RESNET
RESIDENTIAL ENERGY SERVICES NETWORK

Setting the **Standards** for
Home Energy Efficiency

Interpretation: Hot Water Distribution Pipe Length Calculation Requirements

Designation: IR 301-2019-032

Approved: July 17, 2023 by RESNET SDC 300

Effective Date: August 26, 2023

Reference:

Standard _ANSI/RESNET/ICC 301_____
Page Number(s): _51_____
Sections(s): _4.2.2.5.2.11. Service Hot Water Use_& Normative Appendix B Inspection Procedures for Minimum Rated Features_
Table(s): _Equation 4.2-13 _____
Relating to: Water Pipe Length Determination_____

Request from:

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Background Statement: *Provided by person requesting the interpretation.*

The determination of the PipeL portion of the pRatio calculation item is unclear and appears to be interpreted differently by the different software tools.

PipeL = measured length of hot water piping from the hot water heater (or from a shared recirculation loop serving multiple41 Dwelling Units) to the farthest hot water fixture, measured longitudinally from plans, assuming the hot water piping does not run diagonally, plus 10 feet of piping for each floor level, plus 5 feet of piping for unconditioned basements (if any).

The description states to determine the horizontal length, and then add for vertical, "plus 10 feet of piping for each floor level, plus 5 feet of piping for unconditioned basements (if any)." REM/Rate only expects the horizontal distance for input then adds 10' for each conditioned level, including a conditioned basement if there is one. If there is an unconditioned basement, it adds 5 feet for that level. Ekotrope has the user calculate the horizontal distance and add for the vertical distance as well, with the instructions, "plus 10 feet of piping for each floor level, plus 5 feet of piping for unconditioned basements (if any)." Some Raters interpret "floor level" to just include the levels above the basement if the basement is conditioned and also only add the 10' based on the floor level where the farthest horizontal distance fixture is located. For example, if modeling a two-story above grade home with a conditioned basement and the farthest hot water using fixture is located on the first floor, 45' horizontally from the water heater, a REM/Rate user would input 45' and the software would calculate 45' + 30' = 75' for PipeL, however, an Ekotrope user may calculate only 45' + 10' = 55' and that would be what Ekotrope would use for PipeL. The clarification that is needed is if "each floor level" means each conditioned floor, including the conditioned basement if there is one, regardless of which level the fixture is located on. Someone more intimately familiar with the calculation should determine the clarification for this as I do not know what the ramifications are for the intended calculation if the interpretation I suggest below is incorrect. I just would like to ensure the standard is consistently applied.

Proposed Interpretation: *Provided by person requesting the interpretation.*

> "Each floor level" in ANSI 301-2019 for pipe length (pipeL) means "each conditioned floor level" of the Rated Home, regardless of on which floor level the "farthest hot water fixture" is located. In addition, where the associated vertical pipe length is calculated, 10 ft should be assumed for each conditioned floor level, including a conditioned basement (if there is one). The Standard also intends that where both an unconditioned basement and a conditioned basement exist on the same floor level of the Rated Home, only 10 ft shall be assumed for the vertical pipe length, rather than 10 ft + 5 ft.

SDC Response:

Is the proposed interpretation correct? __X___ Yes _____ No

SDC Comments: