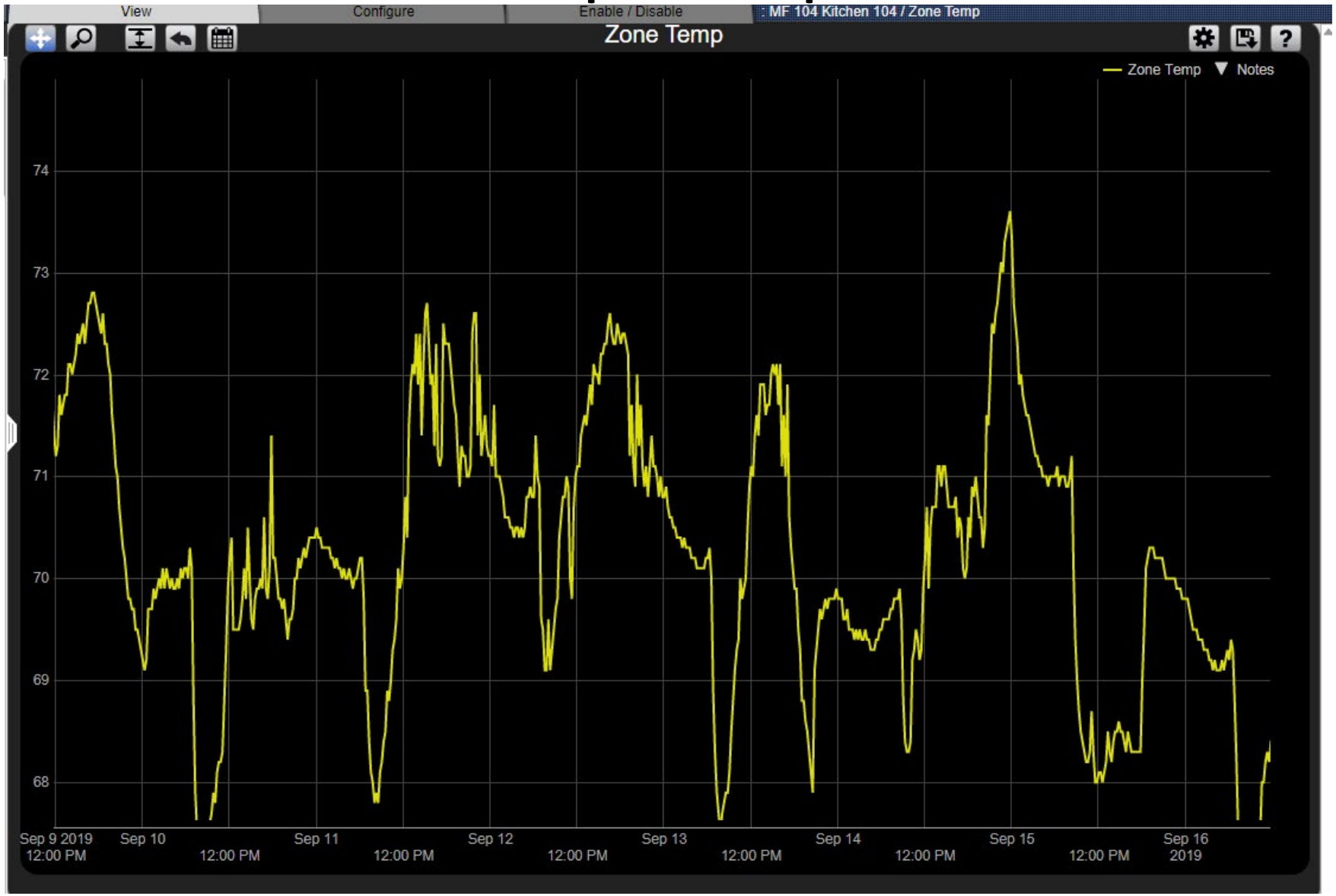
Can't stand the heat: Kitchen workers suffer when temperatures soar

130 Degrees and Rising: How Kitchen Workers Are Dealing With Record Heat

With punishing temperatures across many states, restaurants are adapting to a new climate reality.

Source: New York Times/The Georgia Straight

Kitchen Temp in September



Source: Interface Engineering

Health Considerations

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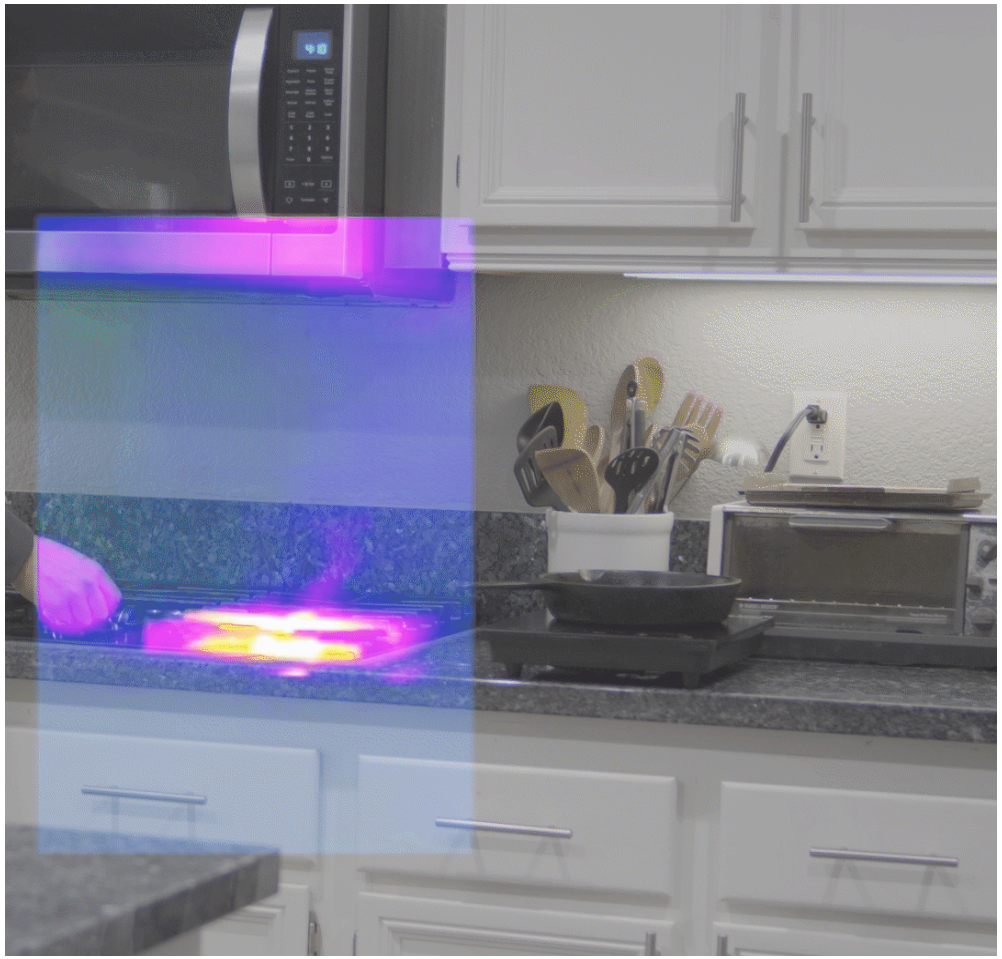
"Natural Gas" Byproducts

- Carbon Dioxide CO_2
- Nitrous Oxide NO
- Sulphur Dioxide SO_2
- Particulates (Soot/Smoke)
- Carbon Monoxide CO



Source: Sierra Club

Carbon Monoxide

- Odorless & Colorless Toxin
- Typical outdoor concentration is 0.03-2.5 ppm
- Federal Standard is 9 ppm maximum
- Indoor concentrations can exceed 200 ppm

Symptoms

- Nausea, Vomiting, Headache, Light-headedness

Complications

- Permanent Brain Damage
- Cardiac Damage
- Death

Benefits of Electrifying:

- No more idling equipment
- Reduced building emissions = reduced environmental impact
- Greater efficiency = energy & utility costs savings
- Precision cooking controls
- Dramatic improvement to thermal comfort
- Extended life of pots & pans
- Easier to clean = saving on chemical costs
- Faster throughput = increased productivity
    - Dollar per labor hour improved
- Improved indoor air quality

Source: Interface Engineering

Myth Busting!

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YOU CAN'T PRODUCE QUALITY FOOD ON INDUCTION

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The Fat Duck
heston blumenthal

Bocuse d'Or

IKA
CULINARY
OLYMPICS

Induction Myth Busting

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- "Induction Cooking Speed is Exaggerated"
- “Sautéing isn’t possible on Induction“
- “Chefs or home cooks can’t preheat their pans therefore can’t sauté properly”
- “Cooking with gas gives you more control”
- “Induction cooking technology does not accommodate wok cooking”
- “Glass surface of the induction equipment will crack/warp because it’s not able to withstand a professional kitchen setting.”

Induction Myth Busting

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"Glass Surfaces Will Shatter and Warp"

Tempered Ceramic Glass

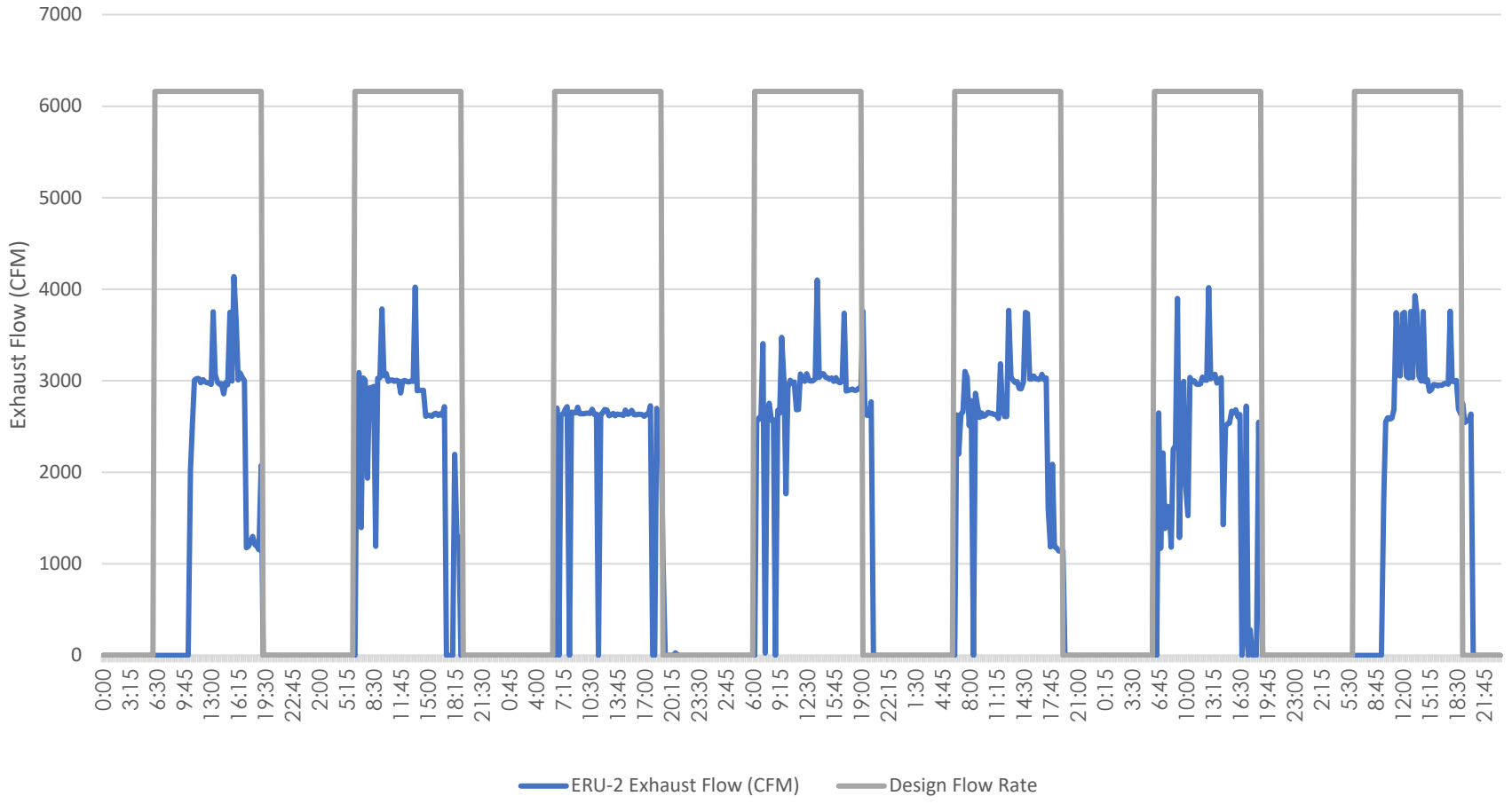
Very Strong/Will not warp

Tempered Glass - 600F

Tempered Ceramic – 1470F

Picture is of 5-year-old surface

Variable vs Constant Volume Exhaust



Source: Interface Engineering

Process Overview

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Design phase

- Identify needs & objectives
- Plan layout & functionality
- Consider space constraints, safety regulations, & energy efficiency

Equipment Selection

- Research equipment options
- Determine capacity, features, & compatibility
- Evaluate energy consumption & cost-effectiveness

Working with an electrician

- Collaborate with a licensed electrician
- Determine electrical requirements (kw/amps)
- Calculate additional load & potential upgrades

Purchase equipment

- Source equipment from reputable suppliers
- Consider warranties, maintenance, & customer support
- Compare prices & negotiate if possible

Installation phase

- Prepare the workspace
- Assemble & install equipment
- Test functionality & safety measures

Design Phase

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Identify Needs & Objectives

- Define menu & cooking requirements
- Determine equipment needs (e.g., ranges, ovens, griddles)

Plan Layout & Functionality

- Create a kitchen layout
- Allocate space for each equipment.
- Ensure efficient workflow

Considerations

- Space Constraints
- Safety regulations (e.g., ventilation, fire suppression)
- Energy-efficient design.

Equipment Selection

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Research Equipment Options

- Identify Suitable Equipment Brands
- Read reviews & gather recommendations

Determine Capacity & Features

- Choose equipment that meets cooking demands.
- Consider special features (e.g., induction technology, control options)

Evaluate Energy Consumption

- Compare energy ratings
- Calculate operational costs.

Working with an Electrician

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Collaborate with a Licensed Electrician

- Consult a professional for electrical expertise
- Share kitchen layout & equipment details.

Determine Electrical Requirements

- Calculate power needs for each equipment
- Consider voltage & amp requirements

Calculate Additional Load & Upgrades

- Assess existing electrical capacity
- Estimate potential upgrades if required

Purchasing Equipment

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Source Equipment from Reputable Suppliers

- Choose suppliers with good reputation
- Inquire about warranty & support

Consider Warranties & Maintenance

- Review warranty terms
- Plan for regular maintenance

Compare Prices & Negotiate

- Obtain quotes from multiple suppliers
- Negotiate prices if possible

Installation Phase

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Prepare the Workplace

- Clear the area for installation
- Ensure proper ventilation & safety measures

Assemble & Install Equipment

- Follow manufacturer's instructions
- Connect electrical & gas lines securely

Test Functionality & Safety Measures

- Verify equipment operation
- Ensure safety features are functioning

Cost Saving Example

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Mount Fabrication for Small Businesses

- Cost Effective Approach
  - Purchase a 2-hob modular (drop-in) piece
  - Fabricate a custom mount to save on costs

- Benefits for Small Businesses
  - Affordable Solution
  - Tailored to specific needs
  - Supports efficient cooking operations

- Cooktek 2-hob induction (pictured right)
  - Costs about $4,000
- Garland 4-hob range
  - Costs about $25,000

Sample Project Timeline

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Installing a Modular 2-Hob Induction Burner

- **Design Phase** • 1-2 Weeks
- **Equipment Selection** • 1-2 Weeks
- **Working with Electrician** • 2-3 Weeks
- **Purchasing Equipment** • 2-4 Weeks
- **Installation Phase** • 1-2 Weeks

Equipment Selection Assistance

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Benefits of working with a representative

- Personalized Guidance
- Access to industry insights
- Make informed equipment choices

Rep Spotlight

- Chef Norbert Zastavny of BSE Reps
  - Experienced Culinary Professional
  - Expertise in kitchen equipment
  - Able to assess your needs and menu requirements
  - Able to recommend suitable equipment solutions
  - Can ensure optimal functionality & efficiency

BSE MARKETING
KEYSTONE
NORTH
MID-ATLANTIC

Contact Info:
nzastavny@bsereps.com
www.BSEReps.com

Energy Efficiency In Commercial Kitchens

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Typical Food Service Stats

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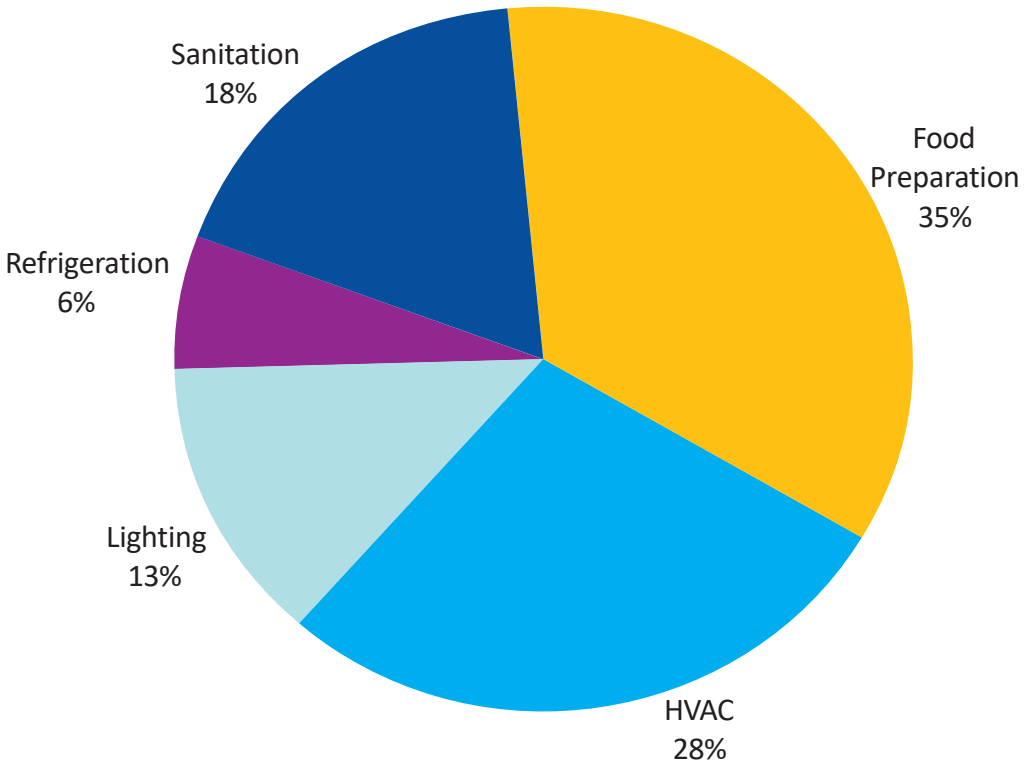
- Incredibly energy intensive, about **5 to 7 times** than other commercial buildings
- High-volume kitchens can use up to **10 times** more energy
- As energy costs increase, investing in energy efficiency is a great way to protect your business against these rising prices
- Buying and installing efficient equipment that could trim thousands of dollars from your annual utility bills

Example of the Average Energy Consumption in a Full-Service Restaurant
(British Thermal Units [Btu])



Source: EPA

Cost Effective Strategies: Refrigeration

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ENERGY STAR CERTIFIED REFRIGERATORS, FREEZERS & ICE MAKERS

Refrigerators and Freezers

ENERGY STAR certified commercial refrigerators and freezers offer average **energy savings of 40 percent compared to standard models**.

Cost-Saving Tips

- Look for the ENERGY STAR
- Turn off door heaters when possible
- Inspect and clean the coils
- Set defrost timers
- Replace worn gaskets
- Ensure adequate airflow around the unit

Energy Star certified commercial refrigerators and freezers can save:

- $90 for electricity annually (per solid door refrigerator) or $100 annually (per transparent door refrigerator)
- $200 for electricity annually (per solid door freezer) or $430 annually (per transparent door freezer)
- $900-$1,000 over the product lifetime (refrigerators)
- $2,000-$4,300 over the product lifetime (freezers)

Chef Tips

- Research and chose the right refrigerant

ENERGY STAR

Source: EPA

Cost Effective Strategies: Steamers

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ENERGY STAR CERTIFIED COOKING & KITCHEN APPLIANCES

Steam Cookers

ENERGY STAR certified steamers have a sealed cooking cavity that consumes **60 percent less energy** than a standard steamers.

ENERGY STAR connectionless models can also **save 90 percent or more water** when compared with standard steamers.

Cost-Saving Tips

- ▶ Look for the ENERGY STAR
- ▶ Use the timer instead of "manual" mode
- ▶ Reduce idle time
- ▶ Perform regular steam generator maintenance
- ▶ Maintain door gaskets

ENERGY STAR certified steamers can save:

- $1,200 in gas or electricity annually
- An additional $1,100 for water and sewer costs annually— totaling more than $2,300 total savings annually
- $12,000 over the product lifetime (electric and as models, respectively)

Good practices can save:
$400 in annual energy costs for a traditional, electric, open- system steamer by eliminating an hour of on time per day.

ENERGY STAR

Source: EPA

Cost Effective Strategies: Fryers

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Fryers

ENERGY STAR certified fryers can be up to **35 percent more energy efficient** than standard models.

Cost-Saving Tips

- Look for the ENERGY STAR
- Reduce idle time & turn off back-up fryers when possible
- Calibrate the fryer controls to operate at the correct temperature
- Perform regular maintenance
- Use a frypot cover during idle periods.
- Engage low power mode idle setting during long periods of fryer downtime, if available.

ENERGY STAR certified fryers can save:

- $120 (electric) or $460 (gas) annually for standard sized fryers
- $185 (electric) or $520 (gas) annually for large vat fryers
- $1,200 (electric) or $4,800 (gas) over the product lifetime for standard fryers
- $1,800 (electric) or $5,400 (gas) over the product lifetime for large vat fryers

Good practices can save:
$200 annually for a gas fryer by cutting four hours of idle time per day.

Chef Tips

- Strain and clean your oil regularly for increased life and performance

ENERGY STAR

Source: EPA

Cost Effective Strategies: Ovens

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Combination Ovens

ENERGY STAR models are on average **30 percent more energy efficient** than standard models.

Cost-Saving Tips

- Look for the ENERGY STAR
- Reduce idle time & turn off back-up ovens when possible
- Fully load the oven when cooking
- Inspect and replace gaskets & tighten hinges when needed
- Maintain the steam generators in combination ovens

ENERGY STAR certified combination ovens can save:

- $250 (gas) or $740 (electric) annually
- $2,500 (gas) or $7,300 (electric) over the product lifetime

Good practices can save:
up to $800 annually by reducing an electric combination oven's idle time by two hours daily.

ENERGY STAR

Source: EPA

Cost Effective Strategies: Ovens & Griddles

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Convection Ovens

ENERGY STAR certified convection ovens are approximately **15 percent more energy efficient** than standard models

ENERGY STAR certified convection ovens can save:

- $70 (electric) or $165 (gas) annually
- $660 (electric) or $1,700 (gas) over the product lifetime

Griddles

ENERGY STAR griddles are approximately **10 percent more energy efficient** than standard models.

Cost-Saving Tips

- Look for the ENERGY STAR
- Reduce idle time by turning the griddle down or off during periods of slow production
- Calibrate the griddle controls to operate at the correct temperature
- Replace missing control knobs

ENERGY STAR certified griddles can save:

- $100 (gas) or $130 (electric) annually
- $1,100 (gas) or $1,300 (electric) over the product lifetime

Good practices can save:
$250 annually from a gas griddle by cutting three hours of idle time per day.

ENERGY STAR

Source: EPA

Cost Effective Strategies

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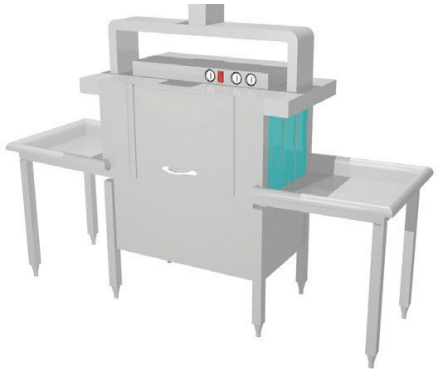
Dishwashers

ENERGY STAR rated dishwashers are on average **40 percent more energy efficient and saves about 40 percent more water** than standard models.

Cost-Saving Tips

- Run fully loaded dish racks through the dish machine could save you hundreds of dollars annually in energy, water, and chemical charges.
- Pay attention to your dishwasher's pressure gauge—if it's showing pressure above 25 psi, there is a good chance you are using much more water than is necessary. Most dishwashers require only around 20 psi.
- If you have a conveyor-style dishwasher, make sure you are using it in auto mode, which saves electricity by running the conveyor motor only when needed.



- Look for the ENERGY STAR
- Turn off at night
- Replace torn wash curtains
- Repair leaks and perform regular maintenance
- Replace worn spray nozzles
- Engage low power mode during long periods of downtime, if available, or between mealtimes.

ENERGY STAR certified commercial dishwashers can save:

- $5,500 annually and $68,000 over the product lifetime of flight type machines
- $1,300 annually and $16,000 over the product lifetime for other eligible dishmachines
- Additionally, ENERGY STAR certified flight type machines can save over 150,000 gallons of water annually.

ENERGY STAR

Source: EPA

Cost Effective Strategies

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Walk-In Refrigerators and Freezers

Walk-in refrigerators and freezers are important to any successful restaurant. Improve this equipment's energy performance with a few inexpensive upgrades and good practices, such as:

- Adding strip curtains or plastic swing doors and automatic door closers to are *inexpensive and easy-to-install solutions.* Strip curtains can cut outside air infiltration by about 75 percent!
- Swapping out incandescent light bulbs for ENERGY STAR certified LED light bulbs, which not only use less energy but also emit less heat into the walk-in.
- Installing electronically commutated motors (ECM) on the evaporator and condenser fans can reduce fan energy consumption by **approximately two-thirds.**
- Performing walk-in maintenance: check and replace door gaskets; and the door sweep; adjust door hinges; clean evaporator and condenser coils; insulate refrigerant suction lines; check refrigerant charge.

ENERGY STAR

Source: EPA

Cost Effective Strategies

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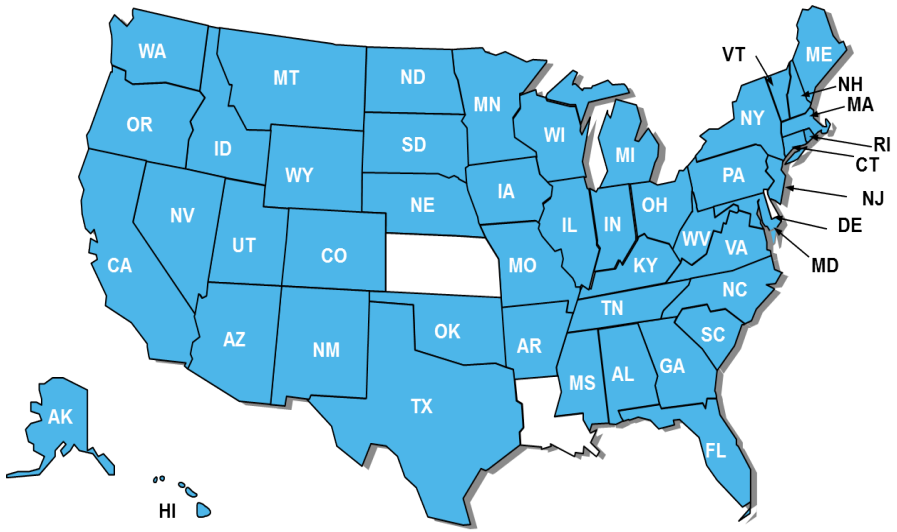
Map of Available Commercial Food Service Utility Incentives



States in blue have utilities that offer rebates for energy-efficient kitchen equipment

PRODUCT	INCENTIVE RANGE
Dishwashers	$25-$2,700
Fryers	$20-$1,900
Griddles	$20-$1,500
Hot food holding cabinets	$75-$800
Ice machines	$20-$2,400
Ovens	$20-$5,000
Refrigerators and freezers	$25-$1,000
Steam cookers	$20-$3,200

Even if your utility does not offer a rebate on efficient kitchen equipment, if you are doing a major renovation or retrofit, you should still contact your utility. They may have custom incentives that could apply to your project.

Incentive ranges for CFS equipment currently supported under ENERGY STAR are as follows:

Find Monetary Incentives
Access the ENERGY STAR CFS Incentive Finder and CFS Incentive Guide at
www.energystar.gov/cfs/incentives.

ENERGY STAR

Source: EPA

RE Farm Café – State College, PA

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Re Farm Café at Windswept Farm

State College, PA

Re Farm Café Vision

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Respecting, **Re**sources, **Re**cycling, **Re**generating, **Re**ducing, **Re**purposing…..

Remembering and **Re**defining your thinking.

Connecting people…

- To land
- To food
- To culture
- To each other.
- To create an intimate, delicious, transparent experience of place…in a way that illuminates our connections and how we can strengthen them…so that our daily lives serve as engines for regenerating our communities.

Re Farm Cafe

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Respecting, **Re**sources, **Re**cycling, **Re**generating, **Re**ducing, **Re**purposing…..

Remembering and **Re**defining your thinking.

- How do they accomplish this?
  - Regenerative Farming (Respecting the land)
  - Farm to Fork (Respecting the ingredients)
  - Reducing their impact on the environment

- Poised to be the first Living Building Challenge (LBC) Restaurant in the world.

- Kitchen utilizes
  - Induction Wok's
  - Induction Griddles,
  - Induction Ranges
  - As well as Demand Control Ventilation

Living Building Challenge: Certification Tiers

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CERTIFICATIONS

Stepping up to a Living Future

ZERO CARBON CERTIFICATION

Carbon neutral with top tier efficiency.

- 100% building energy load offset with on- or off-site renewables
- For existing buildings, combustion allowed
- Embodied carbon reduction and offset

ZERO ENERGY CERTIFICATION

World class efficiency and characteristics, reinforcing a fossil fuel free future.

- 100% building energy load offset with on-site renewables, driving efficiency
- Pathway for premium off-site renewables for high energy building types

CORE GREEN BUILDING CERTIFICATION

Responding to climate change with holistic high performance.

Required Imperatives:

1	Ecology Of Place
4	Human Scaled Living
5	Responsible Water Use
7	Energy + Carbon Reduction
9	Healthy Interior Environment
12	Responsible Materials
17	Universal Access
18	Inclusion
19	Beauty + Biophilia
20	Education + Inspiration

LIVING BUILDING CHALLENGE™ PETAL CERTIFICATION

One pillar of deep regenerative design built on a holistic high-performance foundation.

All Core Imperatives required as well as any additional Imperatives in the area of Petal Certification: Water, Energy or Materials.

ALL CORE IMPERATIVES

Water

6	Net Positive Water

Energy

8	Net Positive Energy

Materials

13	Red List 90%
14	Responsible Sourcing
15	Living Economy Sourcing
16	Net Positive Waste

Typical Food Service Stats

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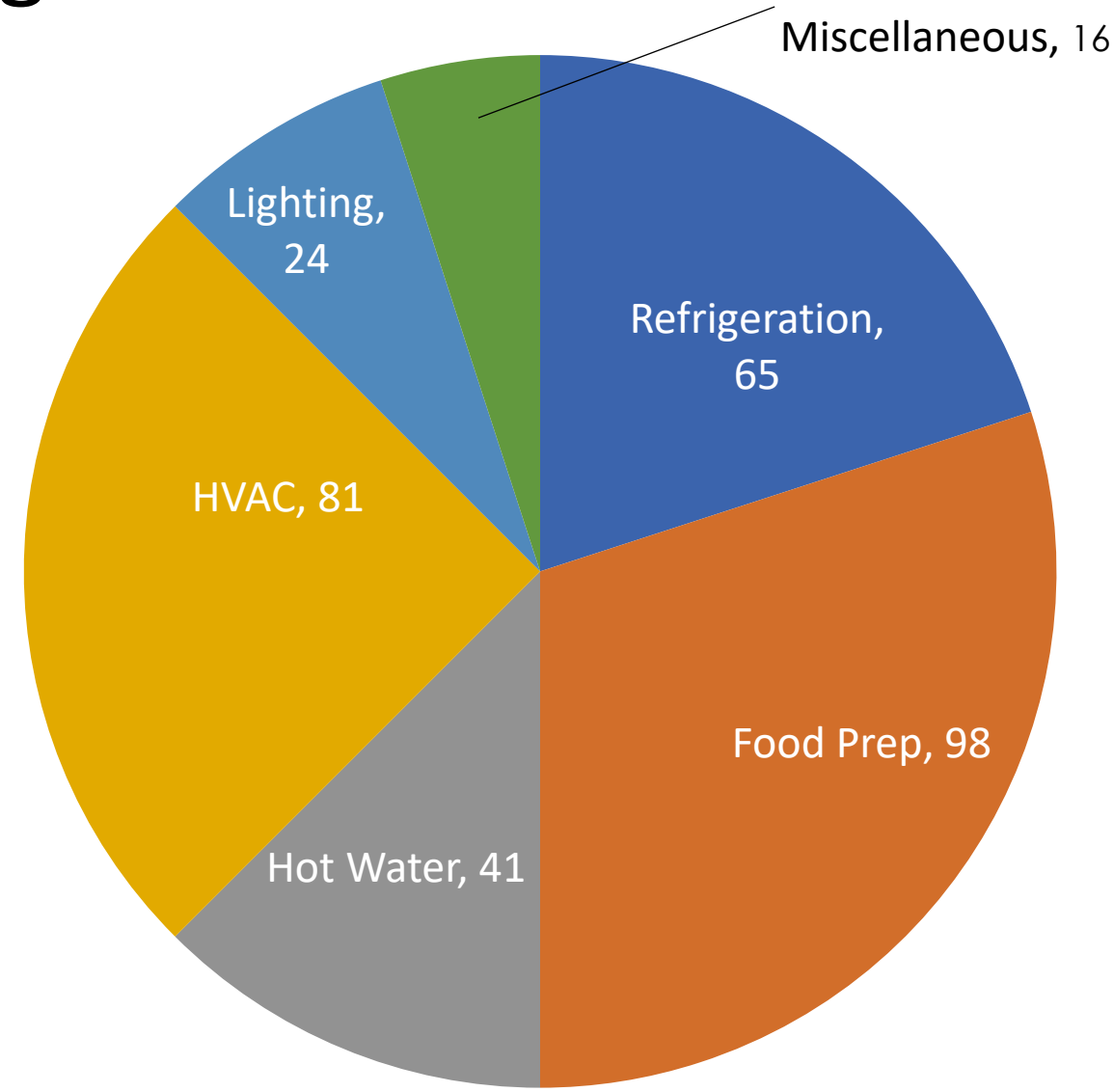
Average EUI of 325

- Typical Cafeteria EUI Range: 250-400 kBTU/sf-yr
- No Ventilation Heat Recovery
- No VAV hoods
- Fossil Fuel Heating.
- Re Farm EUI – Zero!!!



RESOURCES

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Commercial Kitchens Wanted!

PSE scientists want to measure air quality in commercial kitchen settings.
We are interested in measuring both gas-fired and electric appliances.

Sampling can be performed during on or off hours with very minimal equipment. We provide compensation and an air quality report to participants.

PSE Bringing science to energy policy

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www.psehealthyenergy.org

Sign up: NaturalGasStudy@psehealthyenergy.org


Questions?

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Thank You.

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Founder/Culinary Sustainability Consultant– Forward Dining Solutions LLC.