www.austinenergy.com





2018 National Energy Codes Conference

Smart Thermostats/Demand Response

City of Austin/Austin Energy

July 17, 2018



CLEAN, AFFORDABLE, RELIABLE ENERGY AND EXCELLENT CUSTOMER SERVICE

Austin Energy: Who We Are

Mission: To safely deliver clean, affordable, reliable energy and excellent customer service

Vision: Drive customer value in energy services with innovative technology and environmental leadership

Public Power Utility

•(8th Largest; 3rd largest muni)







Clean Energy Goals in Austin Energy Generation Plan





*All subject to meeting Affordability Goals:

<2% rate increase per year; AE rates in lower half of Texas utilities.



Demand Response (DR) Strategy at Austin Energy

Deliver valued programs at the lowest practical cost

Promote automated DR/DER enabled technologies

Recruit customers with ADR technology into programs

Deliver valued added DR to Austin Energy Demand Response Goal of 200 MW by 2025







- Homeowner/occupant convenience
- Energy cost savings
- Demand response enabled
- Data collection device
- Supports remote analytics
- Supports home energy reports
- Regarded as amenity (smart home)
- Integration with other devices
- Options with imbedded occupancy sensors and voice activation





- Space temperature
- Set-point temperature
- Email alarms



- On/off status (fan and compressor)
- Mode (heating/cooling)
- Fan operation (on/auto)
- Communication status
- Diagnostic tool







ENERGY STAR & Smart Thermostats

- Demonstrated energy savings
- Reliable performance
- Environmental benefits
- Convenience, insight, and control



ENERGY STAR® Certified Smart Thermostats Deliver:

- Demonstrated Energy Savings 🗹 Environmental Benefits Reliable Performance
 - Convenience, Insight, and Control

When Choosing a Smart Thermostat, Look for the ENERGY STAR

Smart thermostats that earn the ENERGY STAR are third-party certified to:

- 1. Save energy based on field data collected from more than one thousand homes over an entire year
- 2. Quickly enter a low-power standby mode when inactive.
- 3. Track and report equipment use and temperature data to the homeowner.

Features of ENERGY STAR Certified Smart Thermostats

ENERGY STAR certified smart thermostats provide convenience, insight, and control. While system designs vary, common smart thermostat features include:

- · Allowing you to control home heating and cooling remotely through your smartnhone
- · Geofencing, which allows your smart thermostat to know when you're on the way home and automatically adjusts your home's temperature to your liking.
- · Learning your temperature preferences and establishing a schedule that automatically adjusts to energy-saving temperatures when you are asleep or away
- · Updating software periodically to ensure your smart thermostat is using the latest algorithms and energy-saving features available.

Save Money and Stay Comfortable in Your Home

For the average American household, almost half of the annual energy bill goes to heating and cooling - that's more than \$900 a year. Being smart about how you control your temperature settings with an ENERGY STAR certified smart thermostat will help you save money and stay comfortable in your home.

Save Even More with Utility Rebates

- Utilities or efficiency programs in your area may offer rebates on ENERGY STAR certified smart thermostats: www.energystar.gov/rebatefinder.
- · In addition, in some areas, homeowners with smart thermostats can participate in utility programs that support reliable power for everyone, and earn financial rewards for it.

A smart thermostat is a Wi-Fi enabled device that can automatically

Smart Thermostat?

What is a

adjust heating and cooling temperature settings for optimal performance.



Did You Know?

If everyone used an **ENERGY STAR certified** smart thermostat, savings would grow to 56 trillion BTUs of energy and \$740 million dollars per year, offsetting 13 billion pounds of annual greenhouse gas emissions.





Power Partner Thermostats

Began in 2013

Bring Your Own Thermostat (BYOT)

Wi-Fi connected thermostats

Multiple and flexible control options

Customer owned thermostats

Many product choices

Added as local amendment to code in 2016

Over 14,000 devices enrolled to date

Estimated +45,000 devices in Austin













Added \$25 energy efficiency installation rebate

- Residential single family (SF) & multifamily (MF)
- Commercial/small business

2016 building code requirements

- Water heater timers added in 2008
- Connected thermostats (SF & Low Rise MF)
- OpenADR 2.0 commercial buildings with building automation systems





- Cost more \$20 to \$150
- Occupants save (~\$40 per year)
- Good, simple paybacks < 1 year to 4 years
- Regional utility incentives
 - Upfront incentives
 - Annual participating incentives
- DR can reduce utility cost ~\$60/yr to supply home with power (peak demand)





- Timer code requirement
 - Preset times/noncommunicating
- Consider Wi-Fi controllers
- Coordinates with t-stats
- Possible future DR program
- Energy saving opportunity
- Offers leak alarms







Open Ecosystem = Connected Home



www.ecobee.com/home/developer/api/documentatio n/v1/index.shtml







Load COOP Program

What it is?

- Voluntary commercial demand response
- AE emails or texts designated customer contacts
- Customer has ~one hour to reduce load
- Space temperature reset, nonessential lighting, electric hot water, chilled water supply reset
- AE assists in strategy development

How does it work?

- Customer provides program application
- AE confirms existing or setup new interval meter
- Possibly schedule test curtailments





OpenADR Alliance



Numerous valuable resources







Load COOP Program – Auto Demand Response

Automation of DR signals

OpenADR signaling

Initiates preset strategies

Synergizes with code requirements

Supported by multiple vendors

Increases customer incentive

AE provides technical assistance

AE offers ADR technical guide



API = Standardized Application Programming Interface





- Smart thermostats are a cost effective conservation measure
- Including smart thermostats in the energy codes lowers barriers for utilities to develop and grow demand response
- Better building envelopes increase the thermal storage effect







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