

The CEE Integrated Home Vision



The CEE Integrated Home is a connected, fuel neutral, grid and distribution system interactive, efficient home where devices and systems seamlessly communicate to optimize value for both consumers and the utility grid and distribution systems. This vision provides a home that can react to the dynamic energy value based on time and location by responding to utility signals allowing CEE members to manage to their core mission of maintaining a safe, low cost, and reliable energy experience. Guided by a consumer focused lens, the Integrated Home provides an added value to consumer energy experience through improved customization and personalization. Further, the Integrated Home vision utilizes artificial intelligence and machine learning to enable automation to energy management and an overall optimized experience.

Guiding Tenets

Energy Efficiency: The Integrated Home is centered on optimized performance of the home and all systems within this boundary. Connected products are limited in the benefit they can deliver if they do not first maximize technical potential to reduce absolute energy use.

Load Management and Demand Flexibility: As both electrical grid and natural gas distribution systems face rapid changes in resource mix and demand, the importance of the dynamic value of energy relative to time and location as delivered to consumers increases.

Customer Amenity: The Integrated Home must afford equal, if not greater, levels of comfort and quality than a baseline home. Consumer satisfaction and positive user experiences are key to achieving the Initiative's long-term market transformation objectives.

Security and Privacy: It is essential to protect and secure consumer data and information across all aspects of the Integrated Home. The utilization and promotion of cybersecurity, privacy, and consumer safety practices must be embedded across the Integrated Home products.

Initiative Objectives

- ▶ Maintain safe, low cost, and reliable energy delivery and service to all residential customers with minimum carbon impact.
- ▶ Drive increased production and uptake of connected products and services that yield a positive consumer experience and provide the capabilities necessary to be utilized in member IDSM programs by adhering to the Integrated Home core tenets.
- ▶ Facilitate customer participation in member programs and grid services through personalized consumer engagement, optimized energy management, and enhanced amenity, as indicated by customer satisfaction and program participation metrics.

Initiative Scope

The CEE Integrated Home includes the home envelope and connected products within the residential home bounds. The Initiative provides flexibility for programs to adopt the products and home envelope strategy that



best suit individual IDSM needs. Products specified in CEE Integrated Home Version 1.0 include:

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

Initiative Strategy

Minimum Elements

Define capabilities essential to IDSM program needs that any product, device, or system must meet to comply with the CEE Integrated Home Initiative

Product Directory

Public facing database that catalogs qualified products list complying with the Minimum Elements for members to leverage, updated quarterly

Annual Competition

Platform to promote and encourage adoption of efficient, quality, connected products that uphold the Minimum Elements with innovative and interoperable design

Minimum Elements

The Minimum Elements define requirements that any product, device, or system must meet to comply with the CEE Integrated Home Initiative. They provide articulation of the four tenets through foundational elements that reflect attributes valued by CEE members and serve as an important prerequisite to requirements for individual product specifications with associated test procedures, verification processes, and qualified products lists.

- ▶ Laboratory Rated Energy Efficiency
- ▶ Load Management Capabilities
- ▶ Open, Nonproprietary Communication Standards
- ▶ Actionable Savings Through Energy Consumption Reporting
- ▶ Operational Savings Capabilities
- ▶ Consumer Override Capabilities
- ▶ On-Premise Connection
- ▶ Load Management and Energy Consumption
- ▶ Data Sharing
- ▶ Consumer Data Security
- ▶ Loss of Connectivity to Utility
- ▶ Local Storage of Schedules

Optional Elements in Version 1.0 include Energy Consumption Reporting Intervals, Responsiveness to Price Signals, Multiple Pathways to Connect, and Sustainable Operations