

Definitions for ENERGY STAR Programmable Thermostat Proposal



Listed below are of definitions that describe a programmable thermostat and its features for your reference. The purpose of the list is to develop a standard set of terms for programmable thermostats. Stakeholders are encouraged to provide to EPA any other terms that need to be addressed. These definitions will eventually lead to a list of definitions that will be included in the ENERGY STAR specification for programmable thermostats.

Programmable Thermostat: A device that enables the user to set one or more time periods each day when a comfort setpoint temperature is maintained and one or more time periods each day when an energy-saving setpoint temperature is maintained. This device enables the user to save energy as the heating and cooling equipment is not running needlessly at a comfort temperature setpoint 24 hours per day. A programmable thermostat may be capable of controlling one or more zones of a conditioned space.

Note: Communicating thermostats can also qualify under this specification, provided that the thermostat meets the requirements under the “Qualifying Products” and “ENERGY STAR Specification for Qualifying Products” sections in the ENERGY STAR for Programmable Thermostats Proposal.

Setpoint Temperature: The temperature setting in degrees Fahrenheit or degrees Celsius for any given time period.

Comfort Setpoint Temperature: The temperature setting in degrees Fahrenheit or degrees Celsius for the time period during which the building is expected to be occupied, e.g., the early morning and evening hours.

Comfort Time: The time period during which the conditioned space is expected to be occupied, e.g., the early morning and evening hours.

Energy-Saving Setpoint Temperature: The setpoint temperature for the energy-saving periods usually specified for both the heating and cooling seasons.

- **Set-Back Temperature:** The setpoint temperature for the energy-saving periods during the heating season, generally at night and during unoccupied hours. This is a lower setpoint temperature than the comfort setpoint temperature.
- **Set-Up Temperature:** The setpoint temperature for the energy-saving periods during the cooling season, generally at night and during unoccupied hours. This is a higher setpoint temperature than the comfort setpoint temperature.

Events: The time period where the thermostat’s temperatures are either set-back or set-up. There are four energy saving set-backs/set-ups under ENERGY STAR which are defined as “wake,” “leave,” “return,” and “sleep.”

- **Wake:** The time period when the user rises in the morning.
- **Leave:** The time period where the dwelling is unoccupied during the day hours.
- **Return:** The time period where the user returns at night.
- **Sleep:** The time period where the user retires at night.

Please see Table 2 in the ENERGY STAR for Programmable Thermostats Proposal for acceptable times and temperatures for these events.

Note: Under Tier II of the energy-efficiency specifications, EPA has standardized the language for these events. All ENERGY STAR qualified thermostats will use the designated language above to describe these events to the user. EPA believes that this language is intuitive to the consumer and that there is value in standardizing language in the specification and in speaking about programmable thermostat products to the consumer.

Cycle Rate: The number of times the heating or cooling unit goes on and off in a given hour. This is measured when the heating and air-conditioning equipment is operating at a 50% load condition, as measured under the National Electrical Manufacturers Association (NEMA) DC-3 standard titled "Residential Controls- Electrical Wall-Mounted Room Thermostats".¹

Recovery Systems:

- Conventional Recovery: A feature of a programmable thermostat that activates the heating or cooling system at the comfort time set by the user.
- Multistage Heat Pump Recovery: A feature of a programmable thermostat that allows the heat pump to recover gradually from an energy-saving setpoint temperature to a comfort setpoint temperature. The heat pump recovery feature is designed to minimize the use of auxiliary heat while also minimizing the on-time of the system.

Temporary Program Overrides: This feature enables the user to override the programmable thermostat's program by setting the programmable thermostat at a different temperature until the next part of the program begins.

Vacation: A long-term hold may allow the user to set the programmable thermostat at a temperature for a fixed period of time (e.g., vacation).

¹ National Electrical Manufacturers Association (NEMA), 1300 North 17th Street, Suite 1847, Rosslyn, VA 22209