



The Consortium for Energy Efficiency

Water Heater Efficiency Program Dynamics in the United States and Canada

ENERGY STAR® 2012 Partners Meeting
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Agenda

- ▶ Overview of CEE; CEE *Water Heating Initiative*
- ▶ Key dynamics for residential water heating programs
- ▶ Other CEE-led efforts in support of high efficiency water heater programs

Background



The Consortium for Energy Efficiency: Working Together to Advance Efficiency



- ▶ > 130 members serve all or part of 45 states and 8 provinces
- ▶ 86% of \$9.1B* total efficiency budgets are managed by members
- ▶ 2009 EPA Climate Protection Award recognized CEE members approach 
- ▶ CEE is a member-driven nonprofit, governed by a Board of Directors from member organizations

CEE Initiatives and the CEE High Efficiency Residential Gas Water Heating Initiative

CEE Initiatives are a means to **advance efficiency through collaboration and alignment of efficiency programs**

- ▶ Approved by CEE's Board after an **open and objective process**
- ▶ Typically take the form of a **program template**
- ▶ **Voluntarily adopted** by efficiency programs
- ▶ **Influence binational markets** using the leverage of consistent programs
- ▶ **Information and comment is sought from many sources**, but specs are determined without influence from economic interests

	Storage Water Heaters ($\leq 75,000$ Btu/h)
Tier 0	≥ 0.62 EF
Tier 1	≥ 0.67 EF
Tier 2	≥ 0.80 EF

	Tankless Water Heaters ($> 50,000$ and $< 200,000$ Btu/h)
Tier 1	≥ 0.82 EF (w/ electronic ignition)

Water Heating Efficiency Programs: Dynamics and Trends



Program cost-effectiveness challenges are paramount

- ▶ Programs are subject to different cost-effectiveness tests (utility, societal, total resource cost)
 - ▶ Water heater program cost-effectiveness factors
 - Low natural gas prices
 - High incremental equipment and installation costs
 - Minimum standards increases lead to baseline increase which reduce savings and thus cost-effectiveness
-
- ▶ **Result:** some gas programs are retiring their water heater measures or reducing incentives

Availability limited in some areas



Programs moving beyond the widget for more systems-based approaches

- ▶ Whole homes programs and “bundled” incentives for simultaneous replacement of heating and water heating equipment
 - Drivers: achieving deeper savings, safety,
- ▶ System elements included or under consideration by some programs
 - Low-flow showerheads
 - System design
 - Pipe insulation
 - Drain heat recovery
 - Demand recirculation pumps

Programs' perspective on tankless water heaters

- ▶ Significant growth in popularity
- ▶ Consumer advantages and disadvantages
 - Endless hot water
 - Higher installation costs, complexity
- ▶ Some studies indicate savings less than originally expected
 - Test method and draw patterns
 - Design matters

Water heaters remain a priority for CEE and its members

Technologies of recent interest to programs

- ▼ Gas hybrid water heaters
- ▼ Heat pump water heaters
- ▼ Light duty EPACT covered gas storage

Common inclusion criteria for programs

- ▼ Validated, measurable energy savings
- ▼ Cost effective (according to utility test)
- ▼ Proven technology
- ▼ Reliable
- ▼ Equal or improved amenity

Water heater program opportunities

Programs that remain committed to water heater measures are (generally)

- ▶ Evaluating for cost-effectiveness at the portfolio level*
- ▶ Seeing a broader / different purpose in running water heater programs (e.g. safety, customer engagement)

To better promote ENERGY STAR water heaters, efficiency programs seek

- ▶ Greater engagement from manufacturers on lab and in-field testing
- ▶ Less expensive high-efficiency products
- ▶ Greater engagement with distribution channel participants in promoting high efficiency water heaters

* Cost-effectiveness at the “portfolio level” describes regulation that permits programs to test cost effectiveness of numerous measures together (e.g. water heater + furnace), as opposed to requiring each measure to pass

Other CEE-led efforts in support of water heater efficiency programs

Directory of Energy Efficient HVAC Equipment

Central Air-Conditioner and Heat Pump Efficiency 101
Find a Rebate or Incentive Program
Why Choose ENERGY STAR?
How and Why of Certified
How to Use the Directory
About CEE and AHRI

AHRI
CEE
Consortium for Energy Efficiency

ENERGY STAR

- Find Split or Packaged Air Conditioners
- Find Split or Packaged Heat Pumps
- Find Variable Speed Mini-Split and Multi-Split Air Conditioners
- Find Variable Speed Mini-Split and Multi-Split Heat Pumps

The CEE/AHRI Verified Directory identifies a list of products (less than 65 MBtu/h) that the manufacturers represent as meeting energy performance tiers established by the Consortium for Energy Efficiency (CEE) as a part of the Residential Air-Conditioner and Heat Pump Initiative and the High Efficiency Commercial Air Conditioning Initiative. These initiatives make use of tiers to differentiate equipment on the basis of energy performance with a higher tier representing a higher level of claimed performance.

Please note that the Directory lists all the products that meet the performance levels specified in the ENERGY STAR Central Air-Conditioner and Air-Source Heat Pump specification. However, only those products that are listed by an ENERGY STAR partner are officially recognized as ENERGY STAR qualified. For a list of ENERGY STAR Partners, visit: www.energystar.gov/products.

For Consumers
Find out how you can improve your comfort while saving energy and environment.
[More](#)

For Specifiers/Contractors
Learn about proper sizing and installation and how to find the right equipment for each application.
[More](#)

For Efficiency Program Administrators
Learn about new strategies to promote energy efficiency in the field.
[More](#)

COALITION FOR ENERGY STAR® WATER HEATERS

Expansion of the *CEE AHRI Directory of Energy Efficient Equipment*

- ▶ Allows program administrators, contractors, and consumers to search for, filter, and identify ENERGY STAR qualified equipment suitable for residential and small commercial
 - Currently focused on residential HVAC equipment
 - Plans underway to include gas furnaces and water heating equipment

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CEE

AC Search

Home

AHRI Certified Reference Number

CEE Tiers

AHRI Type

Outdoor Unit Manufacturer (Systems)

Indoor Unit Manufacturer (Mix-Match Or Coil)

Furnace Model Number

SEER (Btu/h/Watt) Min. Max.

Phase

Product Type

Equipment Type

Model Status

Outdoor Unit Model Number

Outdoor Unit Trade/Brand Name (Systems)

Indoor Unit Model Number

Cooling Cap. (Btu/h) Min. Max.

EER (Btu/h/Watt) Min. Max.

Manufacturer Type

Labeled ENERGY STAR Yes No No Preference

The Coalition for ENERGY STAR Water Heaters: promoting high efficiency water heating since 2009

Phase 1 Accomplishments

- ▶ 20 sponsors and partners
- ▶ Launched rebate finder website with promotional tools: www.eswaterheaters.org
- ▶ Published 10 articles
- ▶ YouTube videos and radio PSA
- ▶ Facebook site w/ articles and news
- ▶ 3 media tours & 3 trade shows
- ▶ Media kit, press releases and “e-blast” informational e-mails
- ▶ Brochure, banners, tote bag
- ▶ Flyers and utility bill stuffers
- ▶ Identity including brand and logo:



Coalition Phase 2 is focused on member– manufacturer collaboration & engaging installers

Key benefits

- ▶ **ENLIST:** website, articles, videos, and social media **promote installer and customer participation in efficiency programs**
- ▶ **INFORM:** **product directory** provides unique, user-friendly resource to identify qualifying water heater models by CEE Tier
- ▶ **FORTIFY:** **sponsor messaging** with branded and unbranded content
- ▶ **FACILITATE:** **dialog, alignment, and collaborative problem-solving** between members, trade associations, government agencies, and manufacturers

Approach

- ▶ **Narrower focus** supports efforts which most benefit CEE members in areas of significant need (credibility, communication, information)
- ▶ **Addresses dynamic environment and CEE Initiative revision** with a 15-month project from October 2012* to December 2013

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Appendix: Further information

By working together binationally, CEE members capture greater savings locally

- ▶ Develop approaches to overcome market barriers and reduce the cost of capturing greater energy efficiency savings
- ▶ Achieve greater consistency on program offerings
 - Share best practices
 - Seek consensus on high efficiency specifications (for program eligibility)
 - Partner with industries and trade associations
 - Ensure that ENERGY STAR® serves the collective needs of programs
- ▶ Create consistent binational programs required to move markets, members
 - Adopt (voluntarily) approaches into programs
 - Work with industry and other partners on efficiency
 - Increase the availability of high efficiency products

CEE members work together and with stakeholders to achieve higher savings

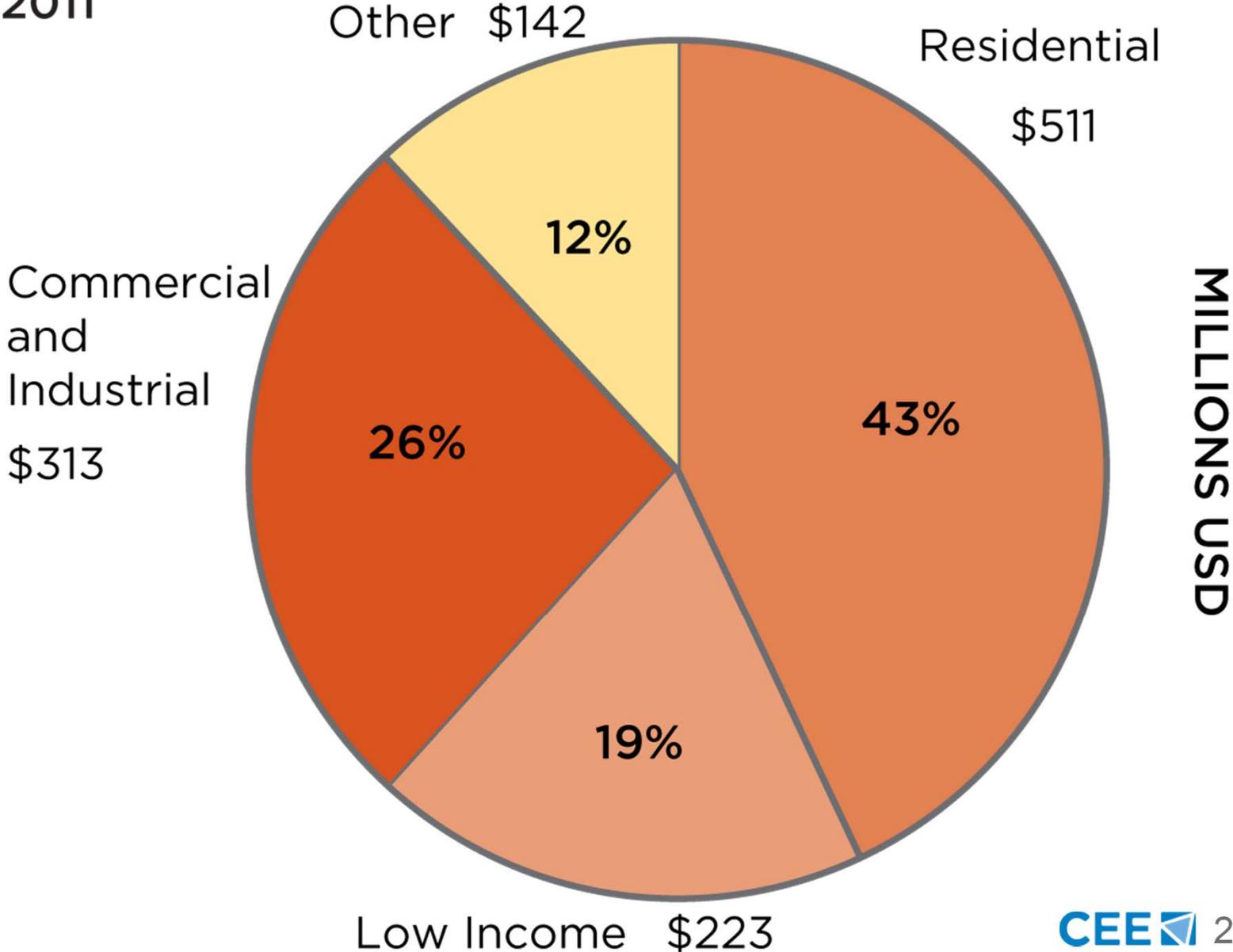
Members

- ▼ Efficiency Program Administrators—utilities and nonutilities with ratepayer funded programs
- ▼ National Program Sponsors —
 - DOE national labs
 - Government energy research agencies
 - National efficiency organizations
 - State and provincial energy offices

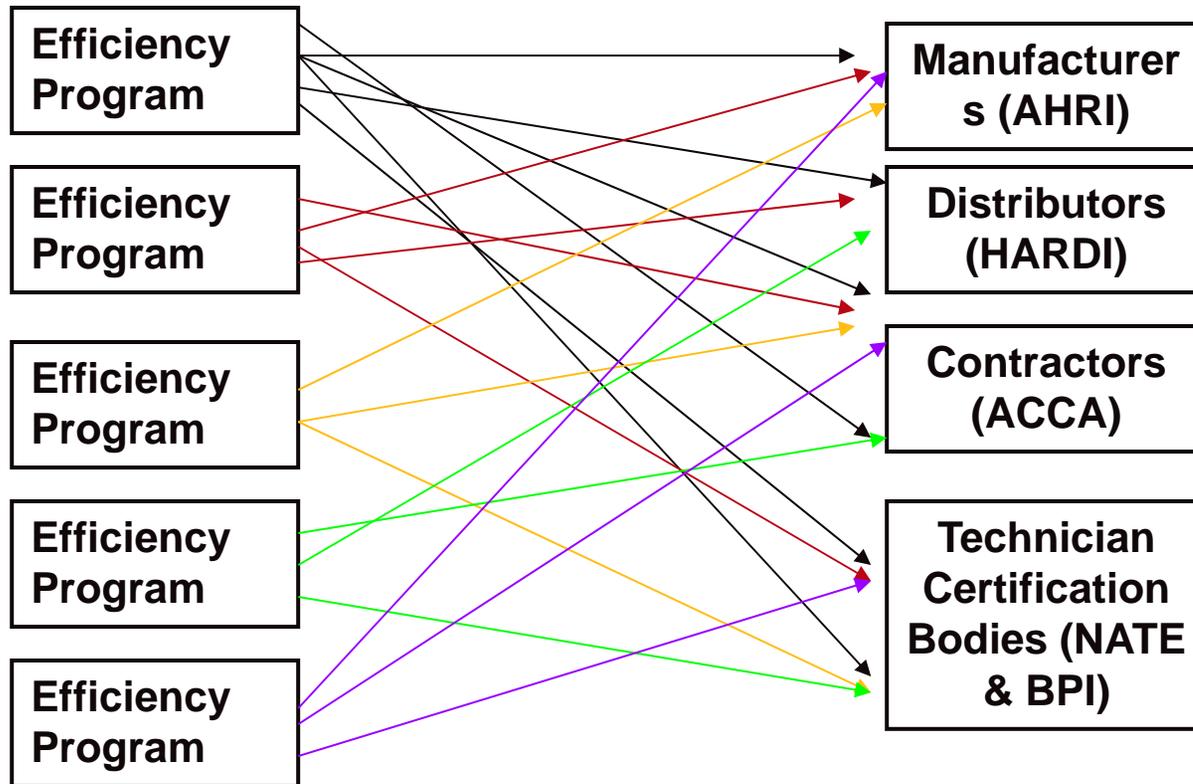
Nonmembers

- ▼ Partners
 - ▼ DOE, EPA, EPRI, GTI, AGA, IEE
 - ▼ Trade associations AHRI, HARDI, ACCA
- ▼ Manufacturers and others are consulted about aspects for programs

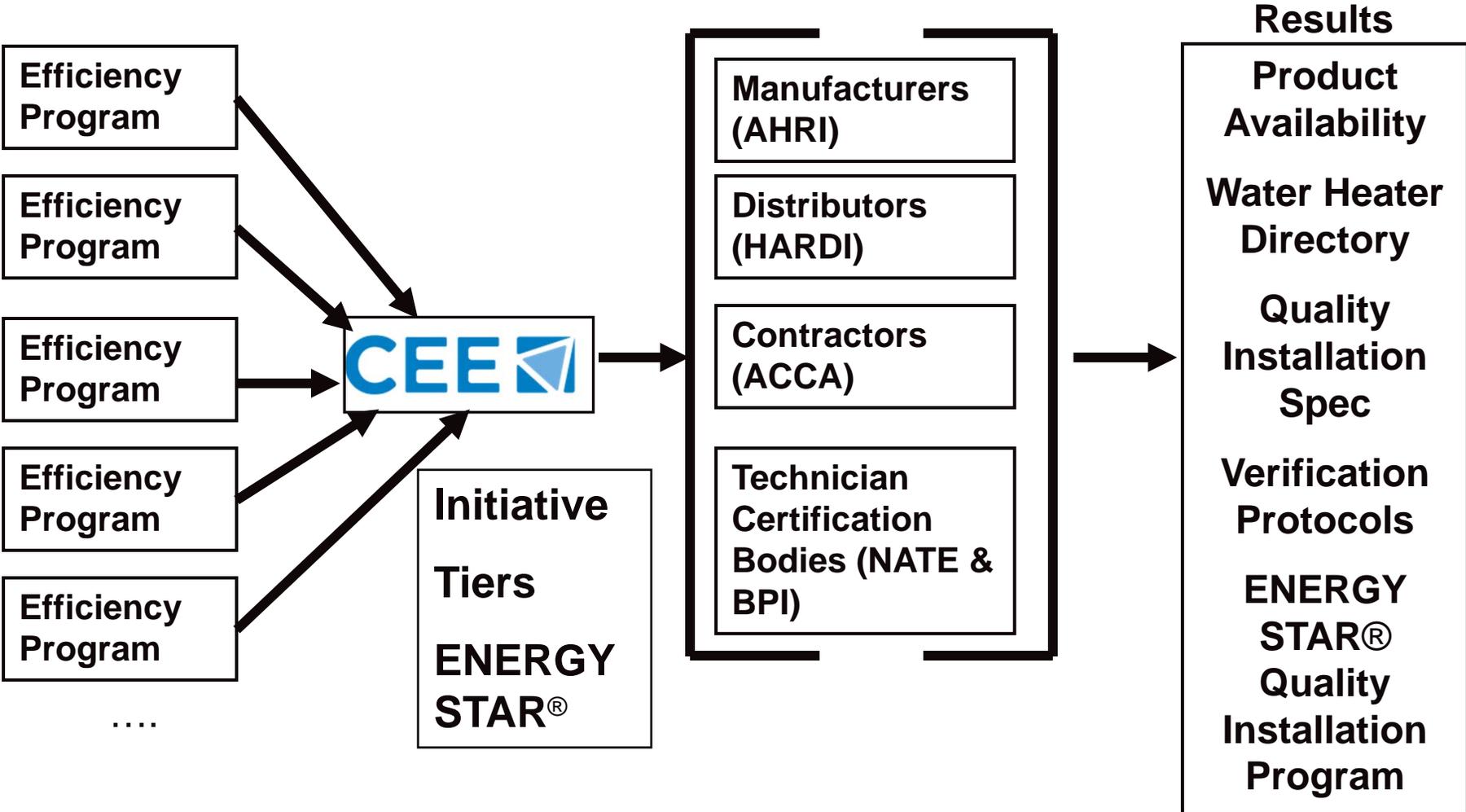
US Gas Program Budgets by Customer Class 2011



Example: Approach to the Residential HVAC market before CEE



With CEE: more efficient products made available and installed correctly



Voluntary Initiative Participation Requirements

- ▼ Incorporate the CEE efficiency specifications for water heaters in an incentive-based program at Tier 0, Tier 1, or Tier 2;

and

- ▼ Undertake the awareness-building aspects of the initiative, making use of communication messages developed by CEE committee

My role

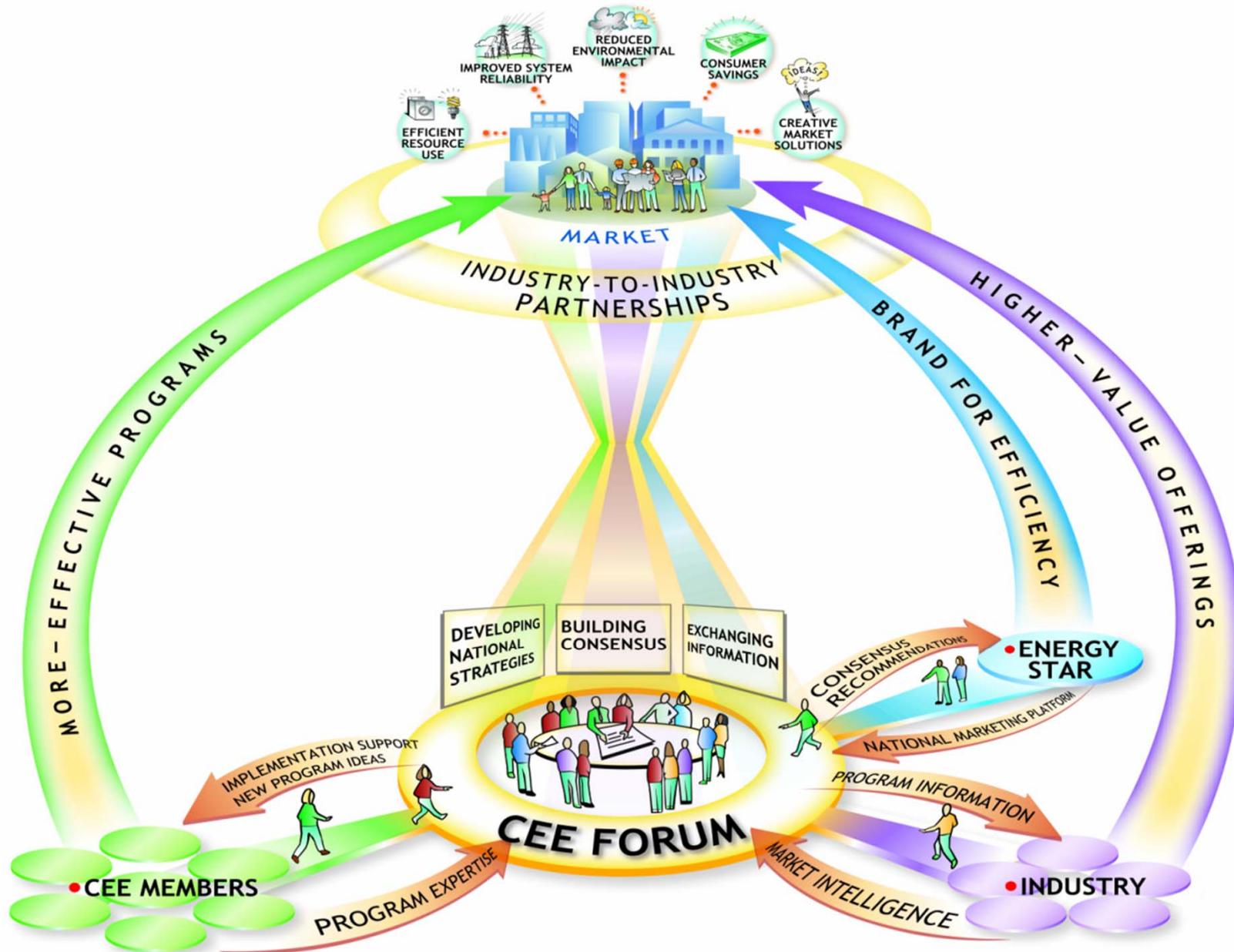
I am responsible for leading

- ▼ CEE's residential gas efforts and Initiatives, including
 - *High Efficiency Residential Gas Water Heating Initiative*
 - *High Efficiency Residential Gas Heating Initiative*
- ▼ The Coalition for ENERGY STAR Water Heaters
- ▼ CEE's exploration of the efficiency opportunity of incorporating condensing gas furnaces ins packaged air-conditioning rooftop units (RTUs)

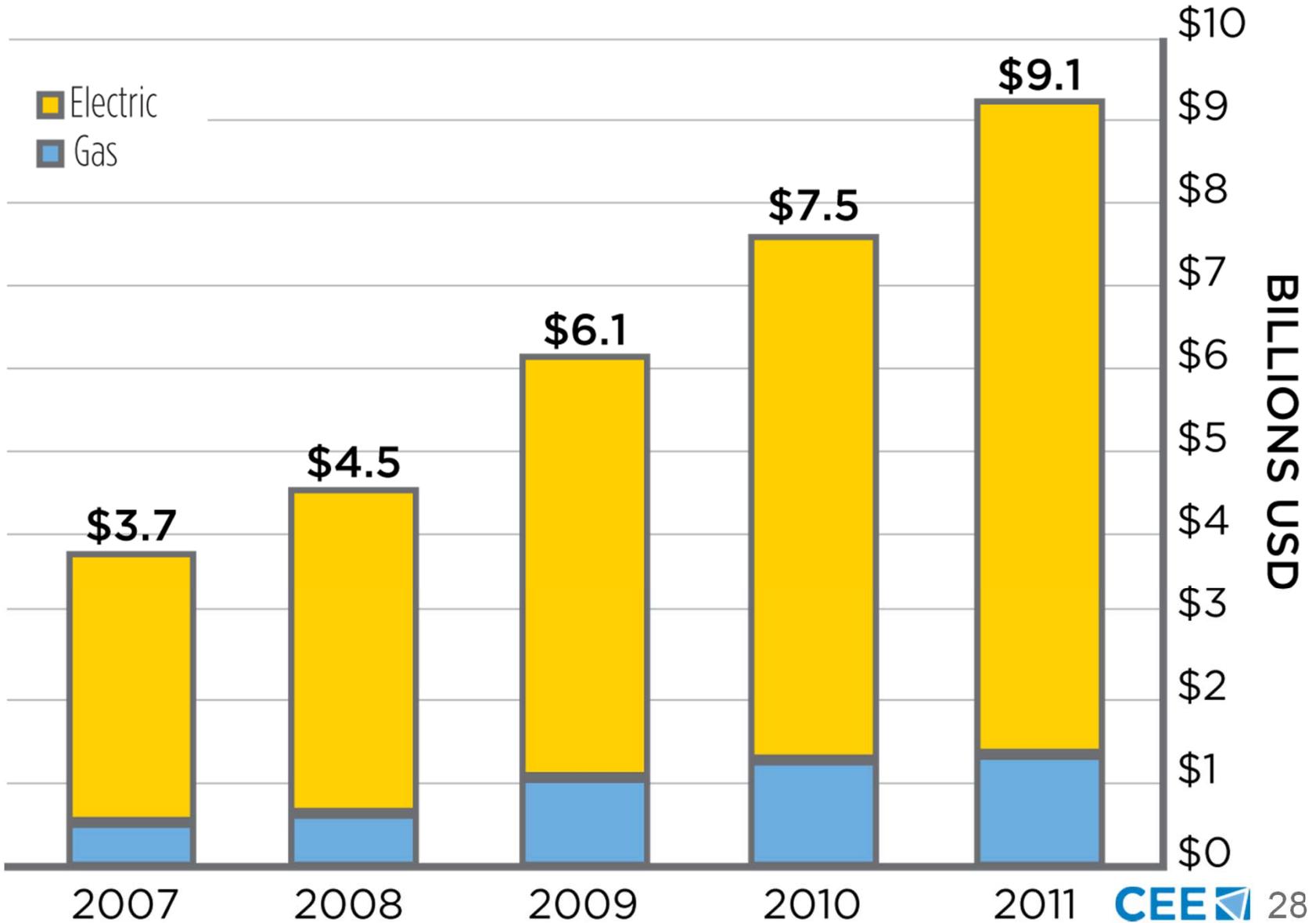
Goals of CEESM High Efficiency Residential Gas Water Heater Initiative

- ▼ To save natural gas by promoting installation of highly efficient equipment
- ▼ To achieve this, CEE members can
 - Offer incentives
 - Educate consumers and installers on the benefits of high efficiency

Stakeholders work together at CEE



US and Canadian Efficiency Program Budgets 2007-2011



Estimated Annual Gas Energy Savings for 2010 (MDth)*

	Residential	Low Income	C & I	Other	Total
US					
North East	14,356	2,131	11,841	428	28,757
Midwest	8,739	1,472	8,505	1,702	20,408
South	385	45	141	0	571
West	8,454	1,181	19,525	1,924	31,084
Subtotal US	32,924	4,829	40,013	4,054	80,820
Canada	11,249	12,262	30,146	127	53,784
Binational Gas Total	43,173	17,091	70,159	4,181	134,604

* Based on estimated 2010 savings from measures installed in 2010 as well as from measures installed as early as 1992 that were still generating savings as of 2010 (i.e. “annual effects”)

Major dynamics

- ▶ Cost-effectiveness and availability challenges are paramount
- ▶ Buy-in from the distribution channel is critical
- ▶ Programs are moving beyond the widget for more systems-based approaches
- ▶ Program experiences with tankless WH
- ▶ Technologies of more recent interest to programs