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

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith 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% two-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to refrigerated bottled or canned beverage vending machine; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The maximum average daily energy consumption in kilowatt hours per day (kWh/day), the refrigerated volume (V) in cubic feet (ft^3) used to demonstrate compliance with standards set forth in § 431.296, the ambient temperature in degrees Fahrenheit (°F), and the ambient relative humidity in percent (%) during the test.

[76 FR 12451, Mar. 7, 2011; 76 FR 24779, May 2, 2011, as amended at 76 FR 38292, June 30, 2011]

§ 429.53 Walk-in coolers and walk-in freezers.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to walk-in coolers and freezers; and

(2) [Reserved]

(b) *Certification reports.* (1) Except that § 429.12(b)(6) applies to the certified component, the requirements of § 429.12 are applicable to manufacturers of the components of walk-in coolers and freezers (WICFs) listed in paragraph (b)(2) of this section, and;

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information:

(i) For WICF doors: The door type, R-value of the door insulation, and a declaration that the manufacturer has incorporated the applicable design requirements. In addition, for those WICFs with transparent reach-in doors and windows: The glass type of the doors and windows (*e.g.*, double-pane with heat reflective treatment, triple-pane glass with gas fill), and the power draw of the antisweat heater in watts per square foot of door opening.

(ii) For WICF panels: The R-value of the insulation (except for glazed portions of the doors or structural members)

(iii) For WICF fan motors: The motor purpose (*i.e.*, evaporator fan motor or condenser fan motor), the horsepower, and a declaration that the manufacturer has incorporated the applicable design requirements.

[76 FR 12451, Mar. 7, 2011, as amended at 76 FR 65365, Oct. 21, 2011]

§ 429.54 Metal halide lamp ballasts and fixtures.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to metal halide lamp ballasts; and

(2) For each basic model of metal halide lamp ballast selected for testing, a

sample of sufficient size, not less than four, shall be selected at random and tested to ensure that:

(i) Any represented value of estimated energy efficiency calculated as the measured output power to the lamp divided by the measured input power to the ballast (P_{out}/P_{in}), of a basic model is 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 ith sample;

Or,

(B) The lower 99-percent confidence limit (LCL) of the true mean divided by 0.99.

$$LCL = \bar{x} - t_{.99}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.99}$ is the t statistic for a 99% two-tailed confidence interval with n–1 degrees of freedom (from appendix A).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to metal halide lamp ballasts; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The minimum ballast efficiency in percent (%), the lamp wattage in watts (W), and the type of ballast (*e.g.*, pulse-start, magnetic probe-start, and non-pulse start electronic).

[76 FR 12451, Mar. 7, 2011; 76 FR 24780, May 2, 2011; 76 FR 46202, Aug. 2, 2011]

§ 429.70 Alternative methods for determining energy efficiency or energy use.

(a) *General.* A manufacturer of commercial HVAC and WH equipment, distribution transformers, and central air conditioners and heat pumps may not distribute any basic model of such equipment in commerce unless the manufacturer has determined the energy efficiency of the basic model, either from testing the basic model or from applying an alternative method for determining energy efficiency or energy use (AEDM) to the basic model, in accordance with the requirements of this section. In instances where a manufacturer has tested a basic model to validate the alternative method, the energy efficiency of that basic model must be determined and rated according to results from actual testing. In addition, a manufacturer may not knowingly use an AEDM to overrate the efficiency of a basic model. For each basic model of distribution transformer that has a configuration of windings that allows for more than one nominal rated voltage, the manufacturer must determine the basic model's efficiency either at the voltage at which the highest losses occur or at each voltage at which the transformer is rated to operate.

(b) *Testing.* Testing for each covered product or covered equipment must be done in accordance with the sampling plan provisions established in §§ 429.14 through 429.54 and the testing procedures in parts 430 and 431.

(c) *Alternative efficiency determination method (AEDM) for commercial HVAC and WH equipment*—(1) *Criteria an AEDM must satisfy.* A manufacturer may not apply an AEDM to a basic model to determine its efficiency pursuant to this section unless:

(i) The AEDM is derived from a mathematical model that represents the energy consumption characteristics of the basic model;