

Technology Discussions: Residential



Smart Home Technologies

Rick Counihan, Nest

Jen King, ACEEE

Richard Caperton, Oracle (moderator)

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Nest: Smart Home Technologies

November 2, 2017

Agenda

- Nest Update
- Innovative Eclipse Demand Response
- New Low-Income Initiative

Nest Update

2011





EPA Finalizes ENERGY STAR Ratings For Smart Thermostats, Nest First To Qualify

March 9th, 2017 by [Joshua S Hill](#)



The US Environmental Protection Agency has finalized its first-ever ENERGY STAR specifications for smart thermostats, a move which resulted in the Nest Learning Thermostat becoming the first smart thermostat to receive an ENERGY STAR rating.

The first-ever ENERGY STAR specifications for smart thermostats were determined back on December 23, 2016, but only announced this month by the Environmental Protection Agency (EPA). Unlike other ENERGY STAR-rated products, however, smart thermostats provided a challenge for the EPA, which explained that the "challenge in identifying household thermostats that save energy is accounting for how an individual

2017



Still, Saving Energy is at the core....

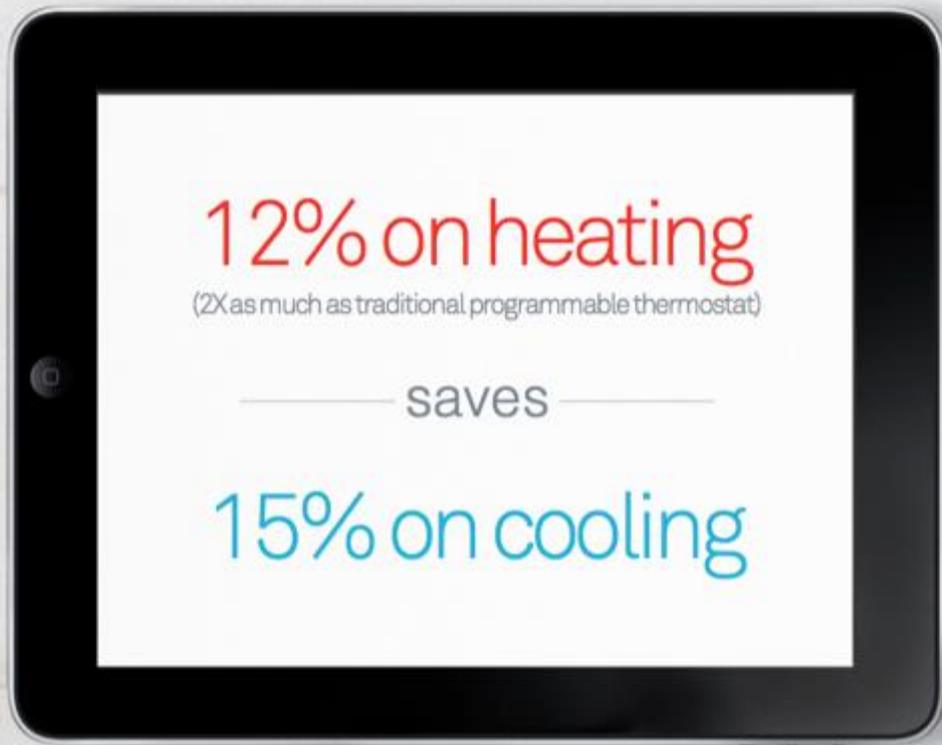


Saved

14B kWh
\$1B worth of energy

We have proof.
nest.com/realsavings

\$130 to \$145
average savings a year



Based on independent studies by  Energy Trust of Oregon and  VECTREN and  NIPSCO

So we made
a new thermostat...



...at a lower price

The Thermostat E includes all of Nest's proven energy-saving features

AutoSchedule

Home/Away Assist (optional geo-fencing)

Eco Mode

Nest Leaf (behavioral feedback)

Airwave

Heat Pump Balance

True Radiant

Energy History

Sunblock



Eclipse

“One Click”



Nest's Solar Eclipse Rush Hour

By the numbers



750,000+

Devices participated



700

MW of load reduction



0

Issues

Virginia Eclipse

Approximately:

- 24,000 Virginians participated.
- 160 MW of load drop within the PJM.

Read more @

<https://nest.com/blog/2017/08/10/solar-eclipse-meet-the-nest-thermostat/>

Eclipse User Experience: Opt in with One Click



Special Help for Low-Income Customers

Energy costs are a burden for families

\$24,998

Low income
median annual income
(US average \$53,988)

\$1,692

Low income
annual utility spending
(US average: \$1,932)

7.2%

Low income
energy burden
(US average: 3.5%)

Traditional Weatherization Addresses Envelope, Appliances



Nest's Newest Initiative for Low-Income Programs

3



Types of partners, including governmental, utilities, and non-profits

1M

Nest Thermostats to low and moderate income families

5



Years to reach this goal

Rick Counihan

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Smart Home Technology

VAEEC Fall Meeting November 2, 2017

Jen King, Senior Buildings Analyst

American Council for an Energy-Efficient Economy (ACEEE)

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Smart homes: Definition and current trends

Technology

Smart thermostats

Water heating controls

Smart LEDs

Security systems



Opportunities

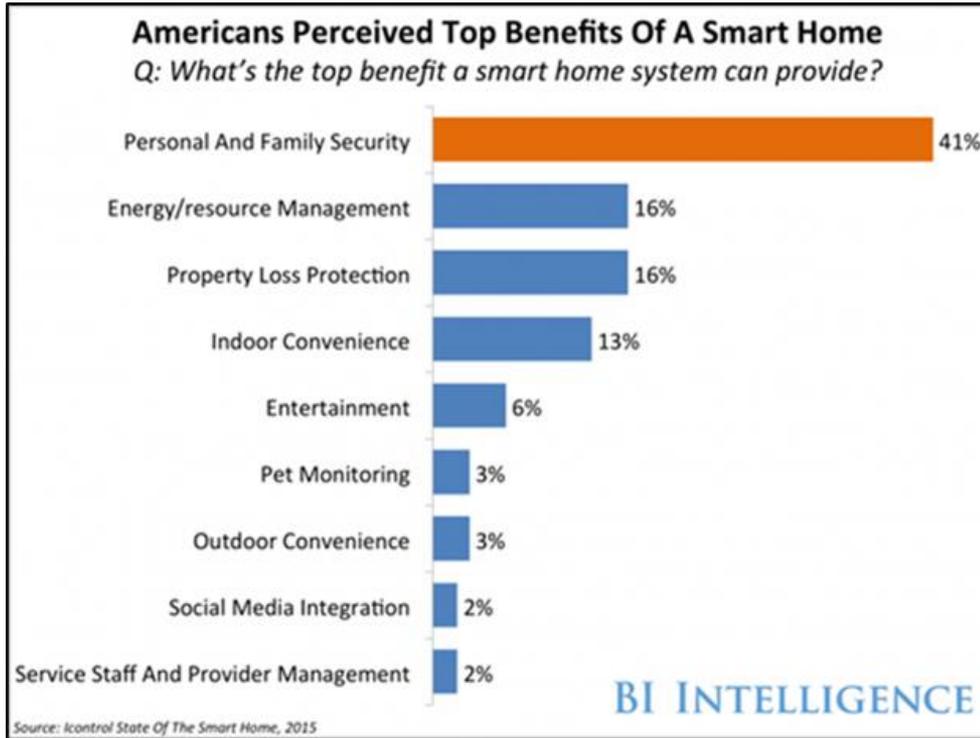
Remote control and automation

Integrating disparate systems

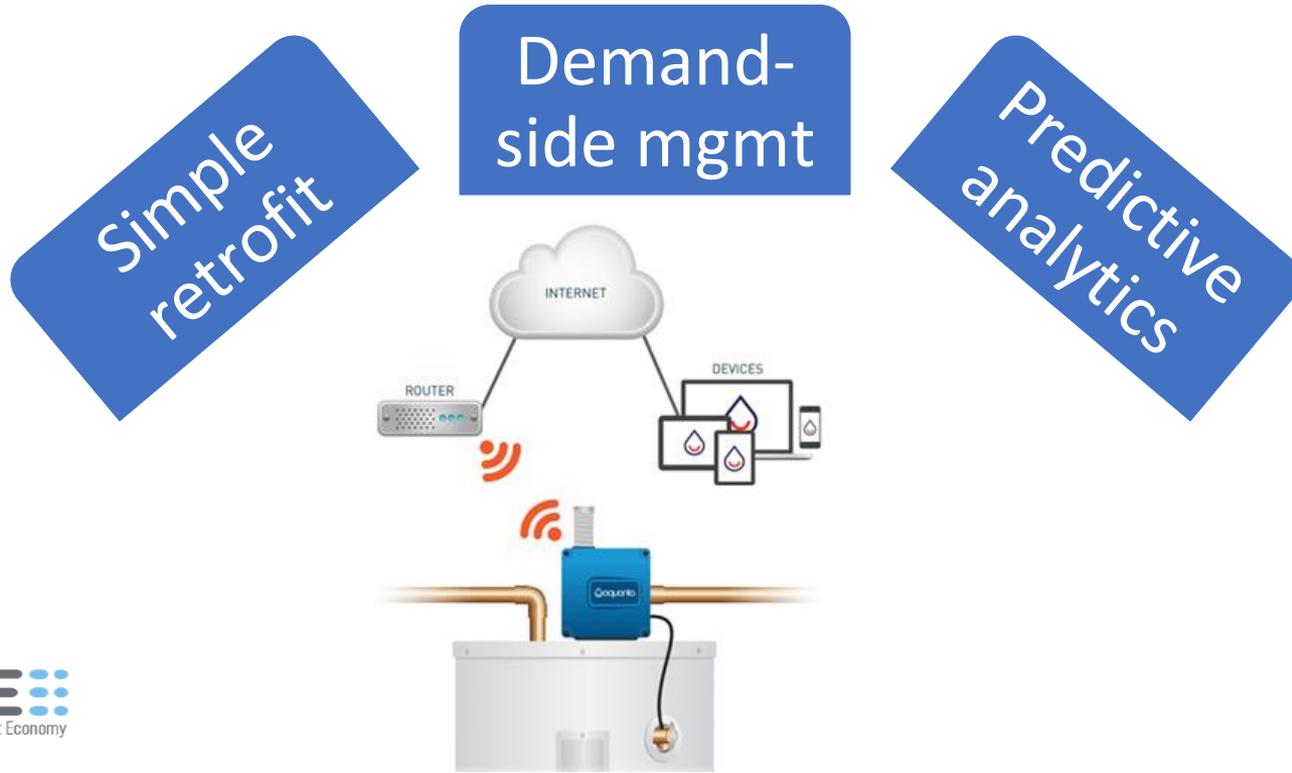
Demand response

Virtual energy audits

Leading driver: non-energy benefit



Grid-connected water heaters represent an up-and-coming smart technology.



Barriers to smart home technologies

- Purchase cost ➤ relief through rebates
- Interoperability ➤ open protocols
- Consumer acceptance
 - Data privacy concerns loom
- Internet access
 - <50% of low-income households subscribed
- Valid use cases

Preliminary conclusions

How to prove savings:

1. Need more use cases, especially for incremental and combined savings.
2. Leverage the data that smart devices can collect to prove cost-effective savings for program EM&V.

How utility programs can help:

1. Incorporate smart technologies into existing retrofit programs.
2. Coordinate offerings through nontraditional partners (e.g., home performance contractors, third-party providers).

How to continue growth:

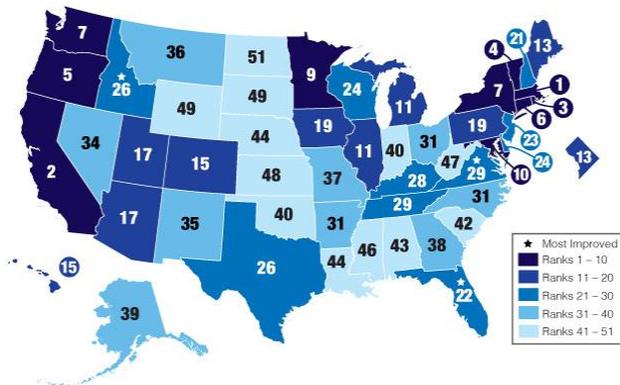
1. Industry and government working together.
 - R&D will help continue to drive down the cost of smart technologies.
 - Government can enact policies that may increase adoption.

A look at the Commonwealth

2017 State Scorecard

Ranked #29

“most improved”



Energy Code

Update due March 2018

2015 IECC (w/ amendments)

- duct and envelope testing

Incentives

High eff. gas and electric water heaters

AC and water heater switches (for DR)

Wi-Fi thermostats

Smart power strips

Questions?



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The Nest logo consists of the word 'nest' in a white, lowercase, sans-serif font, centered within a solid blue square.