DOCKETED	
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Project Title:	Commercial Food Service Equipment (i.e. Commercial Steam Cookers, Commercial Convection Ovens, Commercial Dishwashers, and Commercial Fryer)
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Document Title:	NAFEM Comments on RFI and ITSP for Commercial Food Service Equipment
Description:	Comments regarding the appliance efficiency regulations for commercial food service equipment from NAFEM received via email
Filer:	Alex Galdamez
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Air Filter Requirements

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Air filters manufactured on and after July 1, 2024, are required to comply with the testing, marking, and certification requirements listed in Sections 1601-1609 of California's Appliance Efficiency Regulations (Title 20) to be sold or offered for sale in California.

All regulated products are required to be listed on the California Energy Commission's (CEC) Modernized Appliance Efficiency Database System (MAEDbS), a publicly available database that contains all regulated products that may legally be sold or offered for sale in California. The MAEDbS will likely be open for air filter certification one month prior to the effective date.

Compliance Process

Title 20 compliance entails the following:

- **Testing** by using the required test method found in Section 1604 and using a test lab that meets the requirements outlined in Sections 1603(a) and (b).
- **Marking** in accordance with Title 20, Section 1607; and
- **Certifying** to the CEC's MAEDbS

Background and Benefits

The Title 20 standard is applicable to air filters in residential ducted systems. While it doesn't introduce efficiency standards, it offers consumers necessary information, through database certification and labeling, to select efficient air filters. Additionally, the California Building Energy Efficiency Standards (Title 24, Part 6 or the Energy Code) requires air filters in newly constructed homes and certain residential HVAC system alterations to meet certain requirements. Manufacturers are required to mark these air filters to indicate particulate filtration efficiency and pressure drop with verification conducted by a code official.

CEC staff anticipates that after a full stock turnover, these provisions may yield annual energy savings of nearly 38 GWh and 6.1 therms. Furthermore, CEC's analysis indicates annual net statewide benefits of approximately $10.5 million.

Quick Links
to Relevant Code Sections

California Appliance Efficiency Regulations - Title 20

- Section 1602(c) – Definitions
- Section 1603(a) and 1603(b) – Testing: All Appliances
- Section 1604(c)(3) – Test Methods for Specific Appliances
- Section 1605.3(c)(6) – Energy Performance, Energy Design, Water Performance, and Water Design Standards: In General
- Section 1606 – Filing by Manufacturers; Listing of Appliances in Database
- Section 1607(a), 1607(b), and 1607(d)(11) – Marking of Appliances
- Section 1608 – Compliance, Enforcement, and General Administrative Matters

Building Energy Efficiency Standards – Title 24, Part 6

- Section 110.0 – Systems and Equipment - General
- Section 110.1 – Mandatory Requirements for Appliances
- Section 120.1(c)1 – Requirements for Ventilation and Indoor Air Quality
- Section 150.0(m)12 – Mandatory Features and Devices
- Section 150.2(b)1.M.i.c. – Energy Efficiency Standards for Alterations to Existing Family and Residential Buildings
- Section 160.2(b)1 – Mandatory Requirements for Ventilation and Indoor Air Quality

Scope

The Title 20 standards apply to air filters designed for installation in residential ducted systems. These filters are air-cleaning devices that have a nominal frame depth of no greater than 6.0 inches and are either disposable or reusable.

The standards exclude the following air filter types:

- Electronic air cleaners – electrically powered filtration equipment that uses high voltage electrostatic principles to collect particulate matter. It may be of single-stage or multi-stage configuration. Part or all of the charging and/or collecting sections may be manually cleanable, automatically cleanable, or disposable.
- Filter media sold as rolls, not encased in a frame.
- Air filters designed and sold exclusively for installation in products other than residential ducted systems.
  - Air filters used in residential ventilation systems: Unlike residential *ducted* systems, residential *ventilation* systems do not recirculate and condition air within a residence. Instead, they achieve energy efficient mechanical ventilation by exchanging air with the outside environment (e.g., energy recovery ventilators, ERVs).

Testing Requirements

To certify product data to the MAEDbS, manufacturers must test each basic model of air filter at dimensions determined by the manufacturer, as specified in Section 1604(c)(3). The test methods for air filters are shown below:

Appliance Performance Criteria	Test Method
Air filter pressure drop	AHRI Standard 680 (I-P)-2017* or ANSI/ASHRAE Standard 52.2-2017
Minimum Efficiency Reporting Value (MERV)	ANSI/ASHRAE Standard 52.2- 2017
Air filter particle size efficiency	AHRI Standard 680 (I-P)-2017* or ANSI/ASHRAE Standard 52.2-2017
Dust holding capacity	AHRI Standard 680 (I-P)-2017* or ANSI/ASHRAE Standard 52.2-2017

*MERV not reportable for models being tested to AHRI Standard 680 (I-P)-2017

To calculate airflow rate at an initial resistance of 0.1 inches water column, follow these steps:

1. Determine airflow rate (Q) using the equation: $Q = C \times d\,P^{n}$, where Q is airflow rate in cubic feet per minute (cfm), dP is initial resistance pressure difference in inches water column, and C and n are coefficients determined in the least-squares fit.
2. Use the following ordered pairs for the fit: (0,0), (initial resistance value 1, airflow rate value 1), (initial resistance value 2, airflow rate value 2), (initial resistance value 3, airflow rate value 3), (initial resistance value 4, airflow rate value 4), and (initial resistance value 5, airflow rate value 5, if using ANSI/ASHRAE Standard 52.2-2017).
3. Calculate airflow rate at 0.1-inch water column: $Q = C \times 0.1^{n}$

Test Labs

- The CEC maintains a publicly available list of approved test laboratories on the MAEDbS.
- Test labs must submit a test lab application to the CEC in order to be considered an approved test lab.
  - This application becomes available once the MAEDbS opens for product certification.
  - Product testing can occur prior to the test lab being approved by the CEC.
- A manufacturer may act as a test lab or may delegate to a third party.
- For information on test lab requirements, see Section 1603(a).
- For information on how to submit test lab applications, see CEC's MAEDbS General Instructions for Submitting Appliance Data

Marking Requirements

Manufacturers must mark their regulated products permanently, legibly, and conspicuously in an accessible place on each unit with the following information, per Title 20, Section 1607 (b):

1. Manufacturer's name or brand name or trademark
2. Model number
3. Date of manufacture, indicating (i) year and (ii) month or smaller (e.g., week) increment

Additionally, manufacturers must mark the energy performance information of their regulated products in accordance with the test method applied to the basic model, as specified in Section 1607 (d)(11).

- For air filters with a basic model tested according to AHRI Standard 680 (I-P)-2017:
  - Mark on the left side of the label with Particle Size Efficiency (PSE) in three ranges (0.3-1.0, 1.0-3.0, 3.0-10 micrometers). On the right side of the label, specify initial resistance values in inches per water column (IWC) for 25%, 50%, 75%, and 100% of the maximum rated airflow.
  - Airflow rate values for tested air filters
    - [value 1] = 25% of the maximum rated airflow rate in cfm.
    - [value 2] = 50% of the maximum rated airflow rate in cfm
    - [value 3] = 75% of the maximum rated airflow rate in cfm
    - [value 4] = 100% of the maximum rated airflow rate in cfm
  - Air filters that have not been tested should be marked with information that is based on an air filter of the same basic model which has been tested in accordance with AHRI Standard 680 (I-P)-2017. This includes identical PSE values, initial resistance values (for airflow rate values 1-4), and adjusted airflow rate values (1-4) based on face area ratios between the untested and tested air filters.

Table Z-1: Sample Air Filter Marking (AHRI Standard 680 [I-P]-2017)

(µm) PSE (%)	0.30-1.0	1.0-3.0	3.0-10	Airflow Rate (CFM)	[value 1]	[value 2]	[value 3]	[value 4]*	*Max Rated Airflow
Space may be left blank	[value]	[value]	[value]	Initial Resistance (IWC)*	[value]	[value]	[value]	[value]	*Space may be left blank*

- For air filters with a basic model tested according to ANSI/ASHRAE Standard 52.2-2017:
  - Mark the left side of the label with PSE in three particle size ranges and the Minimum Efficiency Reporting Value (MERV) with a whole number value between 1 and 16. On the right side of the label, specify the initial resistance values for 50%, 75%, 100%, 125% of the test airflow rate and the Maximum Rated Airflow Rate.
  - Airflow rate values for tested air filters:
    - [value 1] = 50% of the test airflow rate in cfm
    - [value 2] = 75% of the test airflow rate in cfm
    - [value 3] = 100% of the test airflow rate in cfm
    - [value 4] = 125% of the test airflow rate in cfm
    - [value 5] = Maximum Rated Airflow Rate in cfm, as published by the manufacturer
  - Air filters that have not been tested should be marked with information that is based on an air filter of the same basic model that has been tested in accordance with ANSI/ASHRAE Standard 52.2-2017. This includes the same PSE values, initial resistance values (for airflow rate values 1-5), adjusted airflow rate values (1-5) based on the face area ratios, and MERV with whole number values ranging from 1 to 16.

Table Z-2: Sample Air Filter Marking (ANSI/ASHRAE Standard 52.2-2017)

MERV	(µm) PSE (%)	0.30-1.0	1.0-3.0	3.0-10	Airflow Rate (CFM)	[value 1]	[value 2]	[value 3]	[value 4]	[value 5]*	*Max Rated Airflow
[value]	*Space may be left blank*	[value]	[value]	[value]	Initial Resistance (IWC)	[value]	[value]	[value]	[value]	[value]	*Space may be left blank*

Certification Requirements

Each basic model of air filter must be certified to the CEC and appear in MAEDbS. Even if an air filter meets all testing and marking requirements outlined in Title 20, it is illegal to sell or offer for sale a regulated product in California if the model is not certified. All market actors – including manufacturers, distributors, retailers, contractors, and importers– are equally responsible for ensuring regulated products sold or offered for sale in California are listed in the MAEDbS.

Once certified, products do not need to be recertified each year. However, manufacturers shall remove their product listings if the product is no longer available for sale and add new products or modify the ratings of products for any that have changed.

For More Information

CALIFORNIA ENERGY COMMISSION

energy.ca.gov

- **Appliances Call Center:** (888) 838-1467 or outside California (916) 651-7100. Questions may also be emailed to appliances@energy.ca.gov
- California Appliance Efficiency Standards Site
- Modernized Appliance Efficiency Database (MAEDbS)
- **Air Filters Rulemaking Documents:** docket # 22-AAER-02

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Ace Tools™

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- Title 20 Reference Ace - Navigate the Title 20 Standards using an index, keyword search, and hyperlinked text.

Ace Training™

A portfolio of on-demand and live online and in-person training alternatives on California's Energy Code and Title 20 regulations, tailored to a variety of industry professionals and addressing key measures

- Title 20 Training Ace
- Title 20 Essentials: Using MAEDbS for Manufacturers

Ace Resources™

An array of downloadable materials providing practical and concise guidance on how and when to comply with California's building and appliance energy efficiency standards

Fact Sheets

- MAEDbS 101
- Title 20 Basics – Manufacturers
- Title 20 Basics – Retailers, Distributors, and Installers

Submit a Question – Get your Title 20 questions answered directly by experts. Select the 'Appliances' drop-down menu, navigate to 'Resources,' and select 'Submit a Question.'

Energy Code Ace is here to help you ensure your products meet the requirements of California's appliance and equipment efficiency energy code, Title 20 – which can help ensure that you don't encounter issues that impact your sales and bottom line, including avoiding facing civil penalties under Title 20 Section 1609 for noncompliant products. Create an account on the Energy Code Ace site and select an industry role for your profile to receive messages about all our offerings!

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