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CA IOU Response to 15-day language_Air Filter Labeling

Additional submitted attachment is included below.

Air Filter Labeling

Codes and Standards Enhancement (CASE) Initiative
For PY 2015: Title 20 Standards Development

Response to 15-day Language for
Air Filter Labeling

Docket # 15-AAER-1

May 8th, 2015

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1 Response to CEC Proposed 15-Day Language

The California Investor Owned Utilities (CA IOUs) are very supportive of the CEC's proposal to require labeling on air filters, as this will help improve compliance with Title 24, and may lead to energy savings in the form of appropriate air filters being chosen by consumers which reduce the pressure on the air filter system. The labeling measure has been found to be cost-effective and requiring a low effort to implement. The IOUs support the adoption of the proposed 15-day language, but would like to make note of potential future improvements for the proposed measure to ensure accurate results.

1.1 Pressure Drop Definition

The proposed language includes an update to an existing definition for pressure drop. The addition, highlighted below, creates confusion, and may be in error. The definition of pressure drop is correct. However, pressure drop is not the same as "particle size removal efficiency." The IOUs recommend removing the highlighted portion to restore the previous definition of pressure drop. If a definition of "particle size removal efficiency" is needed, the IOUs recommend adding this as a separate definition.

"Pressure drop" also known as "particle size removal efficiency" means the drop in static pressure versus air flow rate across air filter media in the forced-air heating or cooling equipment.

1.2 Testing multiple size air filters

The proposed language includes the following addition:

Manufacturers shall test small, medium, and large size filters for each grade.

This language is welcomed to provide direction to industry on how many filters need to be tested to be in compliance with the proposed language. However, this requirement needs additional detail and specifics to ensure that all manufacturers are testing equivalent filters.

It is the belief of the IOUs that this language is to allow for filter performance benchmarking, while not requiring testing of every different sized model of filter. Rather than providing nominal descriptions of the sizes, the CEC should specify exact filter sizes to ensure consistent benchmarking between different filter manufacturers.

Figure 1, below, shows the results of a survey conducted in 2012 which identifies the relative frequency of different filter sizes by unique model. Based on this data, the IOUs recommend that the CEC specify that filters be tested in sizes of 288 in^2, 320 in^2, and 350 in^2.

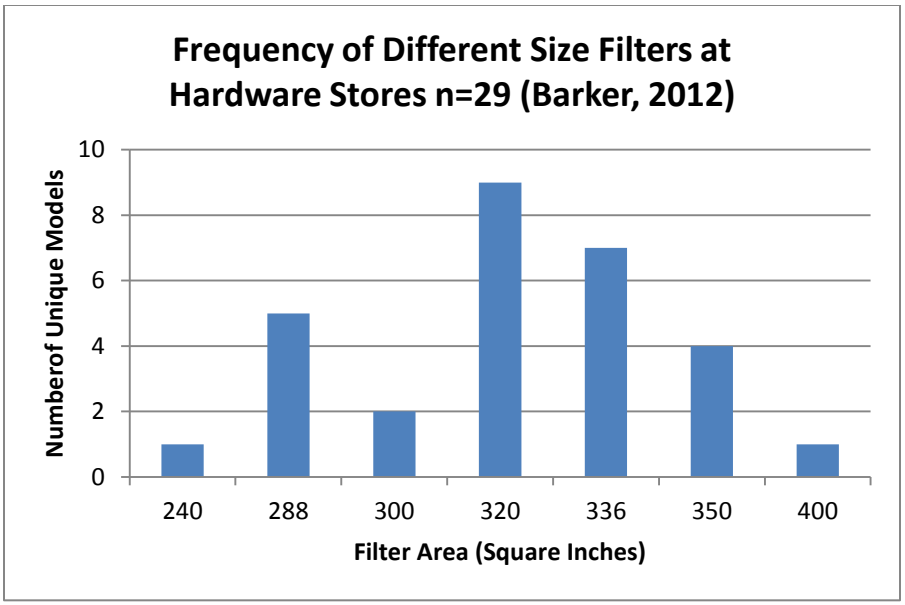

Figure 1 - Filter size survey data

1.3 Divergent Compliance Paths

Existing Title 24 language allows disclosing filter efficiency in either *MERV* (in whole numbers) using ASHRAE 52.2, or *particle size efficiency* (in percentages across three testing bins of different sized particles) following AHRI 680. In the most recent draft of Title 20 language, the labeling requirements have been updated to be more specific to each of those test standards. However, the impact of these changes mean manufacturers testing to ASHRAE 52.2 and AHRI 680 will produce different results from each other, and those values will not be comparable.

The different requirements for test flow rates in the proposed language are described in Figures 2 and 3, below.

(B) Air filters for which reported information is determined in accordance with ASHRAE Standard 52.2-2012 shall be marked with the following information:

1. Particle size efficiency (PSE) of the unit in three particle size ranges: 0.3-1.0, 1.0-3.0, 3.0-10 micrometers (µm).

2. Initial resistance for the range of airflow rates as published by the manufacturer, including the maximum rated airflow rate. The airflow rate values shall be the maximum rated airflow rate, and the values for 50%, 75%, 100% and 125% of the test airflow rate value determined in accordance with ASHRAE 52.2-2012, as described in subsections a, b, c, d, e below.

Figure 2 - ASHRAE 52.2 Flow Rates

(A) Air filters for which the reported information is determined in accordance with the AHRI standard 680-2009 shall be marked with the following information:

1. ~~the MERV p~~Particle size efficiency (PSE) ~~ratings~~ of the unit ~~and~~in three particle size ranges: 0.3-1.0, 1.0-3.0, 3.0-10 micrometers (µm).
2. ~~•~~Initial resistance ~~at 400 cfm, 800 cfm, 1200 cfm, 1600 cfm, and either 2000cfm or maximum rated airflow rate,~~ for the range of airflow rates as published by the manufacturer, including the maximum rated airflow rate. The selected airflow rates shall be in multiples of 400 cfm. If the maximum rated airflow rate is not a multiple of 400 cfm, then report initial resistance at multiples of 400 cfm, and any fraction thereof, to include the maximum rated airflow rate as described in subsections a, b, c, d, e below.

Figure 3 - AHRI 680 Flow Rates

To illustrate the difference between test procedures, the test flow rates for a 320 square inch filter with an assumed face velocity of 492 FPM are shown in Table 1, below, alongside the test flow rates for AHRI 680. As described in Figure 1, 320 square inches was the most common sized filter seen in the survey. ASHRAE 52.2, section 8.1.2 specifies that a face velocity of 492 FPM shall be used if a velocity is not otherwise specified.

ASHRAE 52.2 Specification	ASHRAE 52.2 Example	AHRI 680	Difference
50%	547 CFM	400 CFM	-147 CFM
75%	820 CFM	800 CFM	-20 CFM
100%	1093 CFM	1200 CFM	107 CFM
125%	1367 CFM	1600 CFM	233 CFM
Maximum	Maximum	Maximum	n/a

Table 1 - Test Results Comparison

The difference between these two test methods will consistently show higher performance, in the form of lower pressure drop, at relatively lower CFMs. This means that filters tested under AHRI 680 will appear to perform better at lower CFMs, and worse at higher CFMs. Moreover, anyone attempting to compare two labels will be hard pressed to determine which filter is more appropriate when the metrics are inconsistent.