



Smart Thermostats and ASHPs

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Status of Smart Thermostats



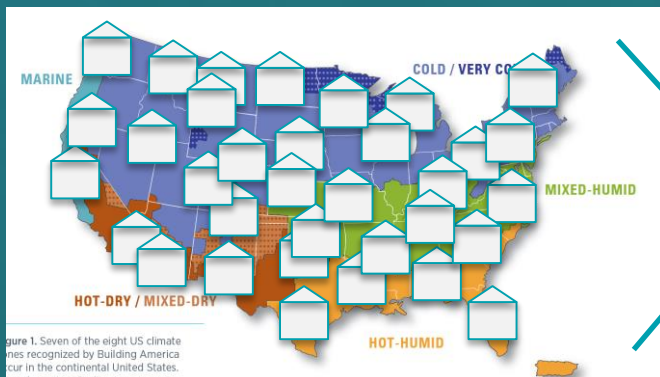
- Confused terminology, about the same functionality
 - Smart, wi-fi, learning, connected—all hopefully employing advanced analytics to optimize HVAC usage
- Penetration:
 - ~15% of homes
 - ½ of thermostat sales (~6 mil smart tstats sold in 2017 and growing)
- Many pathways into the market
 - Through utility programs, retail, security providers, HVAC installation/add-ons
- Growing interest for Programs, many incentives available
 - Programs doubling down as residential lighting savings go away, something of a replacement widget
 - Not cheap. Prices in the \$150-\$250 range, incentives to motivate sales

ENERGY STAR Smart Thermostat Specification



- In the works since ~2010, finalized Dec 2016
- Seven models currently certify:
- How it works:
 - Thermostats meet basic functionality and capability requirements
 - Thermostats run field data from hundreds of US homes through EPA software
 - Data gets aggregated and analyzed to establish savings, using runtime reduction as a proxy for savings

Service Brand Name	Service Model Name
Carrier	Carrier Cor
Ecobee	ecobee4
EcoFactor	simple S100
Nest	Nest Learning Thermostat
Ecobee	ecobee3
Ecobee	ecobee3 Lite
Bryant	Bryant Housewise



Heating savings $\geq 8\%$

Cooling savings $\geq 10\%$

Figure 1. Seven of the eight US climate zones recognized by Building America occur in the continental United States. http://www.eia.doe.gov/pub/energy/usa/energy_zones.pdf

Threats and Opportunities for ASHPs



- Current treatment of ASHPs in ENERGY STAR Spec:
 - Smart Thermostat Manufacturers must report “**Average resistance heat utilization for heat pump installations (RU)**,” BUT lack of consistency for how this is done
 - Emergency vs. auxiliary heat?
 - Result: HP homes may be **kicked out** of metric for lack of data and/or may **not be helping** the thermostats earn efficient credit for runtime reduction
- For future consideration:
 - “If resistance heat utilization data indicates substantial variance among certified CT products, EPA may consider including requirements to ensure ENERGY STAR CT products **effectively minimize the use of supplemental electric-resistance heat**”
 - The door is open to work with EPA
- If coordination between ENERGY STAR and the ASHP industry does not happen, more and more consumers will by Smart Thermostats and expect them to work with their HVAC
 - Problem for the industry if the common ground is not reached.

THANK YOU!



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