



*Sources: US EPA ENERGY STAR website, ENERGY STAR Guide for Restaurants*

**DOE Better Buildings Alliance (BBA)  
Food Service Project Team**

**WEBINAR: Demand Control  
Ventilation (DCV) for  
Commercial Kitchens**

**January 16, 2013**

- **Welcome and introductions**
- **Overview of Commercial Kitchen Ventilation Demand Control Ventilation (CKV DCV)**
- **Overview of utility Energy Efficiency Program Administrator & industry efforts to improve CKV DCV efficiency**
- **Discussion**
- **Next steps**

## Better Buildings Alliance

Better Buildings

SEARCH

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Patrick Corkery, NREL/18596

### Installation of night curtains

Whole Foods Market, a BBA member, installed night curtains to cover the refrigerated produce cases when stores are closed. This strategy lowers the cooling load on the refrigeration case by about 40% during unoccupied periods.

## BETTER BUILDINGS ALLIANCE SIGN-UP FORM

Building owners and operators can join the Better Buildings Alliance (BBA) by completing the sign-up form.

[SIGN-UP FORM](#)

## Join the Better Buildings Alliance

Commercial buildings—our offices, schools, hospitals, restaurants, hotels and stores—consume nearly 20 percent of all energy used in the United States. We spend more than \$200 billion each year to power our country's commercial buildings. Unfortunately, much of this energy and money is wasted: a typical commercial building could save 20 percent on its energy bills simply by commissioning existing systems so they operate as intended. Energy efficiency is a cost effective way to save money, support job growth, reduce pollution, and improve competitiveness.

Through the Better Buildings Alliance, members in different market sectors identify specific barriers and work with the U.S. Department of Energy's (DOE) exceptional network of research and technical experts to develop and deploy innovative, cost-effective, energy-saving solutions that lead to better technologies, more profitable businesses, and better buildings in which we work, shop, eat, stay, and learn.



# ***Demand Control Ventilation (DCV)***

## ***A Technical Overview***

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***Pacific Gas and  
Electric Company®***

***More than 3 Billion CFM...***

**...exhausted from  
Commercial Kitchens in the U.S.**





...dominated by single-speed systems!

# Hotel Kitchen 3:00 PM

No appliance use...but exhaust at 100%

Front Line



Back Line

# The Potential...

Estimated installed base of 10,000 DCV systems (based on author's intel) as this technology has slowly emerged over the last 25 years.

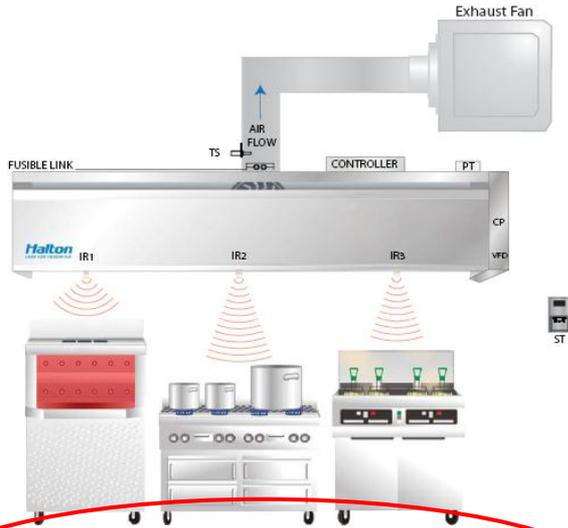
There are approximately 1,000,000 Commercial Foodservice Establishments in the U.S. and Canada.

Assuming just two exhaust hood systems per facility, there are probably 2,000,000 exhaust hoods in operation.

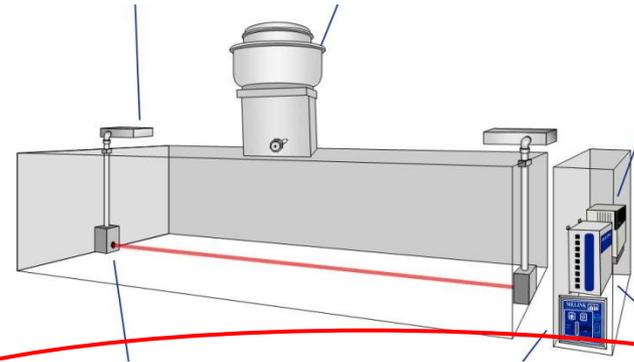
This represents a market penetration of only 0.5%.

The potential for DCV is huge!

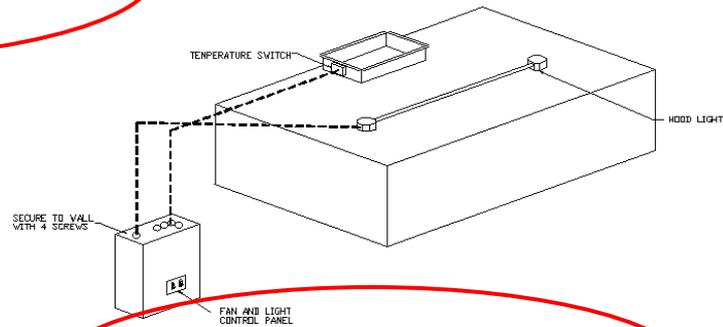
# Demand Ventilation Control Technologies



Duct Temperature Sensor & Infrared Sensors



Duct Temperature Sensor & Smoke Detection



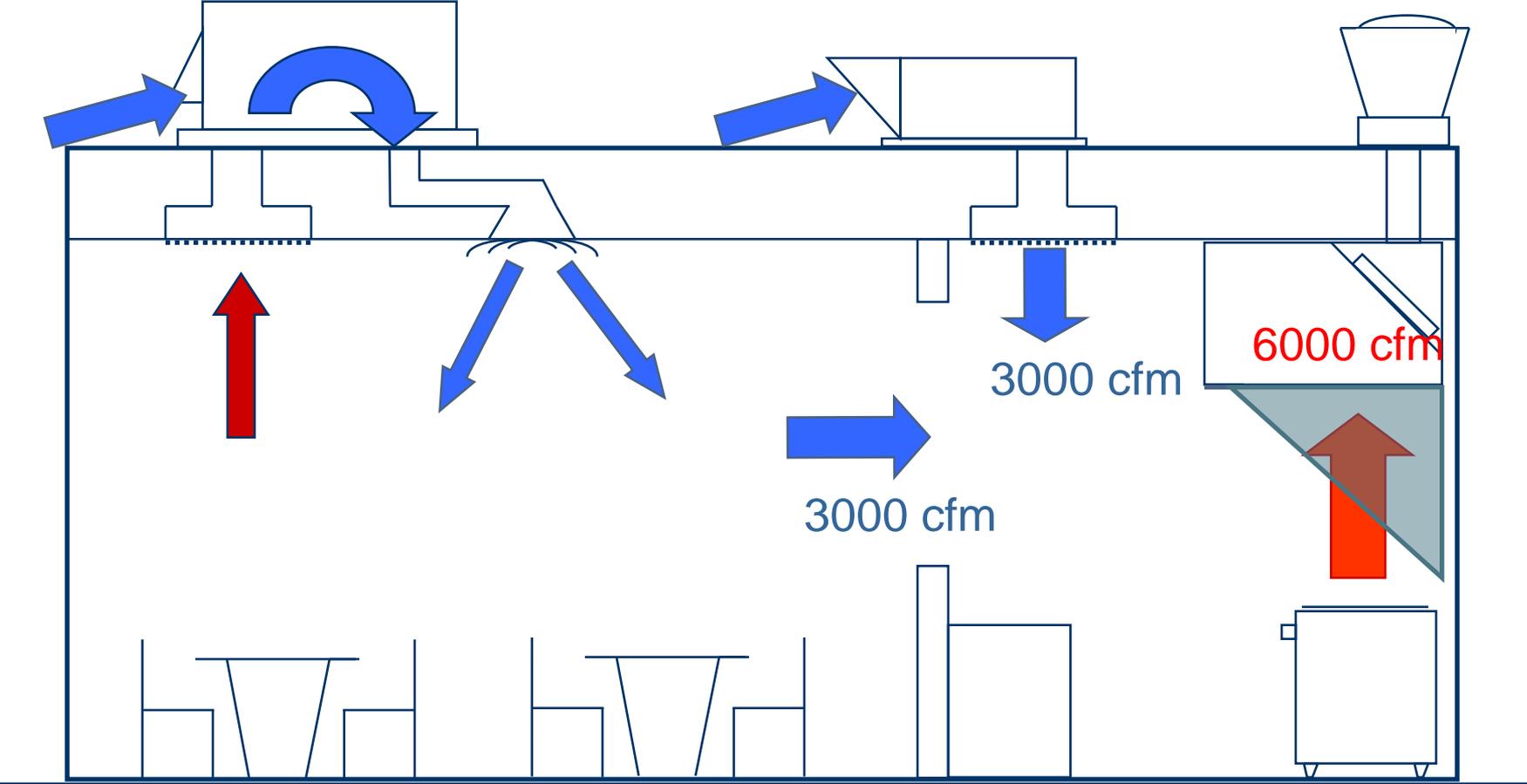
Duct Temperature Sensor

# Variable Frequency Drives (VFD)

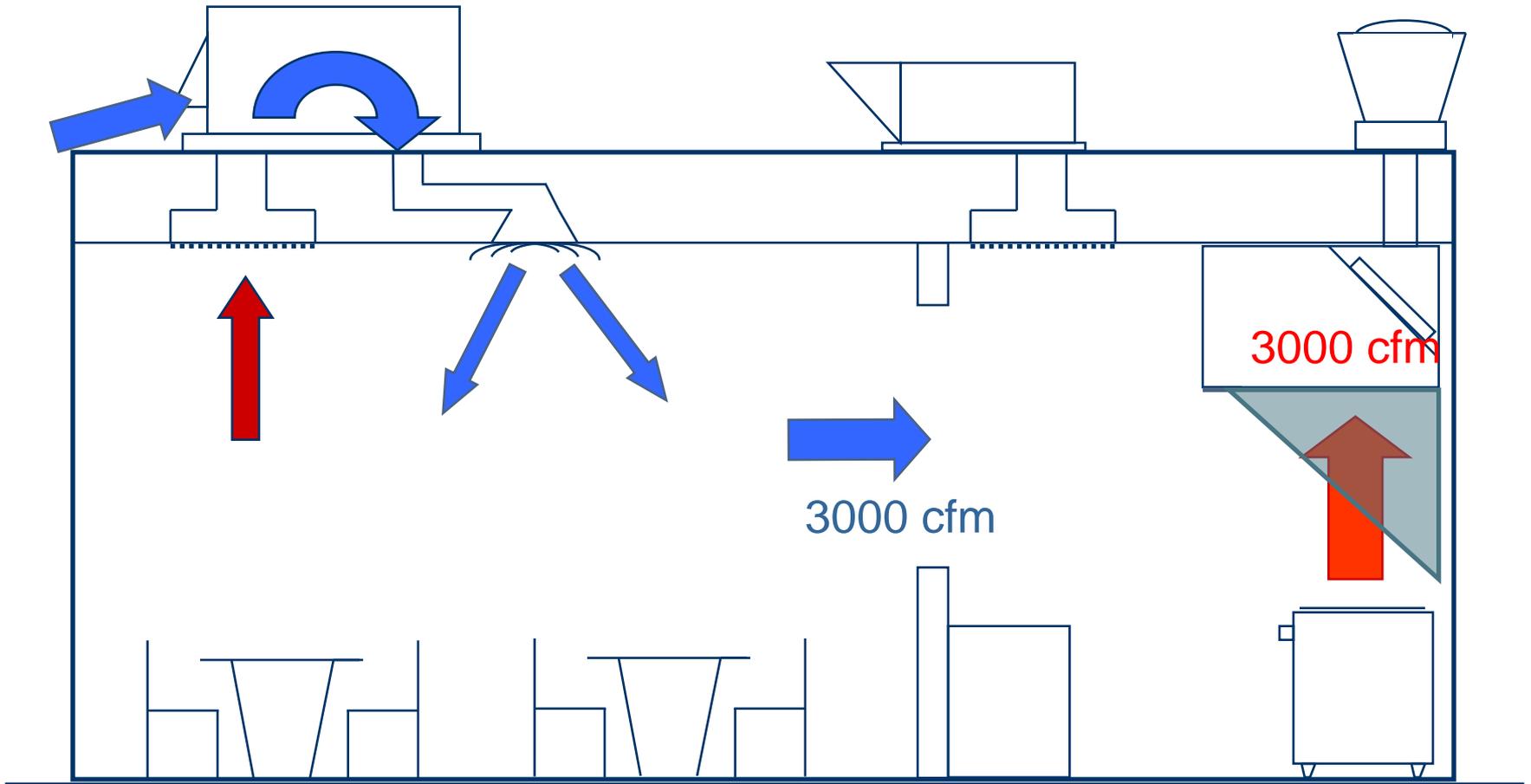


- Essentially electronic motor starters that replace magnetic starters
- Add flexibility to direct drive fans
- Cornerstone of a DVC system
- May be considered a separate value proposition from DVC

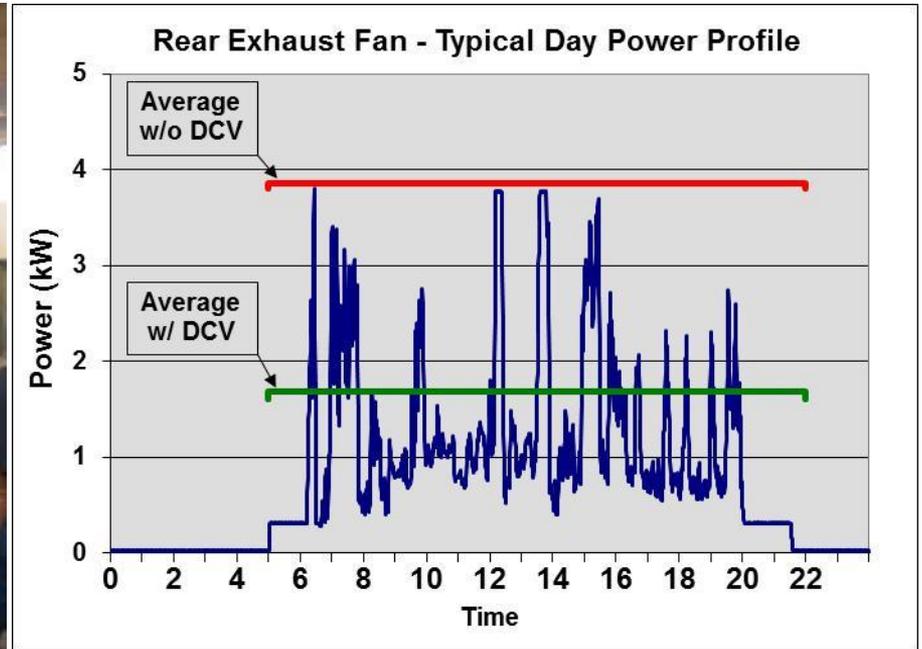
# Full Speed!



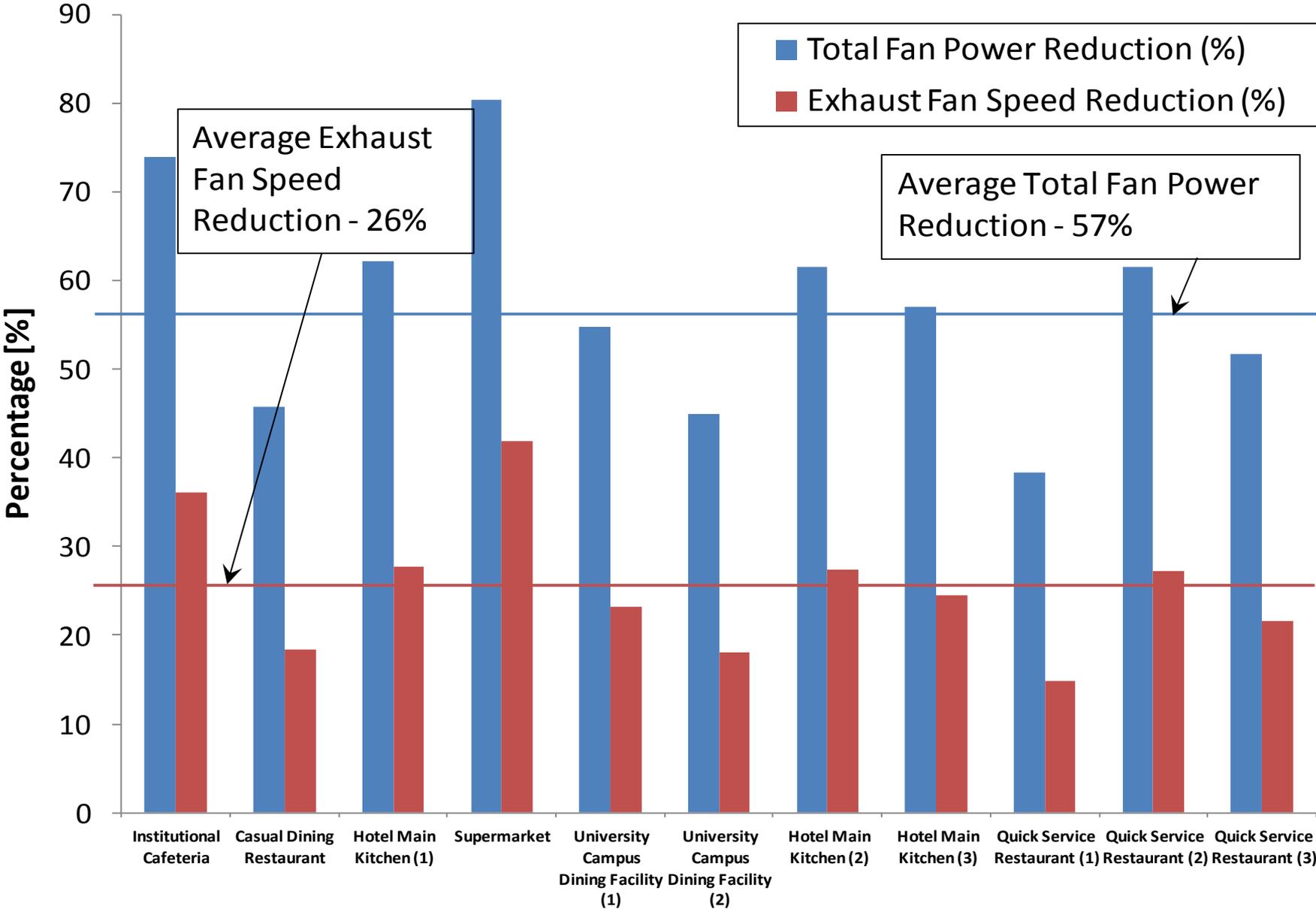
# Half Speed!



# Wall-Mounted Canopy Hood and Typical Fan Power Profile for a Campus Dining Facility



# California DCV Case Studies



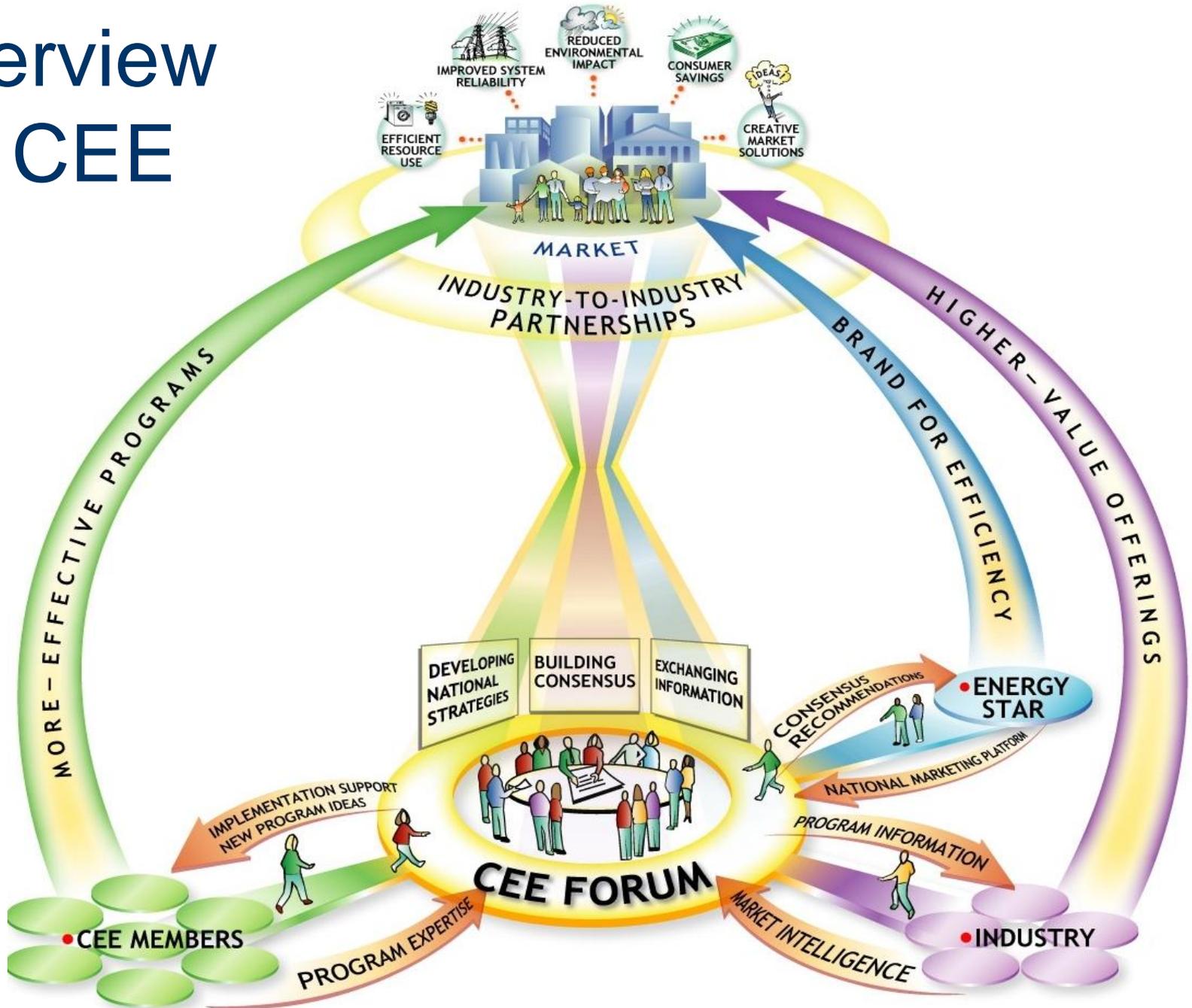
# Recap...

- With the specification of a DCV system, there is no need to take chances with a design exhaust ventilation rate that is too low.
- Effective commissioning of a DVC system can maximize its performance.
- The CKV system must work effectively as single-speed system before DCV is applied.
- Until appliances communicate directly with the DCV system, the DCV technology application will not realize its full “return on investment” potential.

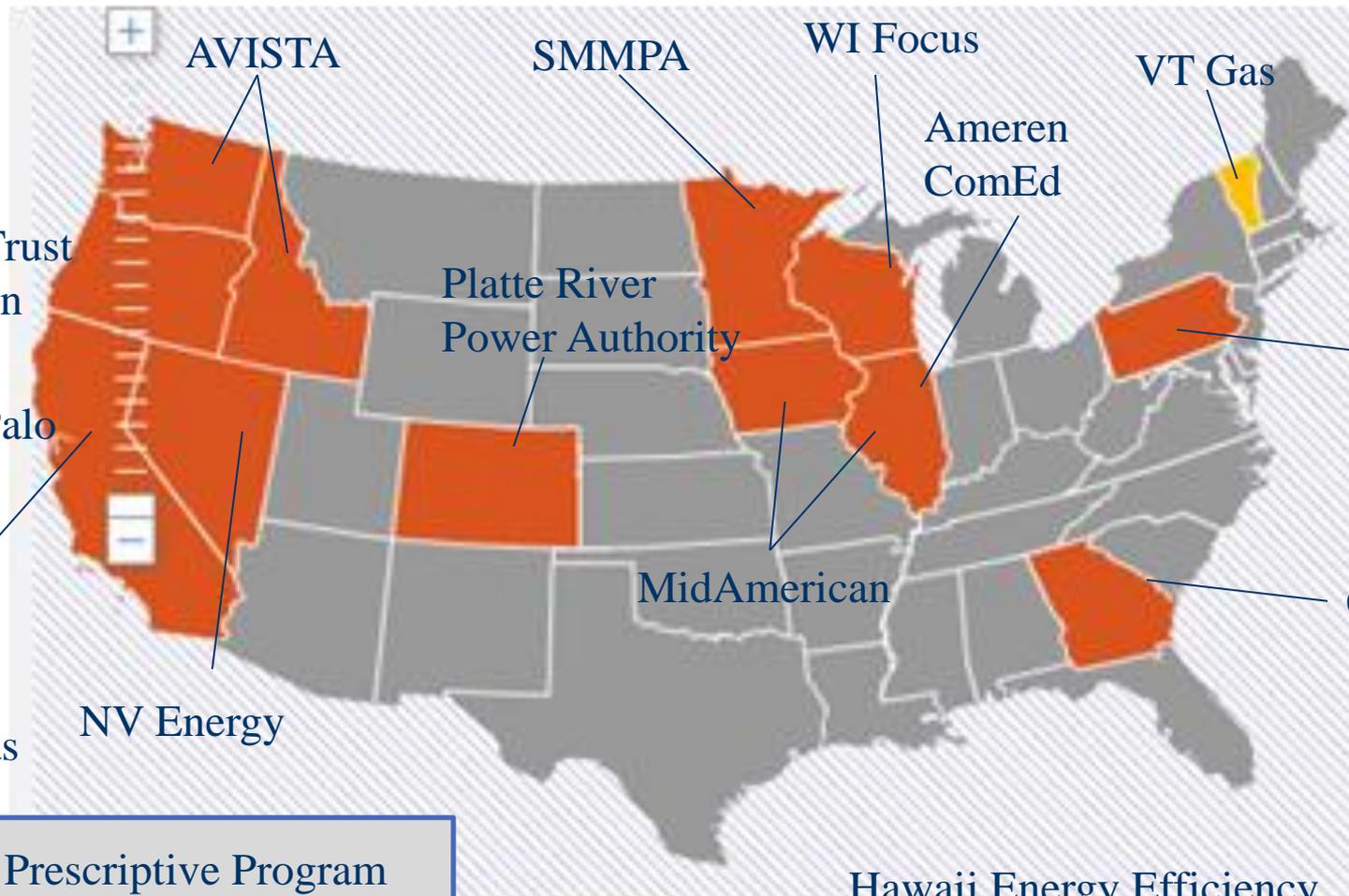
# **CEE Commercial Kitchens**

**Joint BBA-CEE Webinar on Commercial Kitchen  
Ventilation (CKV) Demand Control Ventilation (DCV)**

# Overview of CEE



# CEE CKV DCV Member Programs (2012, US Only)



	Prescriptive Program
	Custom Program
	No Program



# Discussion

- ▼ What is driving your program to consider and provide incentives for CKV DCV?



Ray Keller, VT  
Gas



Andre Saldivar,  
SoCal Edison



Matt Matenaer, WI  
Focus on Energy

- Where have you had success working with chains on CKV DCV and where have you been challenged?

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