

Bethany Sparr, National Renewable Energy Lab (NREL)

Title: Lessons Learned from a Smart Home Demonstration in New York City

Abstract: The surge in home energy management systems (HEMS) over the past decade coincides with several notable technology and market trends, including new emphasis on grid modernization and an increase in embedded sensors and controls capabilities in smart home appliances. Smart home technologies have the potential to provide significant benefits to both consumers and utilities, but broad market uptake has been difficult to achieve. This NYSERDA-funded demonstration project sought to understand better why consumers have been slow to adopt HEMS, and to develop implementation and stakeholder engagement strategies that efficiency programs across New York State can leverage to promote effective use of smart home products. In collaboration with ConEdison, NREL deployed a handful of HEMS solutions that can be deployed at scale using technologies that are mature and readily commercially available. Numerous barriers to adoption were identified after installing packages of HEMS that included smart thermostats, smart LED bulbs, smart plug-load controllers, voice assistants, and advanced power strips, in mix of single-family and multifamily homes in the New York City metro area. Challenges ranged from technology related (such as thermostat incompatibility) to installer and user experience (such as navigating setup of various apps). Technology in the HEMS space will likely continue to improve and become simpler to use over time, but how do we address the issues of consumer perception? How do we prevent bad experiences today that can sour a consumer on smart home products in the future? In the face of increased distributed energy resources and load management needs, HEMS could be a powerful tool for utilities to help ensure a cleaner, more reliable electric grid, while simultaneously improving comfort and electricity cost for individual homeowners. But this future can only be achieved if consumers welcome HEMS into their homes.