To Laura Petrillo-Groh, AHRI
From Alice Rosenberg, CEE
Date June 08, 2020
Re CEE® Residential Heating and Cooling Systems Initiative Background and Context

CEE is a nonprofit public benefits corporation, managing initiatives for its North American members to promote the manufacture and purchase of efficient products and services. Through voluntary market-based initiatives, members achieve lasting structural and behavioral change for the betterment of their customers, utility systems, and society at large. CEE members serve more than 200 million electric and 100 million gas customers in the United States and Canada and invest nearly $6.5 billion annually in efficiency and demand side management expenditures. Since its incorporation in 1991, CEE has managed its work in service of the regulatory responsibilities of utility members to deliver safe, affordable, and reliable service. CEE collaborates with industry, federal agencies, state organizations, and national laboratories to provide considered and analytically based positions to accelerate markets for efficient products and services.

Market Transformation

When CEE was founded twenty-seven years ago, energy efficiency programs were separately conducted in scattered service territories with separate criteria and definitions of efficiency goals. Consequently, manufacturers and others in the supply chain were presented a patchwork quilt of national marketing challenges.

Consortium members are able to partner not only with each other, but also with industry, trade associations, and government agencies. Members continue to find value in working together in a business environment characterized by increasing emphasis on energy efficiency, higher baseline standards that reduce savings potential, and energy goals requiring more efficient use of utility capital. Today, the membership of CEE totals almost 80 large electric and gas utilities along with other administrators of efficiency programs.
The CEE role is to reduce market noise and barriers and create consensus targets so that players that operate at a scale beyond that of individual programs—manufacturers, channel players, and government agencies among others—have clear understanding of what is desired and what carrots may be offered to encourage accelerated action. Binational initiatives present the benefits of market standardization and continuity, effective program design assistance, support for effective program administration and program implementation, and enhanced regulatory confidence. Energy efficiency at CEE includes consideration of consumer amenity so that efficiency does not come at the cost of reduced customer satisfaction.

**Member Budgets and Expenditures**

CEE aggregated data from 302 utility and non-utility program administrators operating efficiency programs in 50 states, the District of Columbia, and eight Canadian provinces to generate the [CEE 2018 Annual Industry Report](#), an extensive industry research effort on program funding and impacts. This document highlights the key findings.

2018 US and Canadian ratepayer funds budgeted for gas and electric demand side management (DSM) measured more than $9.6 billion of the $10.2 billion budgeted from all sources, a two percent increase from 2017. US DSM expenditures in 2017 represented nearly 0.04 percent of US GDP and 2.69 percent of value added by the US utility industry. Canadian DSM expenditures represented a slightly higher proportion of economic activity, making up 0.05 percent of Canadian GDP and two percent of the value added by the Canadian utility industry.

**Figure 1.** **US and Canadian DSM Program Budgets - Gas and Electric (2013-2018)**
Within members' residential sector work, most current efforts are focused on specific end uses or programs, and each individual measure within the offering area is supported to varying degrees.

Figure 2. **US Electric DSM Expenditures by Customer Class (2017)**

![Bar chart showing residential, commercial, industrial, and low income sectors, with residential at 33%, commercial and industrial at 32%, industrial only at 3%, low income at 6%, and cross-sector at 10%]

Figure 3. **CEE Member Offerings by End Measure (2017)**

![Bar chart showing total organizations, res HVAC, water heating, existing homes, appliances, new homes, lighting, low income, swimming pools, and electronics, with the highest number of offerings in total organizations at 151 and the lowest in electronics at 24]
Member Investment in Demand Response
Data from the 2018 CEE Annual Industry Report also notes that total US and Canadian demand response (DR) expenditures increased in 2017, continuing a trend of steady increases and equals the highest binational DR spending seen over the history of this report. US and Canadian administrators reported that demand response programs have saved approximately 33,246 GWh of electricity and over 566 million therms of gas in 2017, which represents 26.5 million metric tons of avoided CO2 emissions. Through this effort, the Consortium is defining the demand response baseline and report demand response information of the greatest value to the industry.

Residential Program Cycles
In 2015, CEE conducted a survey of members regarding residential HVAC program offerings. The 25 respondents who provided information for had a collective budget totaling over $400 million USD, with service territories spanning 30 US states and serving more than 68 million residents.

Figure 4. Structure and Timing of Programs’ Reported Budget Cycles (2015)
CEE Residential Heating and Cooling Systems Initiative

CEE is currently working to revise its longstanding CEE® Residential Heating and Cooling Systems Initiative. The Initiative harmonizes binational program approaches by supporting the adoption high efficiency equipment in the market, focusing on reduced demand and decrease energy use though installation and maintenance guidance, and facilitating new program opportunities through connected capabilities. The primary objective is to drive efficient in-field performance by increasing the market penetration and quality installation of high efficiency equipment and HVAC systems, including systems enabled by a capacity for communications with customers, authorized third-party service providers, and the utility grid.

Figure 5. SEER Levels Over Time – Split Air Source Heat Pumps

Figure 6. HSPF Levels Over Time – Split Air Source Heat Pumps
CEE Member Residential HVAC Programs

As described in greater detail in the 2018 CEE Residential HVAC Program Summary, there are 105 CEE members actively promoting residential heating and cooling system offerings.

Figure 7. HVAC Measures Offered by CEE Members (2018)

Of those promoting HVAC measures to their customers, many adopted the tiers and specifications laid out in the CEE Residential Heating and Cooling Systems Initiative. A full list of these members is presented in Appendix B.

Figure 8. CEE Res HVAC Initiative Participants and Members with HVAC Offerings (2018)
Program Offerings and Incentives

Figure 9. CEE Members’ Split Air Source Heat Pump SEER Requirements 2015-2019

The following graphs show the incentive amount – most commonly in the form of a downstream rebate to the customer or contractor – from the past five years of data, pulled from CEE Residential HVAC Program Summaries since 2015.

Figure 10. Split Central Air Conditioner Program Incentive Levels 2015 – 2019
Figure 11. Packaged Central Air Conditioner Program Incentive Levels 2015 – 2019

Figure 12. Split Air Source Heat Pump Program Incentive Levels 2015 – 2019

Figure 13. Packaged Air Source Heat Pump Program Incentive Levels 2015 – 2019
Appendix A  About CEE Initiatives

CEE market initiatives are based on the notion of market transformation. While each initiative describes an approach to a specific market, initiatives share some common properties:

- Initiatives are developed by CEE members. Insights from industry partners, service providers, government agencies, and other stakeholders are considered in the development process as appropriate.
- Initiatives are adopted into member and stakeholder program design voluntarily.
- Initiatives use strategies, frequently common specifications, that clarify the definition of efficiency in a particular product or market.
- Initiatives are constructed with flexible participation requirements so that members can join an initiative as appropriate for their circumstance.
- Initiatives may have more than one baseline as goals change over time. For example, Residential Space Heating and Cooling was initially focused on rated product efficiency. At a later date, Quality Installation was added as another goal to address performance related to the system.
- Initiatives have both energy and non-energy goals. In addition to reductions of energy consumption, locational and temporal value, carbon or other greenhouse gas reductions may be sought as well as economic development, job creation, and improved public health.
- Considering customer amenity ensures that energy reduction is not associated with a reduced level of service or value, for example, a refrigerator that routinely alters its internal temperature to save energy but reduces the life of perishable food.

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1 See https://www.cee1.org/content/cee-program-resources for a list of and links to current CEE initiatives.
Appendix B  Members with Res HVAC Programs

- Alliant Energy—Iowa
- Alliant Energy—Wisconsin
- Ameren Illinois
- Atmos Energy Corporation—Colorado
- Austin Energy
- Avista—Idaho
- Avista—Oregon
- Avista—Washington
- Baltimore Gas and Electric Company
- BC Hydro
- Berkshire Gas
- Cape Light Compact
- Columbia Gas of Massachusetts
- Columbia Gas of Ohio
- Commonwealth Edison Company
- Connecticut Natural Gas
- Consolidated Edison Company
- Consumers Energy
- DC Sustainable Energy Utility (DCSEU)
- Dominion Energy Utah
- Dominion Energy Wyoming
- DTE Energy
- Duke Energy Carolinas
- Duke Energy Progress—Carolinas
- Duke Energy—Florida
- Duke Energy—Indiana
- Duke Energy—Kentucky
- Duke Energy—Ohio
- Efficiency Maine
- Efficiency Vermont
- Energir
- Energy Trust of Oregon—Oregon
- Energy Trust of Oregon—Washington
- Eugene Water & Electric Board
- Eversource—Connecticut
- Eversource—Eastern Massachusetts
- Eversource—New Hampshire
- Eversource—Western Massachusetts
- Focus on Energy—Wisconsin
- FortisBC
- Georgia Power
- Great Plains Natural Gas
- Gulf Power
- Hawai‘i Energy Efficiency Program
- Idaho Power—Idaho
- Idaho Power—Oregon
- Los Angeles Department of Water & Power
- MidAmerican Energy Company—Illinois
- MidAmerican Energy Company—Iowa
- MidAmerican Energy Company—South Dakota
- Mississippi Power
- Montana-Dakota Utilities Co.—Montana
- Montana-Dakota Utilities Co.—North Dakota
- Montana-Dakota Utilities Co.—South Dakota
- National Grid—Downstate Long Island
- National Grid—Massachusetts
- National Grid—New York City Downstate
- National Grid—New York Upstate
- National Grid—Rhode Island
- Nebraska Public Power District
- New Jersey Natural Gas
- New Mexico Gas Company
- Nicor Gas
- Northern California Power Agency
- NW Natural—Oregon
- NW Natural—Washington
- Oncor
- Pacific Gas and Electric Company
- PECO
- PNM
- Potomac Electric Power Company (Pepco)—Maryland
- PSEG Long Island
- Puget Sound Energy
- Sacramento Municipal Utility District
- Salt River Project
- San Diego Gas & Electric Company
- Seattle City Light
- Snohomish County PUD
- SoCalGas
- South Jersey Gas
- Southern Connecticut Gas
- Southern Minnesota Municipal Power Agency
- Southwest Gas—California
- Tacoma Power
- Tampa Electric
- TECO Peoples Gas
- Tennessee Valley Authority—Alabama
- Tennessee Valley Authority—Georgia
- Tennessee Valley Authority—Kentucky
- Tennessee Valley Authority—Mississippi
- Tennessee Valley Authority—North Carolina
- Tennessee Valley Authority—Tennessee
- Tennessee Valley Authority—Virginia
- United Illuminating Company
- Unitil—Massachusetts
- Unitil—New Hampshire
- Vectren Corporation—Ohio
- Vermont Gas
- Xcel Energy—Colorado
- Xcel Energy—Michigan
- Xcel Energy—Minnesota
- Xcel Energy—New Mexico
- Xcel Energy—North Dakota
- Xcel Energy—Texas
- Xcel Energy—Wisconsin

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3 2018 CEE Residential HVAC Program Summary
Appendix C  CEE Board of Directors

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4 As of June 8, 2020. https://www.cee1.org/content/cee-board-directors