

**§ 429.17**

**10 CFR Ch. II (1–1–12 Edition)**

air mover (*e.g.*, furnace, air handler, blower kit), the model number of this ducted air mover must be included among the model numbers listed on the certification report.

(iii) Small duct, high velocity air conditioners: The seasonal energy efficiency ratio (SEER in British thermal units per Watt-hour (Btu/W-h)) and the cooling capacity in British thermal units per hour (Btu/h).

(iv) Small duct, high velocity heat pumps: The seasonal energy efficiency ratio (SEER in British thermal units per Watt-hour (Btu/W-h)), the heating seasonal performance factor (HSPF in British thermal units per Watt-hour (Btu/W-h)), and the cooling capacity in British thermal units per hour (Btu/h).

(iv) Space constrained air conditioners: The seasonal energy efficiency ratio (SEER in British thermal units per Watt-hour (Btu/W-h)) and the cooling capacity in British thermal units per hour (Btu/h).

(v) Space constrained heat pumps: The seasonal energy efficiency ratio (SEER in British thermal units per

Watt-hour (Btu/W-h)), the coefficient of performance, and the cooling capacity in British thermal units per hour (Btu/h).

(c) *Alternative methods for determining efficiency or energy use* for central air conditioners and heat pumps can be found in § 429.70 of this subpart.

[76 FR 12451, Mar. 7, 2011; 76 FR 24763, May 2, 2011]

**§ 429.17 Residential water heaters.**

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to residential water heaters; and

(2) For each basic model of residential water heaters, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of estimated annual operating cost, energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$$

and,  $\bar{x}$  is the sample mean; n is the number of samples; and  $x_i$  is the  $i^{\text{th}}$  sample;

Or,

(B) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.10, where:

$$UCL = \bar{x} + t_{.95} \left( \frac{s}{\sqrt{n}} \right)$$

And  $\bar{x}$  is the sample mean; s is the sample standard deviation; n is the number of

samples; and  $t_{0.95}$  is the t statistic for a 95% one-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the energy factor or other measure of energy consumption of a basic model for which

consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$$

and,  $\bar{x}$  is the sample mean;  $n$  is the number of samples; and  $x_i$  is the  $i^{\text{th}}$  sample;

Or,

(B) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.90, where:

$$LCL = \bar{x} - t_{.95} \left( \frac{s}{\sqrt{n}} \right)$$

And  $\bar{x}$  is the sample mean;  $s$  is the sample standard deviation;  $n$  is the number of samples; and  $t_{0.95}$  is the  $t$  statistic for a 95% one-tailed confidence interval with  $n-1$  degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to residential water heaters; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The energy factor (EF), rated storage volume in gallons (gal), first hour rating (maximum gallons per minute), and recovery efficiency (percent).

[76 FR 12451, Mar. 7, 2011; 76 FR 24764, May 2, 2011]

#### § 429.18 Residential furnaces.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of

§ 429.11 are applicable to residential furnaces; and

(2) (i) For each basic model of furnaces, other than basic models of those sectional cast-iron boilers (which may be aggregated into groups having identical intermediate sections and combustion chambers) a sample of sufficient size shall be randomly selected and tested to ensure that—

(A) Any represented value of estimated annual operating cost, energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(I) The mean of the sample, where:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$$

and,  $\bar{x}$  is the sample mean;  $n$  is the number of samples; and  $x_i$  is the  $i^{\text{th}}$  sample;

Or,

(2) The upper 97½ percent confidence limit (UCL) of the true mean divided by 1.05, where: