



STATE OF WASHINGTON

## STATE BUILDING CODE COUNCIL

### Washington State Energy Code Development Standard Energy Code Proposal Form

May 2018

Log No. 19-WSEC-R11 Rev 2  
Proponent 5/30/19

Code being amended:  Commercial Provisions  Residential Provisions

Code Section # R403.1.1

**Brief Description:** Requires a programmable thermostat as defined by R403.1.1 be installed in accessory dwelling units.

Proposed code change text:

**R501.1.2 Thermostats for accessory dwelling units.** Where a separate dwelling unit, that provides independent facilities for living, sleeping, cooking, bathing and sanitation, is established within or attached to an existing dwelling unit, the heating and cooling for the newly-created dwelling unit shall be controllable with a separate programmable thermostat in accordance with R403.1.1.

**R403.1 Controls (Mandatory).** At least one thermostat shall be provided for each separate heating and cooling system.

**R403.1.1 Programmable thermostat.** Where the primary heating system is a forced-air furnace, at least one thermostat per dwelling unit shall be capable of controlling the heating and cooling system on a daily schedule to maintain different temperature set points at different times of the day. The thermostat shall allow for, at a minimum, a 5-2 programmable schedule (weekdays/weekends) and be capable of providing at least two programmable setback periods per day. This thermostat shall include the capability to set back or temporarily operate the system to maintain *zone* temperatures down to 55°F (13°C) or up to 85°F (29°C). The thermostat shall initially be programmed by the manufacturer with a heating temperature set point no higher than 70°F (21°C) and a cooling temperature set point no lower than 78°F (26°C). The thermostat and/or control system shall have an adjustable deadband of not less than 10°F.

**Purpose of code change:**

Many jurisdictions allow an additional dwelling unit, sometimes known as a mother-in-law apartment, to be established within or attached to an existing one-family dwelling. These are known as accessory dwelling units (ADU). In some jurisdictions, an ADU can also be a separate structure that is placed on a lot that already has a one-family dwelling unit on it or it can be a portion of another accessory structure like an apartment over a garage.

It's not clear in the current State of Washington Residential Energy code that a newly created ADU in an existing one-family dwelling would be required to have a programmable thermostat separate from the

main dwelling unit. This code proposal makes programmable thermostats mandatory for ADU's when new ADU's are established.

The purpose of the code change is to ensure that ADU occupants can control their internal environment and benefit from the energy savings that come with being able to adjust the temperature to correspond with their use of the space.

Your amendment must meet one of the following criteria. Select at least one:

- |   |   |
|---|---|
| <input type="checkbox"/> Addresses a critical life/safety need.                         | (Note that energy conservation is a state policy)                       |
| <input type="checkbox"/> The amendment clarifies the intent or application of the code. | <input type="checkbox"/> Consistency with state or federal regulations. |
| <input checked="" type="checkbox"/> Addresses a specific state policy or statute.       | <input type="checkbox"/> Addresses a unique character of the state.     |
|   | <input type="checkbox"/> Corrects errors and omissions.                 |

Check the building types that would be impacted by your code change:

- |   |   |  |
|---|---|--|
| <input checked="" type="checkbox"/> Single family/duplex/townhome | <input type="checkbox"/> Multi-family 4 + stories | <input type="checkbox"/> Institutional |
| <input type="checkbox"/> Multi-family 1 – 3 stories               | <input type="checkbox"/> Commercial / Retail      | <input type="checkbox"/> Industrial    |

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## **Economic Impact Data Sheet**

**Briefly summarize your proposal's primary economic impacts and benefits to building owners, tenants and businesses.**

This proposal will increase the cost of construction because an additional programmable thermostat separate from the primary dwelling unit will be required in accessory dwelling units. Tenants will see energy savings because they will be able to optimize the control of their thermostat.

**Provide your best estimate of the construction cost (or cost savings) of your code change proposal? Show calculations here, and list sources for costs/savings, or attach backup data pages**

**Cost:**

According to [www.costhelper.com](http://www.costhelper.com), a more advanced programmable thermostat model that includes (5/2 programming and 7-day programming run between \$80-\$250 dollars. The installation costs by an HVAC contractor could be \$75-\$150. However, connecting a programmable thermostat to an existing heating system or to a new system is where most of the cost will be incurred.

Currently, the State of Washington Residential Energy Code requires a programmable thermostat be provided for each separate heating and cooling system (See State of Washington Residential Energy Code R403.1.1) and R303.9 of the State of Washington Residential Code requires that every dwelling

unit be provided with heating facilities. Neither of these sections require a **separate** heating and cooling system for each dwelling unit.

However, getting a programmable thermostat to function in an ADU has costs beyond the installation of the programmable thermostat. A programmable thermostat in an ADU can be connected to the heating facilities (equipment) of the existing home or connected to its own dedicated heating system separate from the heating facilities of the existing home. Below are the estimated total costs of various options for a 400 sq. ft. ADU provided by a Seattle-based contractor (includes labor and other installation costs):

2 zone system added to an existing system

Total cost \$3920.00

1 head mini split system Heat Pump with programmable thermostat

Total cost \$5245.00

3 in wall electric heaters with programmable thermostat

Total cost \$1155.00

1 small gas furnace with duct, gas piping and programmable thermostat-this would be an unlikely option due to the 400 square feet size of the ADU.

Total cost \$5600.00

**Provide your best estimate of the annual energy savings (or additional energy use) for your code change proposal?**

**Energy Savings**

From [www.energystar.gov](http://www.energystar.gov), Proper Use Guidelines for Programmable Thermostats:

“Through proper use of a programmable thermostat (using the four pre-programmed settings) you can save about \$180\* every year in energy costs. The \$180 savings assumes a typical, single-family home with a 10--hour daytime setback of 8° F in winter and setup of 7° F in summer, and an 8-hour nighttime setback of 8° F in winter and a setup of 4° F in summer.”

The savings generated from a programmable thermostat in an ADU wouldn't be quite as large as an entire single-family dwelling, but if the typical single-family home was 2,000 sq. ft in the Energy Star Model, that would equate to roughly \$45 a year in savings for the tenant of a 500 sq. ft ADU within the dwelling.

From the Department of Energy, [www.energy.gov](http://www.energy.gov)

“You can save as much as 10% a year on heating and cooling by simply turning your thermostat back 7°-10°F for 8 hours a day from its normal setting. The percentage of savings from setback is greater for buildings in milder climates than for those in more severe climates.”

**List any code enforcement time for additional plan review or inspections that your proposal will require, in hours per permit application:**

This shouldn't increase code enforcement time because the inspector would not need to take extra trips to verify that the programmable thermostat has been installed.