

Compact Hot Water Distribution Design

Draft Code Language

Last Updated: 3/06/2017

1. INTRODUCTION

The California Statewide Utility Codes and Standards Team actively supports the California Energy Commission in developing revisions to the 2019 California Building Energy Efficiency Standards (Title 24, Part 6). Our joint intent is to achieve significant energy savings through the development of reasonable, responsible, and cost-effective code change proposals for the 2019 Title 24 code change cycle.

The Statewide Utility Team is proposing code change to modify the Compact Hot Water Distribution compliance option credit for single family new construction homes in all Climate Zones.

The Statewide Utility Team is requesting feedback on the draft code language presented in this document. Input we receive will inform the code change proposal that the Statewide Utility Team will be proposing to the California Energy Commission in April 2017.

To provide feedback, please email us at info@title24stakeholders.com or contact the measure lead at:

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For more information about the California Statewide Utility Codes and Standards Team's 2019 Title 24, Part 6 advocacy efforts, and the latest information on this code change proposal please visit: www.title24stakeholders.com.

2. DRAFT CODE LANGUAGE

The proposed changes to the Standards, Reference Appendices, and the ACM Reference Manuals are provided below. Changes to the 2016 documents are marked with underlining (new language) and ~~strikethroughs~~ (deletions).

2.1 Standards

No change.

2.2 Reference Appendices

The proposed measure will modify existing language in the Reference Appendices in RA3 (Field Verification and Diagnostic Protocols) and RA4 (Eligibility Criteria for Energy Efficiency Measures) as shown below.

RA3.6.5 HERS-Verified Compact Hot Water Distribution System Expanded Credit (CHWDS-H)

To meet the Compact HWDS hot water distribution system Expanded Credit eligibility requirements, the following HERS field verifications are required:

1. No hot water piping >1” diameter is allowed.
2. Length of 1” piping is limited to 8 ft or less.
3. Two and three story buildings cannot have hot water distribution piping in the attic, unless the water heater is also located in the attic, and.
4. Eligible recirculating systems must be HERS-Verified Demand Recirculation: Manual Control conforming to RA4.4.17.

measurements shall verify that the longest measured pipe run length between a hot water use point and the water heater serving that use be no more than the distance specified in Table 3.6.4. Table 3.6.4 specifies the maximum pipe length as a function of Floor Area Served, where Floor Area Served is defined as the conditioned floor area divided by the number of installed water heaters.

TABLE 3.6.5

Floor Area Served (ft ²)	Maximum Measured Water Heater To Use Point Distance (ft)
<1000	28'
1001—1600	43'
1601—2200	53'
2201—2800	62'
>2800	68'

Verification shall include:

- (a) Verify that floor area (ft²) of the building matches the conditioned floor area that was used in compliance documentation. (Note: Floor Areas Served equals the conditioned floor area divided by the number of installed water heaters).

(b) Measure length from water heater to the use point furthest from the water heater and determine if that value is equal to or less than listed in Table 3.6.4. Measurements shall be made to the nearest half foot.

(c) The hot water distribution system piping from the water heater(s) to the fixtures and appliances must take the most direct path. For example, in a house with more than 1-story and the water heater in the garage, this requirement would exclude running hot water supply piping from the manifold to the attic, and then running the line back down to a first floor point of use.

(d) The HERS inspector shall also verify that hot water piping is insulated to a level that meets the requirements of §150.0(j) and is installed in accordance with Proper Installation of Pipe Insulation as specified in RA3.6.2.2

RA4.4.16 HERS-Verified Compact Hot Water Distribution System Expanded Credit (CHWDS-H)

A HERS inspection is required to obtain this credit. To meet the Compact HWDS requirement, the longest measured pipe run length between a hot water use point and the water heater serving that use shall be no more than the distance specified in Table 4.4.5. This table specifies the maximum pipe length as a function of Floor Area Served, where Floor Area Served is defined as the conditioned floor area divided by the number of installed water heaters.

~~Table 5-10: Compact Distribution System~~

Floor Area Served (ft²)	Maximum Water Heater To Use Point Distance (ft)
< 1000	28'
1001 – 1600	43'
1601 – 2200	53'
2201 – 2800	62'
> 2800	68'

Requirements include that:

(a) The floor area (ft²) of the building matches the conditioned floor area that was used in compliance documentation. (Note: Floor Areas Served equals the conditioned floor area divided by the number of installed water heaters).

(b) The length from the water heater to the furthest use point it serves shall be equal to or less than listed in Table 4.4.5. Measurements shall be made to the nearest half foot.

(c) The hot water distribution system piping from the water heater(s) to the fixtures and appliances must take the most direct path. For example, in a house with more than 1-story and the water heater in the garage, this requirement would

~~exclude running hot water supply piping from the manifold to the attic, and then running the line back down to a first floor point of use.~~

~~(d) Hot water piping shall be insulated to a level that meets the requirements of §150.0(j) and be installed in accordance with Proper Installation of Pipe Insulation R4.4.1.~~

To earn the Expanded Credit, all the following eligibility criteria must be met:

1. No hot water piping >1" diameter is allowed.
2. Length of 1" piping is limited to 8 ft or less.
3. Two and three story buildings cannot have hot water distribution piping in the attic, unless the water heater is also located in the attic, and.
4. Eligible recirculating systems must be HERS-Verified Demand Recirculation: Manual Control conforming to RA4.4.17.