

# Ameren Illinois Energy Efficiency Programs

## Morning Brief: Smart Thermostats

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1.16.18



## What is a Smart Thermostat?

- A smart thermostat is a Wi-Fi enabled device that automatically adjusts heating and cooling temperature setting in a home for optimal performance
- ENERGY STAR<sup>®</sup> labeled smart thermostats have been independently certified, based upon actual field data, to deliver energy savings

# What is the difference between the types of thermostats?

- **Manual Thermostats** control your heating and air conditioning by allowing you to manually adjust the temperature in your home
- **Programmable Thermostats** enable you to schedule a program to control your home's temperature based on time of day and/or day of the week
- **Smart Thermostats** are both internet-enabled and learning capable allowing you to control the homes temperature anywhere you have an internet connection

# What are the benefits of smart thermostats?

## Save energy

- Smart thermostats save money by encouraging the use of energy-saving settings. Allowing your thermostat to manage your home's climate will help you save on energy costs. Some models notify you of energy-saving behaviors and provide tips in easy-to-read monthly energy reports to help you achieve even better energy savings.

## Monitor your Home

- With a smart thermostat, you can easily check the companion app from anywhere to see if your air conditioning or heat is running and at what temperature. And — as long as you have your mobile device handy — you can adjust your thermostat from anywhere.

## Eliminate Errors

- Smart thermostats learn your schedule and preferences. Allowing the thermostat to handle lowering and raising the temperature while you come and go makes it easy to be energy efficient. Some smart thermostat models can even detect your presence or absence and adjust the temperature so don't have to worry about leaving the air conditioner or furnace running on high while you are away.

## Simplifying Programming

- Smart thermostats are easy to use and program, thanks to their user-friendly screens and companion apps.



## Which Smart Thermostats Qualify?

- They must be ENERGY STAR® certified, internet-enabled, and have learning capable features
- Home's **primary** heating source must be supplied by Ameren Illinois, gas or electric
- In order to be eligible for more than one thermostat incentive, each thermostat must be connected to a separate, Ameren-sourced heating system



## Which Smart Thermostats Qualify?

- A limit of two incentives per household
- Eligible product models can be found at [AmerenIllinoisSavings.com/smart](https://AmerenIllinoisSavings.com/smart)



## How do I request an incentive for my customer?

- Go to the *Residential Forms Library* at [AmerenIllinoisSavings.com](https://www.AmerenIllinoisSavings.com) download the 'Heating & Cooling Reservation & Incentive Application'
- On page 1-enter all of the information into the first portion
  - Customer Information
  - Program Ally Information
  - Existing Equipment section



## How do I request an incentive for my customer?

- On page 2-at the word 'Thermostat' enter the remainder of the required information all of the way down to where the Air Source Heat Pump Water Heat section begins
- Submit the signed and dated form (your signature and the customer's) along with itemized invoicing to [ResidentialEEApplications@Ameren.com](mailto:ResidentialEEApplications@Ameren.com)





## HEATING AND COOLING

Project Reservation  Incentive Request



# Example 1 (natural gas furnace)

All projects will receive a reservation number via email. The reservation number is required prior to project start date. All program paperwork must be submitted within 30 days of the installation date or by Dec. 31, 2018, whichever comes first. When submitting the Project Reservation, Incentive Request and required documentation, please send all required documents to: [ResidentialEEApplications@ameren.com](mailto:ResidentialEEApplications@ameren.com)

### SECTION 1: CUSTOMER INFORMATION

Name: John Doe	Home Phone: (309) 555-5555	Cell Phone:	
Physical Address: 123 Main Street	City: Peoria	State: IL	ZIP code: 61602
Mailing Address: as above	City:	State:	ZIP code:
Email: JohnDoe@emailprovider.com	Ameren Illinois ELECTRIC Account Number (Account number where equipment was installed): [11111] - [11111] (Max. 5 digits per box. Ex.: 12345 - 67890)		

### SECTION 2: PROGRAM ALLY INFORMATION

Program Ally Company Name: ABC Program Ally, Inc.	Program Ally Contact Name: Edward Zalesman
Phone: 309-555-5555	Email: EZalesman@ABCProgramAlly.com

### Project Installation Information

Name of Illinois Commerce Commission-registered Certified Installer (Name as registered with ICC): \_\_\_\_\_

### SECTION 3: PROJECT/MEASURE INFORMATION

#### Existing Equipment – Required for all projects

Existing Cooling Source: <input checked="" type="checkbox"/> Central AC <input type="checkbox"/> Air-Source Heat Pump <input type="checkbox"/> Geothermal <input type="checkbox"/> None <input type="checkbox"/> Other:			
Age (years): 5	Cooling Capacity: (BTU/HR) 23,800	Rated SEER: 13	
Manufacturer (existing unit): AC Maker Company	Model (existing unit): AC24XXX		
Existing Heat Source: <input type="checkbox"/> Air Source Heat Pump <input type="checkbox"/> Electric Resistance <input type="checkbox"/> Electric Baseboard <input checked="" type="checkbox"/> Gas Furnace/Boiler <input type="checkbox"/> Propane <input type="checkbox"/> None <input type="checkbox"/> Other:			
Age (years): 5	Heating Capacity at 17 F (BTU/HR) 60,000	Heating Capacity at 47 F (BTU/HR) 60,000	AFUE: 90%
Manufacturer (existing unit): Furnace Maker Company	Model (existing unit): BFX060XXXXX		



# Example 1 (natural gas furnace)

<b>THERMOSTAT</b> Install Date: 1-16-18		Existing Heat: Electric <input type="checkbox"/> Gas <input checked="" type="checkbox"/>	
Existing Thermostat: <input checked="" type="checkbox"/> Manual <input type="checkbox"/> Programmable <input type="checkbox"/> None (A new programmable thermostat must replace a manual. A new smart thermostat can replace either)			
New Thermostat Brand/Manufacturer (Programmable):		New Model (Programmable):	
New Thermostat Brand/Manufacturer (Smart): Honeywell		New Model (Smart): TH6220	
MEASURE	INCENTIVE RATE	MAXIMUM	SUB-TOTAL
Programmable Thermostat *	\$25 each	2	\$
Smart Thermostat **	\$100 each	2	\$ 100.00
<p>* Programmable thermostat must be replacing manual thermostat. Programmable thermostat incentives are available only where the primary heating source is supplied by an Ameren Illinois fuel, gas or electric.</p> <p>** Smart thermostat must be Energy Star certified. Must be internet-enabled and have learning capable features. Smart thermostat incentives are available only where primary heating source is supplied by an Ameren Illinois fuel, gas or electric. In order to be eligible for more than one Smart Thermostat incentive, each Smart Thermostat must be connected to a separate, Ameren-sourced heating system.</p>			<b>Thermostat Incentive:</b> \$ 100.00



## HEATING AND COOLING

Project Reservation  Incentive Request



## Example 2 (heat pump)

All projects will receive a reservation number via email. The reservation number is required prior to project start date. All program paperwork must be submitted within 30 days of the installation date or by **Dec. 31, 2018, whichever comes first**. When submitting the Project Reservation, Incentive Request and required documentation, please send all required documents to: [ResidentialEEApplications@ameren.com](mailto:ResidentialEEApplications@ameren.com)

### SECTION 1: CUSTOMER INFORMATION

Name: John Doe	Home Phone: (309) 555-5555	Cell Phone:	
Physical Address: 123 Main Street	City: Peoria	State: IL	ZIP code: 61602
Mailing Address: as above	City:	State:	ZIP code:
Email: JohnDoe@emailprovider.com	Ameren Illinois ELECTRIC Account Number (Account number where equipment was installed): 11111 - 11111 (Max. 5 digits per box. Ex.: 12345 - 67890)		

### SECTION 2: PROGRAM ALLY INFORMATION

Program Ally Company Name: ABC Program Ally, Inc.	Program Ally Contact Name: Edward Zalesman
Phone: 309-555-5555	Email: EZalesman@ABCProgramAlly.com

### Project Installation Information

Name of Illinois Commerce Commission-registered Certified Installer (Name as registered with ICC): \_\_\_\_\_

### SECTION 3: PROJECT/MEASURE INFORMATION

#### Existing Equipment – Required for all projects

Existing Cooling Source: <input type="checkbox"/> Central AC <input checked="" type="checkbox"/> Air-Source Heat Pump <input type="checkbox"/> Geothermal <input type="checkbox"/> None <input type="checkbox"/> Other:			
Age (years): 5	Cooling Capacity: (BTU/HR) 23,800	Rated SEER: 13	
Manufacturer (existing unit): Heat Pump Maker Company	Model (existing unit): HP24XXX		
Existing Heat Source: <input checked="" type="checkbox"/> Air Source Heat Pump <input type="checkbox"/> Electric Resistance <input type="checkbox"/> Electric Baseboard <input type="checkbox"/> Gas Furnace/Boiler <input type="checkbox"/> Propane <input type="checkbox"/> None <input type="checkbox"/> Other:			
Age (years): 5	Heating Capacity at 17 F (BTU/HR) 24,000	Heating Capacity at 47 F (BTU/HR) 14,000	AFUE:
Manufacturer (existing unit): Heat Pump Maker Company	Model (existing unit): HP24XXX		



## Example 2 (heat pump)

<b>THERMOSTAT</b> Install Date: <u>1-16-18</u> Existing Heat: Electric <input checked="" type="checkbox"/> Gas <input type="checkbox"/>			
Existing Thermostat: <input checked="" type="checkbox"/> Manual <input type="checkbox"/> Programmable <input type="checkbox"/> None (A new programmable thermostat must replace a manual. A new smart thermostat can replace either)			
New Thermostat Brand/Manufacturer (Programmable):		New Model (Programmable):	
New Thermostat Brand/Manufacturer (Smart): <u>Honeywell/Nest</u>		New Model (Smart): <u>TH6220/T3</u>	
MEASURE	INCENTIVE RATE	MAXIMUM	SUB-TOTAL
Programmable Thermostat *	\$25 each	2	\$
Smart Thermostat **	\$100 each	2	\$ 200.00
<p>* Programmable thermostat must be replacing manual thermostat. Programmable thermostat incentives are available only where the primary heating source is supplied by an Ameren Illinois fuel, gas or electric.</p> <p>** Smart thermostat must be Energy Star certified. Must be internet-enabled and have learning capable features. Smart thermostat incentives are available only where primary heating source is supplied by an Ameren Illinois fuel, gas or electric. In order to be eligible for more than one Smart Thermostat incentive, each Smart Thermostat must be connected to a separate, Ameren-sourced heating system.</p>			<b>Thermostat Incentive:</b> \$ 200.00

## Helpful hints

- If you have multiple sets of equipment please attach the additional information in an additional Word document (or similar) with the incentive request
- Send in a photo or scanned copy of the installed thermostat's UPC with your emailed incentive request
  - \*\*This differs from the rebate that a customer would apply for where they are required to mail the physical UPC removed from the box
- With air-source heat pumps, remember that we are wanting the primary heat source-the heat pump
  - \*\*not the electric resistance used for supplemental and/or emergency-backup heat



# Deep Dive into Smart Thermostats

# Current list of Energy Star Certified Smart Thermostats

## Nest Labs

- Nest Thermostat E
- Nest Learning Thermostat (T3 series)

## Honeywell international Inc.

- Lyric T6 Pro Wi-Fi (TH6220WF2006)
- Lyric T6 Pro Wi-Fi (TH6320WF2003)
- Lyric T5 Pro Wi-Fi (RCHT8610WF2006)

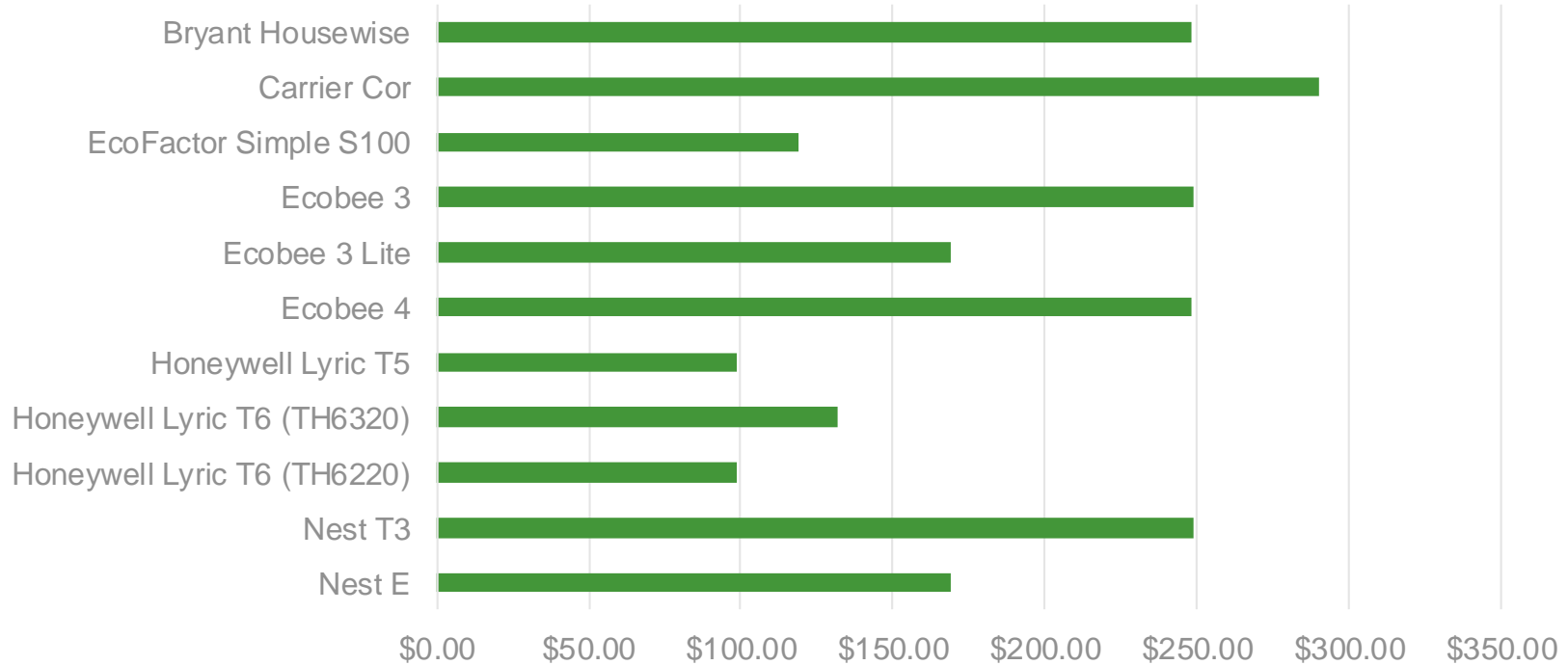
## Ecobee, Inc.

- Ecobee 4
- Ecobee 3 Lite
- Ecobee 3
- Carrier Cor
- Bryant Housewise

## EcoFactor, Inc.

- Simple S100

# Retail Costs





# Energy Star<sup>®</sup> Key Product Criteria (part 1)

ENERGY STAR<sup>®</sup> certified smart thermostats are required to:

- Work as a basic thermostat in absence of connectivity to the service provider
- Give residents some form of feedback about the energy consequences of their settings
- Provide information about HVAC energy use, such as monthly run time
- Provide the ability to set a schedule
- Provide the ability to work with utility programs to prevent brownouts and blackouts, while preserving consumers' ability to override those grid requests



## Energy Star<sup>®</sup> Key Product Criteria (part 2)

In addition to the requirements from the previous slide, they must meet the temperature accuracy and standby criteria shown below.

Static Temperature  
Accuracy

- $\leq \pm 2.0$  °F

Network Standby  
average power  
consumption

- $\leq 3.0$  W average

Time to enter network  
standby after user  
interaction

- $\leq 5.0$  minutes



## Energy Star<sup>®</sup> Key Product Criteria (part 3)

- EPA certified smart thermostats are required to meet the energy savings criteria for reduction in cooling and heating system runtime, and report electric resistance heat use for heat pumps
- To demonstrate compliance, smart thermostat service providers use EPA-provided software to analyze and combine data, to calculate national savings metrics for heating and for cooling

# Common Features

## Convenience

- Many smart thermostats learn your temperature preferences and establish a schedule that automatically adjusts to energy-saving temperatures when you are asleep or away.
- Geofencing allows your smart thermostat to know when you're on the way home and automatically adjusts your home's temperature to your liking.

## Control

- Wi-Fi enabled thermostats allow you to control your home's heating and cooling remotely through your smartphone.
- ENERGY STAR certified smart thermostats quickly enter a low-power standby mode when inactive.

## Insight

- Smart thermostats provide equipment use and temperature data you can track and manage.
- Periodic software updates ensure your smart thermostat is using the latest algorithms and energy-saving features available.



# Feature Details



## Time of Day Usage

Uses load monitoring techniques to determine the appliances that are turned ON within a given period of time in a household or workplace. They can help occupants optimize their power consumption behavior. Most of them estimate the currently turned ON appliances only using electrical measurements such as current and/or voltage, active power, and reactive power.

**Found on:** Nest (E & T3), Honeywell (T6 TH6220, T6 TH6320, & T5 RCHT8610), Ecobee (4, 3 Lite, & 3), Carrier Cor, and Bryant Housewise

## Geofencing

Geofencing allows for a HVAC system prepare for your arrival home. A geofence is a virtual perimeter for a geographic area. Once you've set your geofence radius, your smartphone determines if you've crossed from one side of your geofence boundary to the other. Often, the geofence crossing happens at a predictable spot on your commute or while you're out and about.

*Found on:* Nest (E & T3) & Honeywell (T6 TH6220, T6 TH6320, & T5 RCHT8610)

## Occupancy Sensor on Device

This on-unit sensor allows the smart thermostat to activate heating and cooling cycles based upon the presence of occupants in the area covered by the sensor. This transcends a programmable thermostat's capabilities to be set based on assumed usage patterns which can be variable much of the time.

**Found on:** Nest (E & T3) and Honeywell (T6 TH6220, T6 TH6320, & T5 RCHT8610)



## External Temperature Detection

Smart thermostats understand how the residence heats up and cools down and can use the Wi-Fi connection to track local weather throughout the day. It can then use this information to determine the best way to bring the residence to the desired indoor temperature when the customer arrives home and maintain it while minimizing how long that the heating and cooling equipment runs for.

**Found on:** Nest (E & T3), T6 TH6220, T6 TH6320, T5 RCHT8610, and EcoFactor S100



## Humidity Sensing

This function allows the smart thermostat to regulate indoor humidity through the HVAC system to help prevent frost buildup on windows when it is cold outside and high humidity indoors or lower indoor humidity in the summer in the absence of a dehumidifier.

**Found on:** Nest (E & T3), Ecobee (4, 3 Lite, & 3), Carrier Cor, and Bryant Housewise

## Additional Home Temperature Sensor

These sensors work in conjunction with the smart thermostat to deliver preferred temperature in the rooms that matter, not only the room where the thermostat is installed. They can be used to receive room specific temperatures when used with mobile apps.

**Found on:** Honeywell (T6 TH6220 & T6 TH6320), Ecobee (3 Lite, & 3), Carrier Cor, and Bryant Housewise

## Additional Occupancy Sensor

These remotely installed sensors also help to deliver better comfort to the rooms that matter to the customer based upon the time spent in them.

**Found on:** Ecobee (4, 3 Lite, & 3), Carrier Cor, and Bryant Housewise

## Many other features to explore . . .

- Many will monitor equipment performance and send an alert if anything is not working or is working sub-optimally (Ecobee, Honeywell)
- Multi-stage equipment compatible (Nest, Ecobee)
- They can recognize the temperature difference on cool evenings and will use outside air to cool down the home instead of the air conditioner if used with a ventilator (Ecobee)
- The ability to sense the ambient light is the area (Nest)
- Built in rechargeable lithium-ion battery (Nest)

## Additional features continued

- Can be controlled and monitored via mobile device apps (All listed)
- Can control multiple devices and homes from one account (Nest, EcoFactor)
- Farsight (when thermostat spots an occupant from across the room it can illuminate to show time temp or weather) (Nest)
- Send service reminders to help with the maintenance of the HVAC system (Ecobee)
- Local Weather forecasts (Carrier Cor, Ecobee, Nest, Bryant Housewise, Honeywell)

## Communication

- All of the ENERGY STAR listed smart thermostats have Wi-Fi connections to utilize many of their features and a few contain additional methods of communication
- The Nest (and others) can utilize *Bluetooth* and *Near Field Communication* (passive device information that other devices can read but does not read any information itself) and some Ecobee products are *Amazon™ Alexa™* compatible

## Communication

For more technical information such as compatibility with the various brands of HVAC equipment, please check with your equipment manufacturer and the specifics for each thermostat.





## Additional Resources

For a listing of thermostats that can currently receive rebates and incentives through our programs and a link to the ENERGY STAR website on the smart thermostat page.

[AmerenIllinoisSavings.com/smart](https://AmerenIllinoisSavings.com/smart)



# Questions??

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