CEE

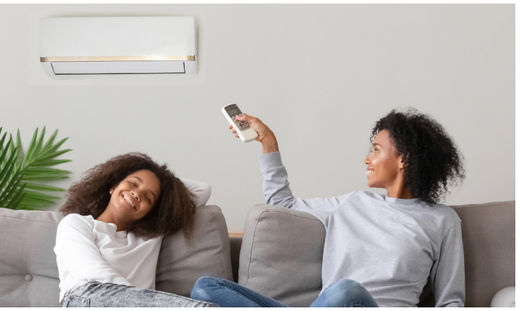
2021 ANNUAL REPORT

INTEGRATING

the

PAST → PRESENT → FUTURE

LEADERSHIP MESSAGE



The Consortium for Energy Efficiency consists of leading United States and Canadian efficiency program administrators, that together develop cutting-edge strategies for accelerating market introduction of new, innovative energy efficient products and services. Consortium members direct approximately $7 billion budgeted annually for US and Canadian demand side management investment.

A foundational principle of the Consortium is working together. Members come from all over the US and Canada, British Columbia to Florida, Maine to Southern California, to develop and achieve shared goals. Together as CEE, members work toward mutually beneficial ends, serving goals that align with utility system and associated planning horizons. Because of a decades-long track record of success, members are confident that the effort put forth in CEE initiatives will bear significant fruit.

CEE's work is principled on identifying the highest value, shared needs of the US and Canada in service of the full spectrum of the "regulatory compact" to provide safe, reliable, affordable and universal service. CEE Initiatives seek to reward market players whose leadership creates products and services of ever greater value to utility customers and systems and accordingly improves the livelihood of society.

CEE members leverage the resources created together for shared need and the greatest potential market impact. This trajectory is epitomized by the new CEE Integrated Home Initiative (described below in greater detail). Members understand that the time, locational, and durational value of energy is critical for meeting present and future needs. CEE's Integrated Home Initiative capitalizes on the proliferation of sensors and communications systems that can serve to maximize incredible new potential and builds upon CEE's more than three decades of HVAC, Lighting and appliance industry relationships.

2021 was a year in which CEE helped to attract manufacturer commitment to build new-to-the-market, Super Efficient Room Conditioners that provide efficient heating and cooling in a through-the-window form factor. And if these additions to CEE's portfolio weren't enough, CEE also built the new Center for Equity and Energy Behavior.

We invite you to learn more about CEE and these and other exciting efforts and we look forward to working with you to serve important objectives in the years to come.

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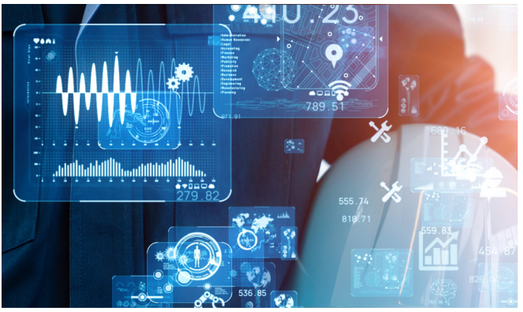

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Pacific Northwest National Laboratory
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THE CEE INTEGRATED HOME *A Next Generation Initiative*

For 30 years, CEE's market transformation efforts have yielded impressive results. Members have collaboratively developed and implemented analytically based, diligently researched Initiatives that intentionally involve industry stakeholders to yield incredible customer, utility system, economic, and environmental benefits. The regulatory compact that governs most members of the Consortium requires CEE to craft solutions that manage to a full spectrum of Integrated Demand Side Management objectives that also include safety, reliability, affordability, and equity.

The coming years pose renewed challenges for utilities to continue meeting their obligations. As distributed energy resources (DERs) aspire to increase clean energy with the potential to aid or detract from system resiliency, their utilization can prompt greater system planning requirements to ensure resource adequacy and may lead to greater variation in time, durational and locational value of energy. Extreme weather events, aging infrastructure, difficulties siting new transmission infrastructure and distribution system upgrade costs can all work to challenge system reliability. In light of this, our ability to provide safe, reliable, and affordable energy that is also clean becomes more valuable than ever. Similar challenges are presented for the natural gas system, particularly with regard to making efficient use of existing pipeline capacity, reducing GHG emissions, and supporting comfortable, affordable, resilient buildings. This is a challenge that CEE members are addressing head

THE CEE INTEGRATED HOME

on, and will require unprecedented levels of investment in the coming decade. Consensus on enabled capabilities for demand flexibility is essential for products and buildings to actively manage energy use in response to these increasingly dynamic and volatile energy markets.

A Connected Home That Delivers on the Full Suite of Utility Objectives

Imagine an efficient home where devices and systems seamlessly communicate to optimize value for both customers and utility systems; a home that tunes operation to consumer needs in light of value of energy at varying times and locations across utility systems. The home responds to utility signals allowing CEE members to manage to their core mission without compromising consumer amenity, and while optimizing performance to minimize customer and system costs. As sensors and chips are increasingly embedded in energy consuming products and wireless communications become more common, if configured accordingly, there is great potential value for shared benefit.

This is the promise of the CEE Integrated Home: A fuel-neutral platform that leverages the potential of enabled, connected products to integrate for measurable customer, utility, and environmental benefits.

Seizing an Incredible Opportunity

An example of the staggering potential was published by the US Department of Energy in the National Roadmap for GEBs (Grid Efficient Buildings). According to their analysis, electric power system financial benefits could amount to between $8 billion and $18 billion annually over the next decade, with cumulative benefits ranging between $100 billion and $200 billion from 2021 – 2040. With the residential sector representing 28% of the nearly 17,000 trillion Btu annual energy consumption in the United States[1], connected homes present a significant opportunity for achieving energy savings and grid stability. Further, the environmental impact of connected homes could provide a carbon reduction of 80 million tons by 2030[2]; representing a major portion of greenhouse gas reduction goals for the US in the residential sector. The CEE℠ Integrated Home Initiative embodies a culmination of work codified by membership over the past decade.

[1]U.S. Energy Information Administration. https://www.eia.gov/consumption/
[2]Cohen, Jesse, Delurey, Dan, Faruqui, Ahmad, Frick, Natalie Mims, Granderson, Jessica, Hledik, Ryan, Khandekar, Aditya, Lam, Long, Nemtzow, David, Neukomm, Monica, Piette, Mary Ann, Ross, Stephanie, Satchwell, Andrew, Urigwe, Daniela, Wang, Kitty. "A National Roadmap for Grid-Interactive Efficient Buildings", U.S. Department of Energy, 17 May 2021.

CEE members direct nearly 70% of the nearly $9 billion in North American energy efficiency (EE) and demand response (DR) program expenditures. The Consortium works with industry stakeholders to communicate consensus positions critical to achieving lasting safe, reliable, and low-cost service to ratepayers, and the CEE℠ Integrated Home Initiative embodies a culmination of work codified by membership over the past decade. Version 1.0 of this new CEE Initiative distinguishes those products that possess the qualities most valuable in supporting utility IDSM objectives. End uses embedded with automated and interactive functionality provide energy savings and load management capabilities while also upholding consumer expectations and yielding customer amenity.

Version 1.0: Standards and Consistency

The CEE℠ Integrated Home Initiative provides a unified vision for residential products to respond to utility price or reliability signals while being guided by a consumer-focused perspective. It specifies emerging utility system conventions of value (IDSM Value) and identifies enabled capabilities and connectivity requirements through a set of Minimum Requirements. Using strategically consistent specifications allows industry partners to understand the embedded capabilities that the utility industry seeks from residential products. By establishing fundamental tenets, the seminal version of this Initiative lays the groundwork for iterative enhancement and refinement.

Version 1.0 of the Initiative includes specific requirements for the following products:

HVAC and Connected Thermostats	Electric Vehicle Supply Equipment
Residential Water Heaters	Room Air Conditioners
Swimming Pools	Clothes Washers
Residential Lighting	Clothes Dryers

The minimum requirements pertinent to all products include embedded functionality, such as:

- On-premise connection
- Load management and run-time status information that support load shedding and load shifting
- Consumer override capabilities
- Open, non-proprietary communication standard, such as CTA-2045
- Local storage of schedules

With technology advancing and evolving, common communication protocols and product standards developing, and the adoption of "smart home" technology by customers expanding rapidly, CEE anticipates the need for regular and cumulative revisions to the CEE℠ Integrated Home Initiative. The iterative and additive

CEE EXPLORES:

Next Generation Metrics for a Next Generation Initiative

Integrated Home Competition Evaluation Criteria

Energy Efficiency and Greenhouse Gas Emissions Reduction	Replaceability & Field Serviceability
Connected Functionalities	Innovative Design
Load Management	Innovative Engineering
Data Sharing	Overall Value
Interoperability	Resiliency
Reliability	Quality
Value Proposition Messaging	Cybersecurity
Ease of Installation, Set Up, and Use	

nature of this space requires CEE to adopt an approach that reflects these needs; for this reason, the CEE Integrated Home incorporates a versioning method for updating and revising the platform. As technological and business drivers develop, membership will adapt the Integrated Home Initiative to serve needs now and into the future. As new leaders emerge, CEE will recognize their success.

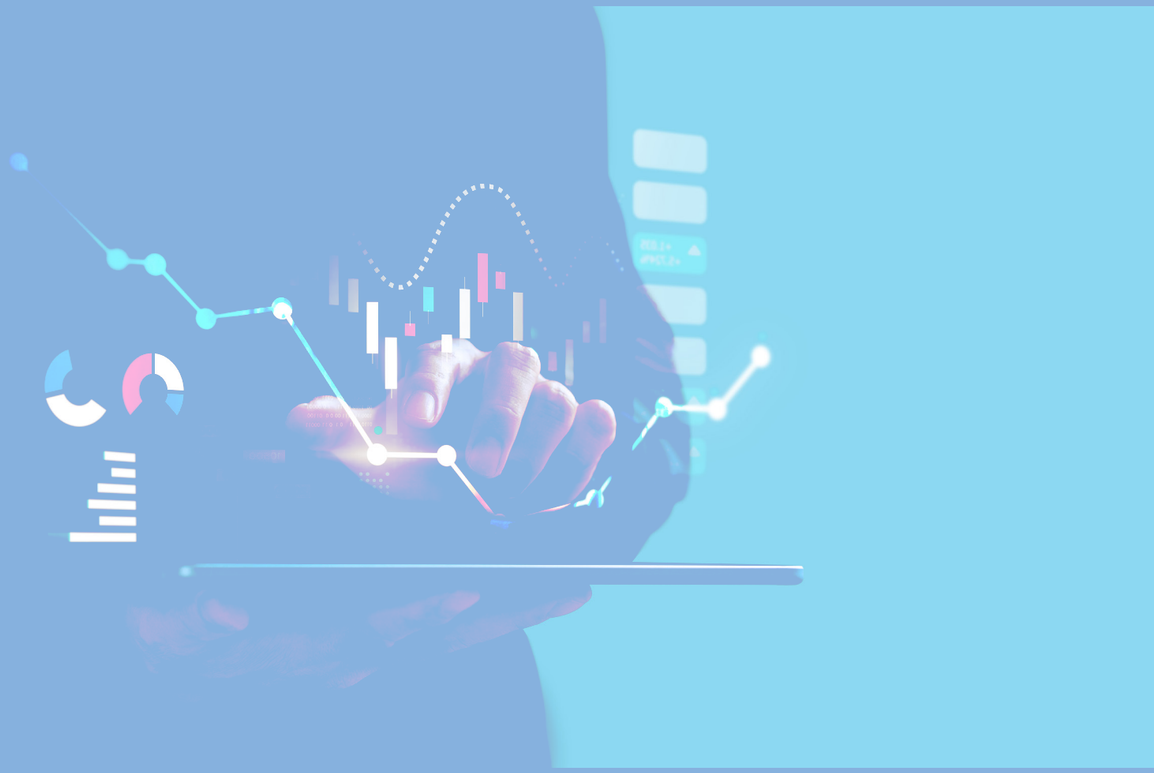
A Competition to Recognize Industry Leadership Supporting the Integrated Home

The requirements set forth in the CEE Integrated Home Initiative represent ambitious performance when compared to currently available products. CEE works closely with industry partners to convey the evolving utility landscape and demonstrate future program needs to address distribution system challenges. The Integrated Home Competition is an annual market transformation competition and showcase to distinguish the top-rated products submitted that embody CEE's Integrated Home vision. The competition also serves as a public stage where manufacturers can gain exposure for their products and brands among industry leaders and consumers alike. The Competition promotes innovative products, devices and systems that are able to meet consumer expectations in terms of interoperability, reliability, and simplicity of use with an emphasis on delivering energy and demand savings.

Integrated Home Competition
COMFORTABLE • CONVENIENT • CONNECTED

The rapid change that has characterized the utility industry for years is accelerating. Consortium members have developed the CEE℠ Integrated Home Initiative to serve the challenges of both today and tomorrow in a thoughtful, considered approach. We invite your thoughts and questions.

To learn more about the CEE Integrated Home, visit the Integrated Home website or contact Alice Rosenberg.



CEE EXPLORES

A broadly understood performance metric can help customers better evaluate various products. The Miles Per Gallon (MPG) metric for automobiles, for example, affords a potential purchaser the ability to compare expected performance under a specified set of operating conditions as established by federal authorities. The metric works to serve public interest by helping the market make informed decisions which in this case could support individual financial interests (lower operating costs) and environmental interests (lower smog and other GHG particulate levels). If a metric is well conceived and the underlying reporting proves reliable over time, the metric provides a valuable role in creating an effective market.

As energy consuming products shift away from what historically was mechanical or static operation (on or off, high or low settings, etc.) and toward varied operation, so too must performance metrics and test procedures change to accurately represent actual operation. The automotive industry and interested stakeholders are wrestling with this issue as electric vehicles proliferate. New metrics such as miles per gallon equivalent (MPGe) or kilowatt hours (kWh) per 100 miles have been offered but there are additional new aspects such as outside temperature that can be relatively more important to range than it was for gasoline vehicles. And historical ratings for smog and greenhouse gas emissions that are tailpipe focused will likely need to evolve to accurately portray the vehicle's ultimate impact on air quality.

Energy efficiency programs have long made use of a standard unit of energy, kWh or Btu, as a basis for savings targets. By themselves, these units do not incorporate time or locational value. A portion of DSM programs known as demand response have targeted demand reduction, however largely during overall system peak periods.
How will program metrics and targets change with the dramatic rise in use of intermittent renewable energy and emerging decarbonization objectives? What metrics will emerge to serve multiple objectives simultaneously, including reliability and equitable delivery of program impacts? These are some of the preeminent challenges facing program administrators now that require investment and coordination binationally.

Working Together

The Evaluation Committee at CEE continues meeting these challenges, helping to chart a path forward for the next generation of programs. A "New Metrics" subcommittee has been formed to explore opportunities and methods that can leverage the extensive data from connected technologies, allowing program administrators to monitor in-field performance and real-time energy usage and optimize operations to achieve desired program objectives. This subcommittee is an opportunity for members to exchange subject matter expertise and get ahead of evaluation challenges as the distribution system is presented with increasingly complex energy management solutions.

As part of this exploration, program admimnistrators from the U.S. and Canada have collaborated with the National Renewable Energy Laboratory (NREL) and Lawrence Berkeley National Laboratory (LBNL), on how load shapes have been used in the past and how they may be used going forward. Members also discussed data and reporting requirements related to balancing and optimizing assets for different priorities such as electricity affordability, mitigation of PV intermittency and grid resiliency.

Beyond those aspects of data reporting that support the evaluation of demand flexible programs, program administrators are under increased pressures to achieve equitable delivery. However, efficiency programs costs can be substantially higher to encourage upgrades if the customer is not the owner of the property, doesn't have access to financial resources or other considerations.

In light of these challenges, in tandem with the Evaluation Committee, CEE developed the new Center for Equity and Energy Behavior. In addition to identifying effective social science practcies, the Center will study Non Energy Impacts (NEIs) and how these can be quantified to consider full program benefits. NEIs have experienced a renaissance in recent years as program administrators seek a means to measure progress towards new goals and a better understanding of the true value of their programs. To support

this goal, CEE is about to undertake an effort to characterize the landscape of NEIs. Creating a common vocabulary for the industry and understanding the breadth of opportunity, as well as prioritizing NEIs to identify those most in need for further study, especially as they concern understanding the impact of programs on underserved customer groups, will help members to quantify these NEIs.

Several member organizations have already shared insight into their program NEIs. ComEd recently presented to the committee about their extensive research estimating participant, societal, and utility non-energy benefits, including health and safety as well as economic impacts for vulnerable customer groups. They found that the methodology used to estimate societal benefits is likely transferrable to other jurisdictions. Puget Sound Energy (PSE) also presented their recent investigation of NEIs, including the innovative methodology they leveraged to make learnings from other jurisdictions relevant for Washington State. The Independent Electric Service Operator (IESO) in Canada shared their recent NEI investigation highlighting the impact of programs on low-income and indigenous customer groups. These new metrics will not only serve members on the evaluation side, but also the planning side. Developing new programs with appropriate metrics from the beginning will enable members to achieve the shared goals that will power the industry into the future.

For more information about Evaluation at CEE, contact Kira Ashby, kashby@cee1.org.

2021 SECTOR ACCOMPLISHMENTS
Commercial & Industrial

Aligning Support for Strategic Energy Management Programs with Current Member Needs

When CEE first launched the CEE SEM Initiative and CEE SEM Minimum Elements, the members who helped developed the initiative and resources saw the need to demonstrate examples of SEM programs and their impacts so that other program administrators could adopt this new type of program. Since that time in 2014, SEM programs have proliferated across the US and Canada and the needs of members supporting these programs have changed as SEM programs mature. To address these changing needs, the CEE SEM Committee developed the SEM Program Framework, a resource designed to support comparison of different program approaches to support customer SEM practices. The Committee collected data from 11 organizations representing 15 different SEM programs and assessed the data to identify approaches that are consistent and may suggest good program models, as well as those that stand out for additional consideration. The result of this work was a Framework report that the Committee co-chairs previewed during the 2021 ACEEE North American SEM Collaborative annual SEM Summit and then shared in full with Industry Partners for discussion and feedback at the 2021 CEE Industry Partner Meeting. The discussions helped to identify unclear aspects of the CEE SEM Minimum Elements and possible opportunities to improve the CEE SEM Program Summary, which will be discussed in depth by the Committee in 2022 with the goal of proposing updates for these key Initiative resources that will better support current member and market needs around SEM program development and implementation for mature SEM programs.

Ensuring Members Can Continue Using ENERGY STAR as a Platform for Commercial Kitchen Programs

CEE developed and submitted public comments to the US Environmental Protection Agency in response to the ENERGY STAR Version 5.0 Commercial Refrigerators and Freezers (CRF) Discussion Guide and draft 1 specification, and draft 1 and draft 2 of the ENERGY STAR Version 3.0 Commercial Ovens Specification. Through this process, CEE was able to work with EPA to solidify and, at times, expand the scope of their initial recommendations to better support member goals though ensuring both stringent energy efficiency requirements and a sufficient selection of models from multiple manufacturers for existing and newly included equipment types. CEE comments supported revised criteria for vertical closed solid self-contained refrigerators and freezers, and expansion of the scope of the CRF Specification to service-over-counter, self-contained refrigerators, and self-contained chef base refrigerators and freezers. With respect to commercial ovens, CEE comments supported EPA's alignment of full-size electric convection oven criteria with CEE Tier 2, ensuring a sufficient selection of gas convection oven models and manufacturers, more stringent convection mode efficiency requirements for combination ovens than convection ovens, consideration of expanding the scope to additional combination oven size categories, the addition of preheat time and energy use data reporting requirements, the introduction of capacity bins for full-size electric convections ovens to include higher capacity ovens and to better distinguish between low capacity and high-capacity ovens. CEE also supported inclusion of water consumption criteria for combination ovens and recommended EPA assess potential unintended consequence of the proposed water consumption metric.

Working with Industry to Enhance Opportunities for C&I Pump Systems Programs

CEE engaged the Hydraulic Institute and pump manufacturers through a series of roundtables to address inconsistencies in messaging around the use of comparable wire-to-water energy performance metrics to help accelerate the adoption of energy efficiency programs that support customer selection and installation of highly efficient pump models. Industry participants agreed there is benefit in an established definition of "high performance", as defined by the CEE C&I Clean Water Pump Specification, to provide a clear and consistent definition of performance to the market that supports the development of pump energy efficiency incentives and clarifies customer selection considerations. The Committee will continue to work with industry partners to promote definitions of performance in the market via consistent messaging in an effort to increase customer demand for high performance products that meet the CEE criteria. Further, CEE is working with Committee participants and industry to explore opportunities for higher performance tiers and additional products like circulator pumps to provide increased options for customers and potentially improve program cost-effectiveness through higher savings per unit and higher volumes of participation.

2021 SECTOR ACCOMPLISHMENTS
Residential

Defining Commercial Whole Building Performance Program Opportunities by Focusing on EMIS

The CEE Commercial Whole Building Performance Committee supported a Lawrence Berkeley National Lab project to scope and implement a market-ready US DOE Energy Management Information Systems (EMIS) evaluation protocol that CEE member program administrators could use to document EMIS use cases and test the potential program value of utility support for customer uses. The Committee contributed expertise and feedback to this project in order to benefit from the resulting product, which allows apples to apples comparison of different EMIS technologies, supporting selection of products that will best serve a given need. While primarily intended as a tool for customers, utility program administrators can benefit by leveraging the protocol to determine whether different EMIS products will meet utility program requirements, thereby enhancing utilities' ability to provide support for EMIS products that contribute to energy savings and other building performance improvements.

The Committee used outcomes of the evaluation protocol project and other resources, such as the results of the Smart Energy Analytics Campaign and dataset of EMIS use cases together with the program examples from Committee participants, to draft EMIS criteria that support IDSM values. The draft criteria will be assessed and refined in 2022 as part of CEE's new Dynamic Energy Management exploration, and in coordination with related work by the CEE Evaluation Committee and Emerging Technology Collaborative. CEE EMIS criteria will further help program administrators assist their customers to identify EMIS that meet customer needs and provide the IDSM value to meet evolving program goals.

Launched the New CEE℠ Integrated Home Initiative

This seminal Initiative defines a connected, fuel neutral, grid and distribution system interactive efficient home where devices and systems seamlessly communicate to optimize value for both consumers as well as the utility grid and distribution systems. The Integrated Home Initiative supports members' efforts to manage towards new program objectives by providing Minimum Requirements for a suite of North American product specifications that deliver to the four fundamental tenets of energy efficiency; load management and demand flexibility; consumer amenity; and security and privacy. In conjunction with the Initiative, CEE published and is actively maintaining an Integrated Home Product Directory; this database catalogs products that meet the Minimum Requirements and allows members to identify and promote products that comply with the Initiative.

Launched and Administered the First Integrated Home Competition

This inauguration completes the evolution of the longstanding Lighting for Tomorrow platform. The 2021 Competition sought residential connected products, both gas and electric, across a range of categories: heating and cooling, water heating, thermostats, lighting, lighting controls, ceiling fans, plug load controls, window attachments, and other home devices that successfully deliver a positive consumer experience, energy management, and grid benefits. Forty-one entries were reviewed and awarded by an expert judging panel in July. Winners are recognized at relevant industry events, promoted locally through member offerings, and showcased in various brochures and news articles.

Developed and Published Eleven 2020 CEE Residential Program Summaries

These summaries reveal program landscape insights using data gathered from current CEE member programs across the United States and Canada. The resources provide a tool for tracking Initiative participation, reflecting market impact, and helping inform future direction of Committee work. The suite of 2020 program summaries included Existing Homes, New Construction, Low Income, Windows, HVAC, Water Heating, Swimming Pools, Appliances, Consumer Electronics, Lighting, and Electric Vehicles and Supply Equipment.

2021 SECTOR ACCOMPLISHMENTS

Evaluation, Research & Behavior

IEA Hard to Reach Annex and New Center for Equity and Energy Behavior

CEE continued to represent the United States – alongside Sweden, New Zealand, and the United Kingdom – in the UsersTCP by IEA global collaboration on better engaging "Hard to Reach" energy users. As part of this project, CEE staff wrote and published case studies of member programs targeting underserved audiences. These case studies were based on program data, member interviews, and evaluation results, and were published in the report "Subtask 2: Case Study Analysis for the US and Canada." This report summarizes HTR audiences, barriers, program methodologies, and covers the following HTR audiences:

- Manufactured homes (which includes many low income, low-English proficiency, and renter customers)
- Indigenous communities, and
- Small businesses.

Center for Equity and Energy Behavior

Ongoing program administrator interest in better engaging underserved audiences prompted CEE staff to develop a Business Plan outlining the proposed launch of a new Center for Equity and Energy Behavior. This Center will support members as they strive to ensure their customers benefit more equitably from energy efficiency, using a behavioral social science lens to do so, all while leveraging non-energy impacts (NEIs) to ensure these programs are more fully valued. (*The Center was approved by the CEE Board of Directors at the February 3rd, 2022 meeting.*)

Evaluation Committee

The Evaluation Committee will continue our deep dive into non-energy impacts (NEIs). (*Please see the new Metrics article above.*) The Evaluation Committee has also launched a series of peer-sharing calls on this topic during which members share their research:

- Member experiences valuing NEIs to improve program cost effectiveness and demonstrate the true value of programs.
- Where NEIs have been monetized and leveraged in some jurisdictions and how these findings and approaches can be transferred to other jurisdictions.

CEE staff also drafted a survey to energy system planners, energy efficiency program planners, and evaluators to elucidate changing dynamics between planning and evaluation and how these institutional relationships can reveal opportunities to achieve strategic goals (such as energy savings, load shifting, or carbon reduction). This survey will be deployed in 2022 and in addition to finding out where the rubber meets the road in operationalizing policy directives, planners and evaluators will also be able to use the results to compare their current process both quantitatively and qualitatively to the practices at peer companies/organizations.

Research

The Evaluation Committee's research covers both the gas and electric sectors in both the US and Canada for program budgets, expenditures, and energy savings. The Committee will continue to use its revised research approach which limits the burden on program administrators who are asked to participate in numerous, often overlapping data collection efforts looking at the DSM industry. Starting in 2021 and moving forward, the Annual Industry Report, in its new form as a short white paper, will leverage parallel research and data collection efforts from the Energy Information Administration (EIA) and Efficiency Canada for a time series comparison of CEE and EIA data. The Committee will continue collaborating with the American Gas Association (AGA) to cover gas trends on the US side and rely on Efficiency Canada for gas trends in Canada.

2021 SECTOR ACCOMPLISHMENTS

Emerging Technologies Collaborative

Updates to the ETC Catalog of Emerging Opportunity (EO) Assessments

The Catalog of Emerging Opportunity Assessments was created as a reference source for CEE members to find pilot or project assessments on emerging technologies and program approaches that may be relevant to work being done in their own organizations, to give the latest status on those assessments, and to provide specific contacts who can provide further assessment information. The Catalog also groups assessments by type as unique emerging opportunities (UEOs) for easier reference and links those UEOs to relevant CEE Committee work. Ninety-eight new assessments conducted in 2021 by 19 CEE member organizations were added to the ETC Catalog in Q1 2022. The Catalog now contains metadata on 1,540 member assessments submitted by 29 CEE members since 2011, as well as a snapshot of 86 unique residential and multifamily EOs and 152 commercial, industrial, and agricultural EOs that these assessments are grouped under.

2021 EO Selection and Research

The ETC EO selection and narrowing process occurs each year and consists of three discrete phases: nominating EOs considered to be timely and relevant by the ETC Advisory Committee, narrowing EOs to eight to 12 for preliminary research and discussion, and further narrowing to two to four EOs for additional exploration (via extended research and working groups consisting of Committee members and relevant industry partners). The results for each of these phases in 2021 are described below:

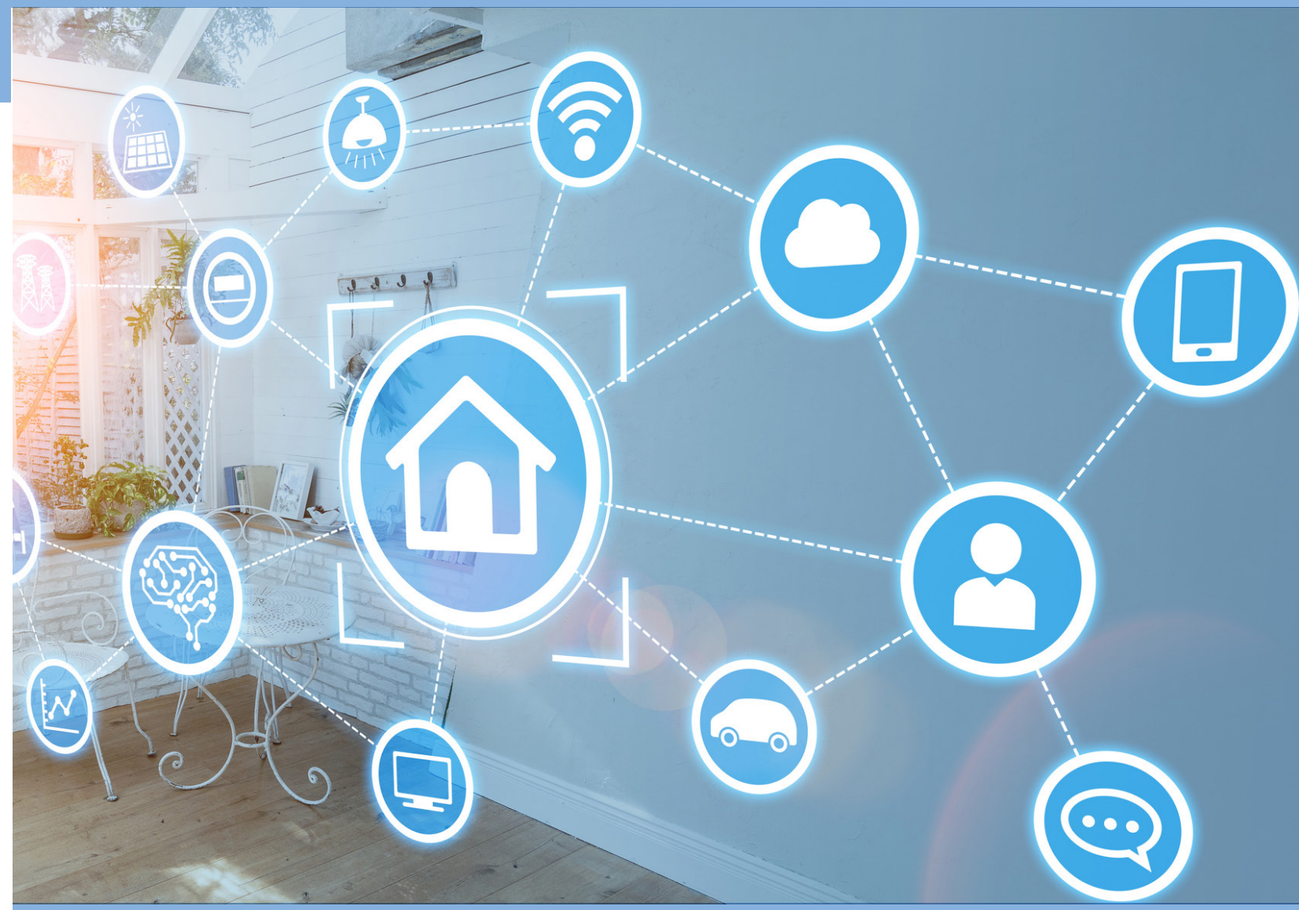
- Nominations: The Committee nominated 36 EOs for initial consideration in 2021 using a vetted scoring process to assess the impacts and feasibility of each opportunity, as well as each member's level of interest. The results of these scorings were compiled and ranked, and the EOs narrowed down to ten that were determined to merit further exploration and discussion:
  - Residential Deep Energy Retrofits.
  - Nonresidential Deep Energy Retrofits.
  - Nonresidential Central Heat Pump Water Heating Applications.
  - Residential HVAC Heat Pump Controls: Analytics, Fault Detection and Diagnostics (FDD), Communicating Capabilities.
  - Artificial Intelligence (AI) and Machine Learning (ML) for Nonresidential Whole Building Energy Management.
  - Nonresidential Zoning, Occupancy Sensing, Real Time, & "Smart" Controls.
  - Grid-Interactive Nonresidential Building Controls.
  - Integration of Nonresidential Gas Heat Pump Water Heaters with Tankless Water Heaters.
  - Secondary Windows for Nonresidential Applications.
  - Residential Bring Your Own Device (BYOD) Program Approaches.
- Preliminary Research and Discussion: Reports were generated for each of the ten EOs describing their impacts, feasibility, and how CEE could contribute to further exploration. Roundtable Discussions were held by Committee members on each, with the objectives of sharing information about assessment, pilot, project, and program experiences related to the EOs; better understanding the specific areas of interest Committee members have in these opportunities; determining the extent of program opportunities; and better understanding the need for additional collaborative efforts to explore or advance the opportunities.
- Working Group Formation for Additional Exploration: Based on these reports and discussions, the Committee determined which of those ten would be considered for extended research over the course of 2021-2023. The top-three ranked EOs were: Grid-Interactive Nonresidential Building Controls, Nonresidential Central Heat Pump Water Heating Applications, and Artificial Intelligence and Machine Learning for Nonresidential Whole Building Energy Management. The ETC began holding Working Groups in late 2021 to begin additional exploration into these three EOs with the purpose of clearly defining the intent and structure of the exploration, confirming that the proposed scopes of work and expected outputs identified in the preliminary research and Roundtable Discussions aligned with ETC expectations (and refine if needed), and discussing what specific areas of research the Committee felt would be most beneficial to achieve their objectives.

Spotlight Roundtables

Spotlight Roundtables provide a dedicated forum for Committee members to present on pilots or other research efforts currently being conducted within their organizations that might be of interest to other members. This work may be relevant to the EOs selected for preliminary or extended ETC research for that year, or it may serve to provide an additional dimension for Committee members to consider—either in their own internal research or for future collective exploration by the Collaborative. Committee members provided information about their own completed, active, and developing assessments via three Spotlight Roundtable discussions, which were attended by 37 individuals from 13 ETC sponsor organizations.

2020 FINANCIALS

Statement of Financial Position			
Assets		Liabilities and net assets	
Cash and investments	$2,672	Current liabilities	$553
Government grants and memberships receivable	$324	Long-term liabilities	$22
Fixed assets, net of depreciation	$43	Unrestricted net assets	$2,005
Other assets	$66	Temporarily restricted net assets	$525
Total assets	$3,105	Total liabilities and net assets	$3,105
Statement of Activities			
Revenue and support from operations		Operating expense	
Membership dues and government grants	$2,811		
Net assets released from restrictions	$534	Program	$2,193
Other income	$160	Administration	$963
Total revenue and support from operations	$3,505	Total operating expenses	$3,156
		Nonoperating activities	
		Increase (decrease) in net assets from operations	$349
		Unrealized gain on investments	$10
		Total increase (decrease) in net assets	$359
		Net assets, beginning of year	$2,171
		Net assets, end of year	$2,530



CEE

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