



ENERGY STAR® Certified Smart Thermostats: Fact Sheet for Manufacturers and Service Providers

The simple choice for energy efficiency.



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The ENERGY STAR Advantage

ENERGY STAR is a widely recognized, well-regarded symbol for energy efficiency:

- More than 90% of consumers are aware of ENERGY STAR.
- 45% of US households reported purchasing an ENERGY STAR certified product in the past year.
- Nearly 75% reported the label as influential in their purchasing decision.
- 80% of knowing purchasers report they are likely to recommend ENERGY STAR products to friends.

ENERGY STAR smart thermostats are third-party certified to deliver reliable performance and heating and cooling savings. The ENERGY STAR specification is designed to focus on actual delivered savings, rather than on the specific strategies that thermostats might use to achieve those savings. Thermostats that have earned the ENERGY STAR label are certified to deliver savings by default in typical use.

How Smart Thermostat Criteria Differ from Other Product Categories

Most ENERGY STAR product criteria are based on engineering estimates and/or laboratory measurement of key metrics. In these cases, the product criteria apply to the hardware and the ENERGY STAR partner is a manufacturer. ENERGY STAR certified smart thermostats are a combination of hardware and service. *The service provider is the ENERGY STAR partner* given that they hold the data to demonstrate savings. Rather than laboratory testing, real-world data from a large sample of homes that use the product are aggregated and analyzed to understand energy usage. For each product family, Environmental Protection Agency (EPA) software analyzes data from randomly selected sample homes to determine whether performance meets ENERGY STAR criteria.

ENERGY STAR Smart Thermostat Key Criteria

Device Criteria		
Parameter	Performance Requirement	
Static temperature accuracy	≤ ±2.0 °F	
Network standby average power consumption	≤ 3.0 W average	
Time to enter network standby after user interaction (on device, remote or occupancy detection)	≤ 5.0 minutes	
Energy Savings Criteria		
Metric	Statistical Measure	Performance Requirement
Annual % run time reduction, heating	Lower 95% confidence limit of weighted national avg.	≥ 8%
	Weighted national average of 20th percentiles	≥ 4%
Annual % run time reduction, cooling	Lower 95% confidence limit of weighted national avg.	≥ 10%
	Weighted national average of 20th percentiles	≥ 5%
Average resistance heat utilization for heat pump installations	National mean in 5 °F outdoor temperature bins from 0 - 60 °F	Reporting Requirement

Additional details about these criteria can be found in the [Connected Thermostat Specification](#).

How Savings Are Determined and Tested

ENERGY STAR criteria for smart thermostats are based on real world performance from installations in homes across the United States. This ensures that savings claims are based on real-world data and user interaction with the product, something lacking in previous efforts to recognize thermostat efficiency.

Savings from ENERGY STAR certified smart thermostats and the test method used to determine these savings are closely related. Together with interested stakeholders, EPA created a repeatable test procedure that determines whether or not a smart thermostat (product and service together) meets a minimum threshold of heating and cooling system savings (e.g., percent runtime reduction). The [test method](#) defines an auditable process to select a sample of homes spread across the country. It also specifies how to use EPA-provided software to analyze a year of data from each sample home and to aggregate the data from all homes. The results are submitted to a third-party certification body. This process ensures that savings aren't simply the effects of regional over-representation. ENERGY STAR smart thermostats save energy—regardless of climate zone.

To allay concerns about customer privacy and proprietary data, the EPA-produced software are open-source Python modules that reside and run in the service provider's data environment. Only the analyzed and aggregated output of the software is seen by a certification body or the EPA. There is also straightforward laboratory testing of the thermostat hardware to assure it meets basic quality requirements.

ENERGY STAR and Utility Programs

ENERGY STAR partners with more than 560 utilities and other energy efficiency program administrators serving over 85% of U.S. households. These partners rely on ENERGY STAR for many of their program offerings—in many cases, they have been doing so for decades. As the [list of ENERGY STAR certified smart thermostats](#) has grown, utility partners are beginning to make ENERGY STAR certification a program requirement.

For them, relying on ENERGY STAR makes sense:

- ENERGY STAR criteria are designed with a quality consumer experience in mind to ensure energy efficiency comes with no sacrifice in performance or features.
- ENERGY STAR specifications are established in a public process, which creates a level playing field for all manufacturers to design products to a specification and market accordingly. In so doing, the program does not arbitrarily pick winners and losers but rather relies on data from a third-party certification and verification process to determine eligibility.
- ENERGY STAR criteria are also designed with other market realities in mind such as ensuring product availability from multiple manufacturers, consumer payback, and utility program needs. For example, ENERGY STAR smart thermostats must be able to work with utility demand response programs (though there are no specific required responses).
- ENERGY STAR certification provides quality assurance to the public and utility partners. All products that earn the ENERGY STAR are tested in an EPA-recognized laboratory and reviewed by an independent, EPA-recognized certification body. In addition, service providers must periodically resubmit savings data from a new random sample of their installation to ensure ongoing energy savings.

Becoming an ENERGY STAR Partner

Partnership offers a unique opportunity to leverage the ENERGY STAR trusted name. Learn about partnership benefits, eligibility and requirements by visiting energystar.gov/partner_resources/join-energy-star.

In addition, the ENERGY STAR specification for smart thermostats is unlike other product categories in that it requires a year's worth of real world (anonymized + masked) data prior to certification. To get started with this process as a potential service provider/partner, please [consult the list of EPA-recognized certification bodies](#) and select product type, "heating and cooling," and program, "connected thermostats," as search filters.

ENERGY STAR® is the simple choice for energy efficiency. For more than 25 years, EPA's ENERGY STAR program has been America's resource for saving energy and protecting the environment. Join the millions making a difference at energystar.gov.