Smart Energy Homes

Electrification and Advanced Integrated Building Energy Solutions

MISSION

Enabling residential decarbonization by transforming homes to be efficient and flexible grid assets.

ABOUT THIS PROJECT

As the region moves towards a decarbonized energy system, our need is growing for homes that are efficient, flexible, and responsive to the grid as well as customers. The Smart Energy Home has been defined as just that (NEEP 2016): one that optimizes energy use to save energy, drive efficiency retrofits in the home, can interact dynamically with the grid, and can manage new distributed energy resources as they come online. As electric grid, owners, operators, and regulators enable the grid to send signals to manage building energy loads, many major home appliance manufacturers now equip new products (HVAC, water heaters, and plug loads/appliances) with smart controls to serve customer needs while responding to grid load management signals. To guide and accelerate this market transformation, NEEP serves as a regional and national convener and subject matter expert to assist state and federal programs, efficiency program administrators, and industry to work and learn together to harness the power of smart energy home and home energy management systems (HEMS) that enable an affordable, reliable, resilient, and low carbon energy system.

LONG-TERM MARKET TRANSFORMATION GOALS

2022

Virtually all smart products are DER-ready and can work as part of an integrated Smart Energy Home system.

2030

50% of Northeast homes are "energy smart" (i.e., have at least two "energy smart" systems - HVAC, water heating, plug loads/appliances).

30% of existing homes and buildings are benchmarked and retrofitted to reduce carbon emissions 50%.

2019 PROJECT OUTCOMES

1. Six more efficiency programs in the Northeast U.S. and Canada offer incentives for smart homes or smart home energy management products joining CT, MA, MD, NH, NJ, NY, RI, and VT.

2. Programs in five more Northeast states join MA, MD, NY, RI, and VT in NEEP's regional effort to advance smart energy homes by conducting pilots, hosting innovative programs, and/or conducting research.

3. Most major manufacturers of smart energy home products serving the Northeast U.S. offer DER-ready products by the end of 2019.

REGIONAL TRENDS & LEADERS

- NEEP's 2016 Smart Energy Homes Market Transformation Report identifies major opportunities to accelerate smart thermostats, home energy management technology and solutions for low-carbon water heating and plug load and appliance efficiency.

- Efficiency programs in MA, MD, NY, and VT offer smart home energy pilots to assess and demonstrate a variety of new smart technologies.

- Efficiency programs in MA and VT are partnering to test and assess the role of smart thermostats to optimize efficient home thermal energy performance through partnerships with Fraunhofer Institute and Vermont Energy Investment Corp (VEIC).

- Home performance contractors in MD, NJ, NY, and VT increasingly offer smart home energy products and systems integration as a customer service.

2019 Strategies with Associated Products, Services and Technical Assistance

STAKEHOLDER ENGAGEMENT

NEEP will engage diverse stakeholders - industry, efficiency programs, state and local government, national labs, U.S. DOE, U.S EPA and advocates - to develop and advance long-term regional market transformation strategies to speed the market introduction and adoption of smart home technologies that facilitate residential decarbonization.

- Northeast Smart Energy Homes Working Group (also known as the HEMS Working Group)

- *New* Decarbonization and Smart Energy Homes webinar –three-part series

- Co-lead the Smart Homes track at HPC National Conference

- Presentations and briefings on residential decarbonization and the smart energy home

TRACKING & ANALYSIS

NEEP will continue to track and report on relevant smart energy home technologies trends and program activity, pilots and technology demonstrations across the region, including the role of such devices to optimize home energy performance, enable demand response and support efficiency program evaluation, measurement and verification.

- Smart Home Market Tracking Analysis, delivered quarterly to working group members.

TOOLS & GUIDELINES

NEEP will help accelerate the availability, adoption, and use of quality, reliable inter-operable smart energy home technologies to meet the future regional needs for reliable, resilient, affordable and low carbon energy.

- NEEP's Smart Energy Home Product Directory provides access to transparent, comparative smart energy home product information via with links to other relevant resources.

- *New* Advising and co-chairing U.S. EPA's ENERGY STAR Smart Home Energy Management Systems (SHEMS) Distributed Energy Resources and Demand Response Workgroup.

NATIONAL/REGIONAL COLLABORATION

NEEP will track, contribute to, and help disseminate relevant research, policies, programs and initiatives, and attend related conferences and events regionally and nationally to build market momentum to overcome identified market, technology and policy barriers.

- Monitor, communicate, present and coordinate with national and regional organizations (e.g., Regional Energy Efficiency Organizations, U.S. DOE, U.S. EPA, Home Performance Coalition, ACEEE, CEE, E-Source, advocacy organizations, etc.)

neep