

DOCKETED

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On 2019 T24 Code Language Recommendation

Additional submitted attachment is included below.

From: Yanda Zhang <ydzhang@zydenergy.com>
Sent: Tuesday, October 10, 2017 10:05 AM
To: Tam, Danny@Energy
Cc: Sean Armstrong; Gary Klein and Associates; Jim Lutz
Subject: proposed language for making future upgrade to HPWH easier
Attachments: 2019 T24 Code Language Recommendation - DHW section 150.0 Oct 10 2017.docx

Danny,

Following my discussion with your last week, Sean, Gary, Jim, and I worked closely and develop a draft language to make DHW system ready for future heat pump water heater installation. Our goal was to develop simple, not cost (or nearly no cost), easy-to-implement requirements to avoid major concerns from stakeholders. On the same time, we want to adequately address all issues related to future HPWH installation so the state can be better prepared for future electrification of DHW energy use. Attached is the draft language we developed. To help you understand the rationales of the proposed requirements, explanations of key elements of the proposed language are provided below.

“A dedicated 120V electrical receptacle that is connected to the electric panel with 10 AWG wire, within 3 feet from the water heater, and accessible to the water heater with no obstructions”

- 10 AWG wire: This is to ensure a 30A power supply (240V or 120V) can be easily provided in future. Normally, 12 AWG wire is used for up to 15A current draw. By requiring 10 AWG wire, which is barely more expensive than 12 AWG wire, 30A power supply can be established by simply replacing the existing breaker in the panel.
- Dedicated: Most of the HPWH products available in today’s market require 240V/30A power supply, although some manufacturers plan to offer 120V products. To make the existing 120V circuit can be easily converted to 240V, we also want to make sure no other 120V appliances/devices (e.g. recirculation pump) are on the same circuit. Therefore, we proposed that a dedicated circuit is used for the water heater and this circuit can be converted to 240V for HPWH without any impact on other 120V appliances/devices.

“E. An indoor space that is of at least 3 feet by 3 feet by 7 feet tall and within 3 feet from the water heater.”

- 3 feet by 3 feet: This is to ensure enough space is available to accommodate a 50Gal HPWH. This size is based on specification of Rheem and AO Smith HPWH models. Space larger than 3’X3’ is desirable for models with larger storage; however, we recognize that builders are less acceptable to requirement of a larger space.
- 3 feet from the installed water heater: This is to ensure future HPWH can be close to the existing hot/cold water pipe inlets so that piping can be easily done.
- We also considered possible requirements to make sure the space allowing adequate air ventilation for proper and efficient HPWH operation. Air ventilation can be an issue for HPWH installed in a closet. Our preliminary research found that HPWHs installed in closet most likely need to be ducted, either for the warm air inlet or cold air exhaust, or both. One possibly requirement is that a 6 inch round vent terminator (see [this example](#)), which cost about \$30 retail, be installed for closet. To avoid possible concern/pushback from builders, we decided to drop this requirement. Future HPWH installation would need to pay the cost to install a vent terminator, which is not too much compared to overall installation cost.

We hope you find the proposed requirements are simple and barely add any burden on builders. Let us know if you have any questions.

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Principal

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Based on 2016 T24 section 150.0 Mandatory requirements for low-rise residential buildings.

(n) **Water Heating System.**

1. Systems using gas or propane water heaters to serve individual dwelling units shall include the following components:

- A. A dedicated 120V electrical receptacle that is connected to the electric panel with 10 AWG wire, within 3 feet from the water heater, and accessible to the water heater with no obstructions; and
- B. A Category III or IV vent, or a Type B vent with straight pipe between the outside termination and the space where the water heater is installed; and
- C. A condensate drain that is no more than 2 inches higher than the base of the installed water heater, and allows natural draining without pump assistance; and
- D. A gas supply line with a capacity of at least 200,000 Btu/hr; and
- E. An indoor space that is of at least 3 feet by 3 feet by 7 feet tall and within 3 feet from the water heater.