

UTILITY ENERGY FORUM

COMMUNICATING THERMOSTATS: OPPORTUNITIES AND CHALLENGES



Programmable Thermostats 2.0: Embracing the Technological and Behavioral Challenges

OVERVIEW

□ Programmable thermostats 1.0

communicating

□ Programmable [^]thermostats 2.0

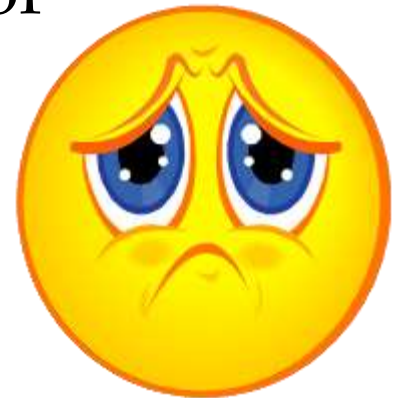
- Why do we believe it is better?
- How do we ensure real savings?



PROGRAMMABLE THERMOSTATS 1.0

Rebate programs largely failed to produce savings

- Savings highly variable
- Disappointing number of instances of increased energy use



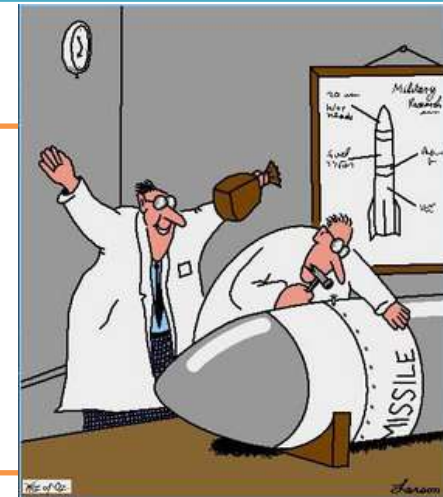
WHY?

What did the evaluators say?

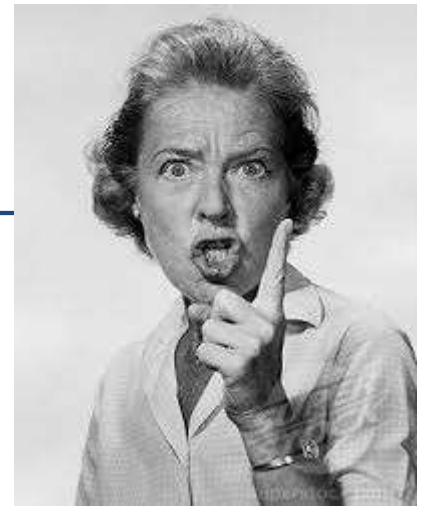
- **Not installed**
 - Left to customer to install
- **Not used correctly**
 - Easily programmable – if you are a rocket scientist

What they didn't tell us

- Automation doesn't always trump conservation



WHY? I'LL TELL YOU WHY...



- ❑ Wrong program design
 - Widget-based program

- ❑ Ignored behavioral aspect
 - Customer expectations
 - Customer acceptance
 - Customer reaction
 - Customer satisfaction



WHY? I'LL TELL YOU WHY...

- ❑ All energy efficiency programs are technological/behavioral hybrids
- ☑ Occupant interaction with the thermostat is the primary driving factor for energy savings

COMMUNICATING THERMOSTATS

Thermostat 2.0

- Smart
- Communicating
- Web-enabled
- WiFi
- Connected
- iStat? Cloudstat?
- The singularity
 - Skynet-stat??



WHY DO WE BELIEVE 2.0 IS BETTER?

Greatly improved features that provide benefits customers want

Easy to use

Remotely accessible

Advanced programming features

- Occupancy control
- Feedback
- Supervision



WHY DO WE BELIEVE 2.0 IS BETTER?

Commercial application

- Savings potential is linked to remote accessibility, remote maintenance, alerting function, supervisory control
- Enables easy seasonal maintenance of temperature control setpoints

WHAT DO THE RESEARCHERS TELL US?

- ❑ Savings are highly variable
- ❑ Customer acceptance is higher
- ❑ Connectivity – not everyone has it, not everyone uses or maintains it
- ❑ Existing conditions matter

Is manual control the root of all evil? No, it is not.

HOW DO WE ENSURE SAVINGS?

- Acknowledge
 - The customer experience will directly impact the savings potential and the ultimate success of the program
- Plan accordingly
 - Program objective
 - Program control
 - Key performance indicators

PRE-APPROVAL CONSIDERATIONS

- Assessment of existing conditions
 - Existing thermostat (compatibility)
 - Typical thermostat control
 - Thermostat location
 - HVAC system type, potential deficiencies
 - Connectivity

Allow you to provide the right message to the customer regarding expectations, satisfaction, energy savings

PRE-APPROVAL CONSIDERATIONS

QPL – qualified product list

- Not all thermostats are created equal
- Utilize available QPLs
- Heat pumps – compatibility, electric heat control logic

INSTALLATION CONSIDERATIONS



Professional installation

Commissioned – programmed to enable savings

Commercial program – supervisory control, alerts

Connectivity

Customer training/support plan

POST INSTALLATION CONSIDERATIONS

Customer ongoing support

Persistence of savings

- Final incentive payment after 1 year
- Allow remote access to thermostat
- Customer satisfaction

Measurement and verification

- Installation, connectivity, automation
- Customer acceptance (satisfaction)

TAKEAWAYS

- ✓ Smart thermostat technology *enables* energy conservation behavior
- ✓ The customer experience is key to saving energy
- ✓ Program design and customer service are key to maximizing program savings

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Thank you!

