



# The Big Three (of the Smart Home)



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Northeast Energy Efficiency Partnerships

Friday, January 26<sup>th</sup> 2018, 1-1:45pm

Public Webinar

# Housekeeping



- This webinar is being recorded
- The slides and recording will be posted online shortly
- All lines will remain on mute—please type in your questions at any time and we will answer during Q&A
- Please complete the survey which launches at the end of the webinar
  
- Note on acronyms:
  - Home Energy Management Systems = HEMS
  - Somewhat interchangeable with Smart Energy Home

# Northeast Energy Efficiency Partnerships



*“Assisting the Northeast & Mid-Atlantic Region in Reducing Total Carbon Emissions 80% by 2050”*

## Mission

Accelerate energy efficiency as an essential part of demand-side solutions that enable a sustainable regional energy system

## Vision

That the region embraces next generation energy efficiency as a core strategy to meet energy needs in a carbon-constrained world

## Approach

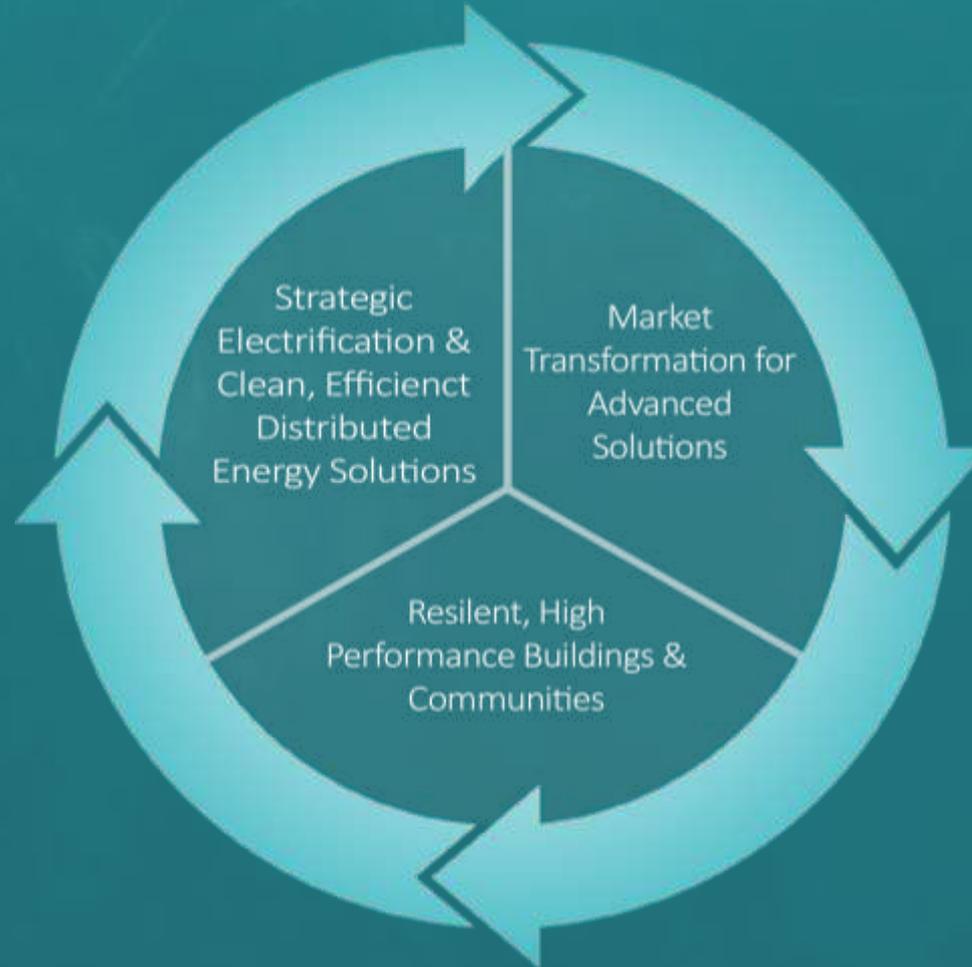
Overcome barriers and transform markets through *Collaboration, Education, and Enterprise*



**One of six REEOs funded in-part by U.S. DOE to support state and local efficiency policies and programs.**

# How do we meet our mission?

*“Assisting the Northeast & Mid-Atlantic Region in Reducing Total Carbon Emissions 80% by 2050”*



# The Smart Energy Home is one way to get there

This is the goal we set forward in our 2016 Market Transformation report

By 2030, **more than 50% of total homes** (75% of new construction) in the Northeast and Mid-Atlantic have at least two “energy smart” major systems (HVAC, water heating, plug load). This means they:



Can drive other home improvements through a feedback mechanism



Optimize major system energy savings



Can optimize devices for the grid (through time-of-use pricing, load shifting, demand response)



Can optimize distributed energy resources

# Goal: Broader Smart Home Adoption



- Brief: The Smart Energy Home and Cross-Promotional Opportunities in Energy Efficiency
- Ideal Audiences:
  - program administrators, home performance professionals, contractors, program implements, program planners, energy efficiency marketers, smart home industry
- Basic premise:
  - Efficiency is looking to bring in new participants to residential retrofits.
  - Many are looking to bring in new customers to the smart home.
  - Let's find opportunities for cross-promotion across these two groups, the efficiency seekers and the smart home chasers, and increase participation in both efforts.



## The Smart Energy Home and Cross-Promotional Opportunities in Energy Efficiency

*Northeast Energy Efficiency Partnerships (NEEP), December 2017*

### Introduction

As residential efficiency programs are looking for new ways to bring in participants, the individuals purchasing smart home devices offer a potential new group of customers for greater efficiency. Likewise, customers who are investing in home efficiency retrofits may be an untapped audience for outreach and education on smart home products. This brief works to identify opportunities for cross-promotion across these two groups, the efficiency seekers and the smart home chasers, and increase participation in both efforts.

### Parameters: What do we mean by "Smart Home" and "Energy Efficiency Retrofit"?

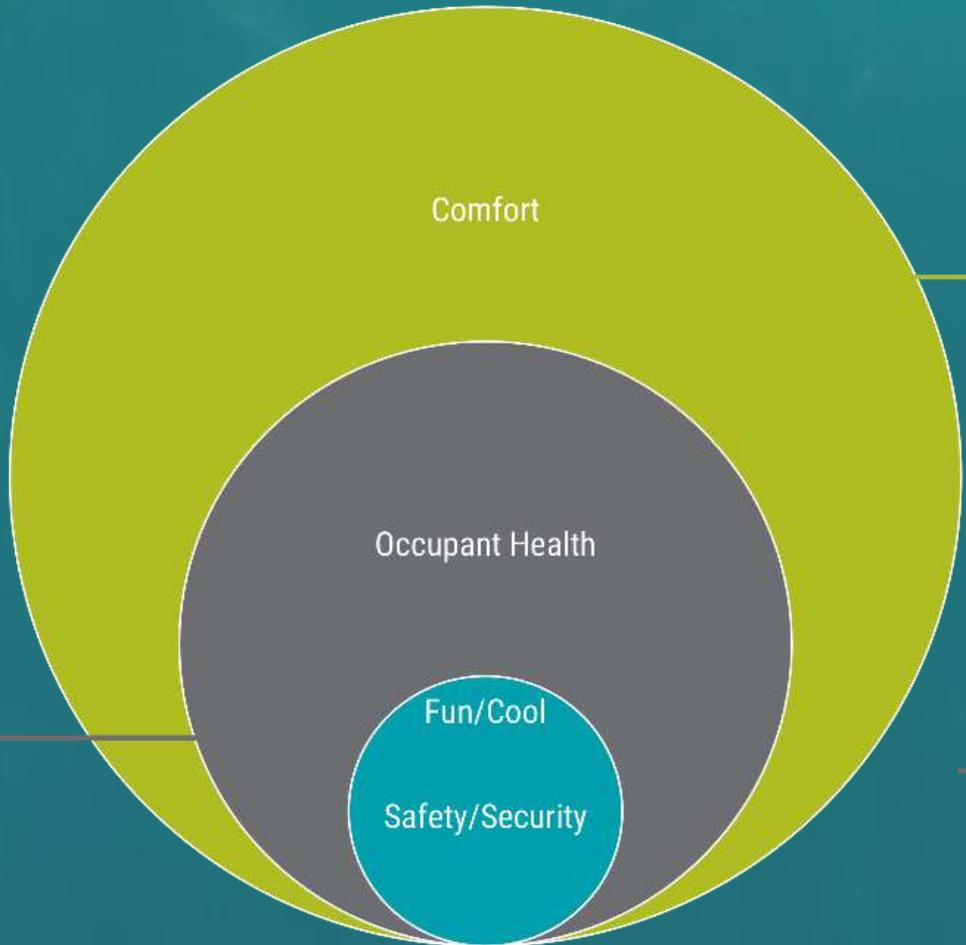
For the purposes of this document, we are focusing on narrow elements of the smart home and residential energy efficiency retrofits. Within the smart home, we are focusing on those products and technologies that offer energy savings; smart HVAC and water heating controls are the largest and most commercialized energy savings opportunities at present, though plug load and appliance controls do offer benefits in some cases.<sup>1</sup> For energy efficiency retrofits, we are referring to larger residential investments in energy efficiency. These could be home performance envelope improvement or large investments in new, highly efficient HVAC or water heating equipment such as air source heat pumps or heat pump water heaters. Retail efficiency investments, such as lighting and appliances, certainly have a role to play in improving residential efficiency, but are less of a focus for this document.

### The Opportunity: Bring More Stakeholders into Efficiency

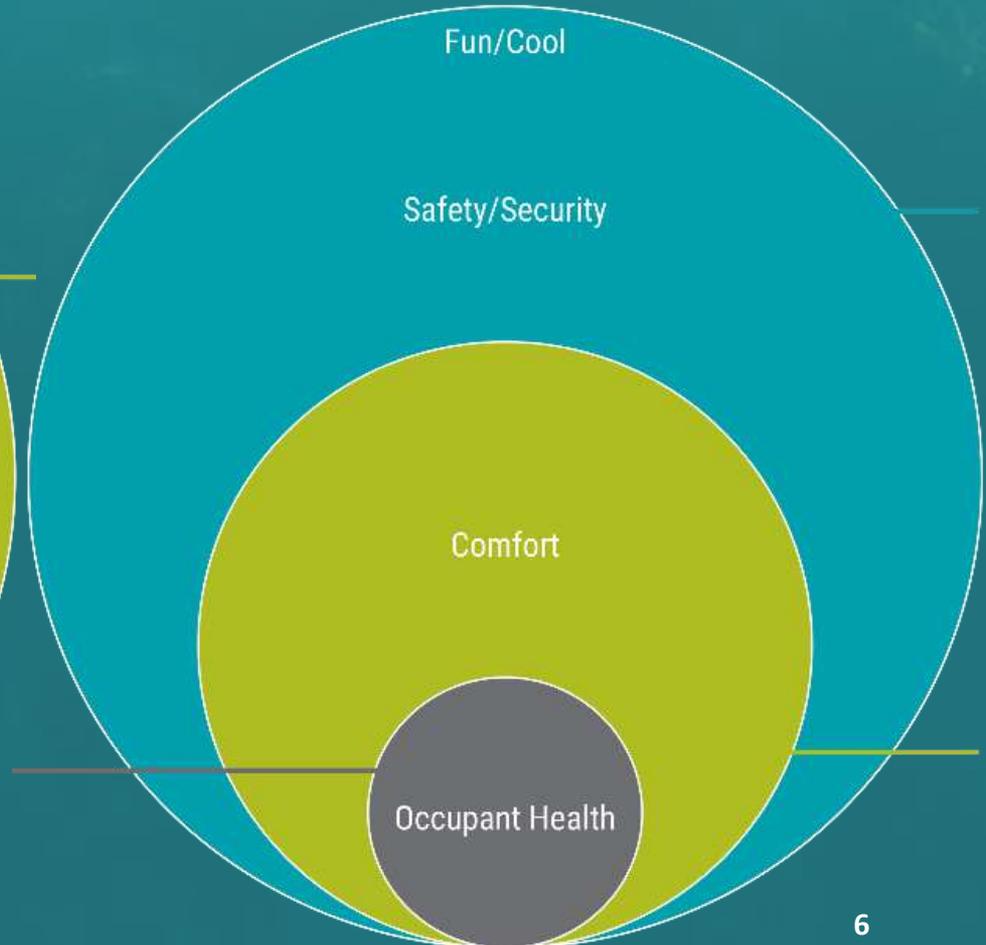
If you've ever tried to explain "energy efficiency" to friends or family, you've likely struggled with how

# Goal: Broader Smart Home Adoption

Consumer Motivations for Retrofit Investment



Consumer Motivations for Smart Home Investment



# Goal: Broader Smart Home Adoption

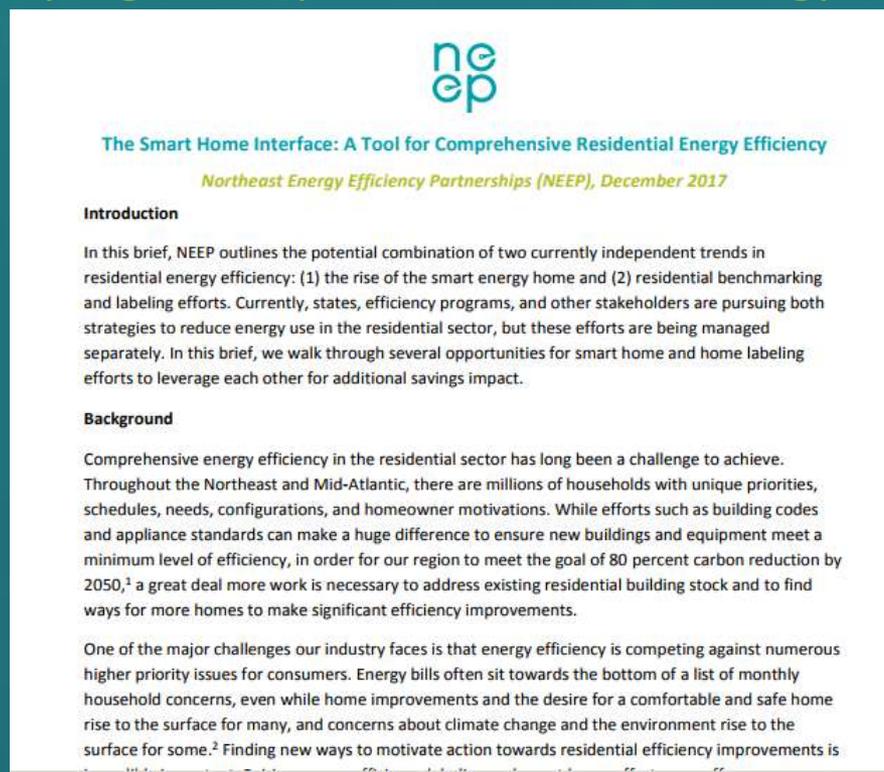
- In 7 pages, we slice and dice this issue covering:
  - Gaps in interest and understanding
  - Customer identities across these groups
  - The process for influencing decision making: how and when
  - The role of branding (ENERGY STAR), gender differences, and how both efforts can be broadened to reach wider goals of 50% adoption

<http://neep.org/smart-energy-home-cross-promotional-opportunities>

# Goal: Smart home products drive other home efficiency improvements (1)



- Brief: The Smart Home Interface: A Tool for Comprehensive Residential Energy Efficiency
- Ideal Audiences:
  - labeling and benchmarking professionals, program administrators, smart home industry, software vendors, program implementers, state energy offices, real estate professionals
- Basic premise
  - The smart home is gaining popularity.
  - Efficiency efforts are ongoing to label and benchmark homes.
  - Let's bring these two trends together to have a bigger impact on energy savings.



# Goal: Smart home products drive other home efficiency improvements (1)

- Recipe for success:

1 part labeled home

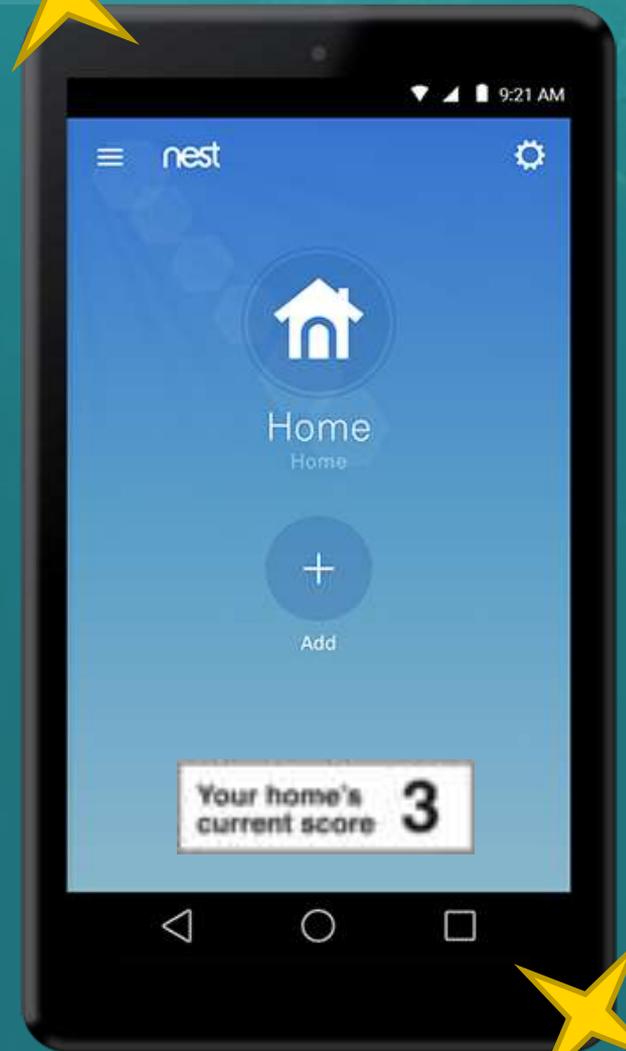
1 part smart home device

Mix well

Plate attractively (presentation is key!)

Serve frequently, giving it a presence of mind

(Artistic rendering of concept)



# Goal: Smart home products drive other home efficiency improvements (1)



- In 6 pages, we cover:
  - The theory behind energy efficiency labeling
  - The smart home user interface
  - Mechanics of integration
  - Data visualization
  - Behavioral efficiency enabled through smart home interface
  - Static scores vs. dynamic energy monitoring
  - M&V implications

<http://neep.org/smart-home-interface-brief>

# Goal: Smart home products drive other home efficiency improvements (2)



- Brief: The Contractors Guide to the Smart Home
- Ideal Audiences:
  - Contractors! (Home performance, HVAC, Solar, etc)
  - Program administrators, implementers, planners
  - Smart home industry
- Basic premise
  - More home performance upgrades are critical to reaching carbon goals, but that work is largely unseen and underappreciated.
  - Smart home technologies can help solve this problem in many ways.

**neep**

**The Contractors Guide to the Smart Home**

*Northeast Energy Efficiency Partnerships (NEEP), December 2017*

**Introduction**

The hype around the concept of a “smart home” has been growing for years, but most homeowners have only recently started incorporating smart products into their homes. While these products and devices may seem gimmicky—with their smartphone-based app interfaces and goofy names<sup>1</sup>—many of them can actually be complementary to existing home performance, HVAC, or even solar portfolios. Smart home products may provide a tangible perspective into the often-unseen work done to improve a home’s performance by providing insight and/or control of energy-using elements. This could become the “cherry on the sundae” for contractors looking to ensure satisfied, repeat, and referral-ready customers. In some cases, the products may even help contractors do their job better.

**Smart home technologies**

It won’t make sense for contractors to incorporate all smart home products into their work. Just as not

# Goal: Smart home products drive other home efficiency improvements (2)



Technology	Why consider it?
Smart thermostats	Exacerbate energy <b>savings</b> . <b>Visually appealing reminder</b> of home performance work done. Rebates often available. Relatively easy installation. Training available.
Health/safety monitors	<b>Track health and safety concerns</b> (indoor air quality, smoke, and carbon monoxide). Logical, smart leave-behind. No direct energy impacts. Relatively easy installation.
Smart lighting	Low cost. <b>High visual impact</b> . Opportunity for upsell. <b>Gateway product</b> into the smart home. Relatively easy installation. Uncertain energy impacts beyond being an LED.
Smart home apps	Light touch, sometimes <b>FREE</b> . Helpful leave-behind. <b>Low set-up</b> needs. Could show savings from work performed. Possible monitoring tool with <b>monthly subscription fee</b> .
Smart water heating	Additional energy <b>savings</b> . Potential for utility rebates. May requires some <b>electrical and plumbing expertise</b> to install.
Load monitoring hardware	<b>Subscription/monitoring</b> for emergency alerting. May require <b>electrical expertise</b> to install. Likely low energy impact, but could show energy savings from work performed
Other smart home devices	<b>FUN</b> . Smart door locks and doorbells can benefit by <b>allowing workers on-site</b> when the homeowner is not available. Cameras, monitors, garage door openers, blinds, appliances, plugs, speakers, switches etc. <b>are professional installation</b> opportunity.

# Goal: Smart home products drive other home efficiency improvements (2)



- In 6 pages, this brief cuts to the core of:
  - Which smart home technologies can be of most benefit to contractors
  - How to bring smart home devices into contractor businesses
  - Efforts using smart home data to find new customers
  - Attracting a new workforce, the “smart home technician”

<http://neep.org/contractors-guide-smart-home>

By 2030, more than 50% of total homes (75% of new construction) in the Northeast and Mid-Atlantic have at least two “energy smart” major systems (HVAC, water heating, plug load). This means they:

Claiming Savings from Smart Thermostats: Guidance Document



Optimize major system energy savings



Past Workshops

Product List

HEMS Working Group



Opportunities for HEMS in Advancing Residential Energy Efficiency Programs

The Smart Energy Home: Strategies to Transform the Region

Can optimize distributed energy resources

The Smart Home Interface

Can drive other home improvements through a feedback mechanism

The Contractors Guide to the Smart Home

Contractor Smart Home Trainings



Can optimize devices for the grid (through time-of-use pricing, load shifting, demand response)

Smart Energy Home Virtual Workshop

(coming soon) HEMS, Strategic Electrification, and DERs

# Conclusions

- We are continuing to chip away at our larger goal, providing useful discreet resources along the way
- Continued coordination of the HEMS Working Group
- HPC National Smart Homes Track
  - April 23-26, including 9 session and reception
- December 2017 Smart Energy Homes Virtual Workshop  
(recording available online)
- Upcoming whitepaper: *Assessing the Role of Smart Energy Homes in Strategic Electrification and Integration of Distributed Energy Resources*
  - New deliverable for 2018, reach out if interested in getting involved
- Research poll

# Thank you to...

- NEEP's Strategic Marketing and Communications Team
- E4theFuture
- NEEP State Partners
- NEEP Allies
- The Home Performance Coalition
- Brief Reviewers from:
  - Bidgely
  - Consortium for Energy Efficiency
  - ecobee
  - Eeme
  - E Source
  - L'Image Home Products
  - Midwest Energy Efficiency Alliance
  - National Grid
  - National Renewable Energy Lab
  - Nest
  - U.S. Environmental Protection Agency
  - Xergy Consulting

# Upcoming Events

## NEEP events:

- Smart Energy Homes Resources Webinar – January 26
- Rapid Fire on Advanced M&V Webinar – February TBD
- Advanced R&D Connector Workshop – March 1

## Industry events:

- New York Regional Home Performance Conference & Trade Show – February 13-14
- AESP Annual Conference – February 19-22
- NFMT2018 – March 20-22 (*free conference*)
- GLOBALCON – March 21-22 (*reduced rates with NEEP*)

## Like what you see?

- Consider becoming a NEEP Ally to gain more Access, Insights, and Visibility into our regional efficiency work
  - <http://www.neep.org/network/allies>
- Reach out to Lucie Carriou, [lcarriou@neep.org](mailto:lcarriou@neep.org) to discuss further.



# Reminders

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THANK YOU!



Happy Friday!

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