

DOCKETED

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Project Title:	Commercial and Industrial Fans and Blowers
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Document Title:	Regulatory Language
Description:	Proposed regulatory language for Commercial and Industrial Fans and Blowers
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Proposed Regulatory Language

California Code of Regulations
Title 20. Public Utilities and Energy
Division 2. State Energy Resources Conservation and Development
Commission
Chapter 4. Energy Conservation
Article 4. Appliance Efficiency Regulations
Sections 1601 - 1609
As related to commercial and industrial fans and blowers

The proposed new language appears as underline (example) and proposed deletions appear as strikeout (~~example~~). Existing language appears as plain text. Three dots or "... " represents the substance of the regulations that exists between the proposed language and current language.

§ 1601. Scope.

This Article applies to the following types of new appliances, if they are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles, or other mobile equipment. Unless otherwise specified, each provision applies only to units manufactured on or after the effective date of the provision.

NOTE: For the applicability of these regulations to appliances installed in new building construction, see sections 110.0 and 110.1 of part 6 of Title 24 of the California Code of Regulations.

...[skipping (a) through (c)]

(d) Portable air conditioners, evaporative coolers, residential furnace fans, ceiling fans, ceiling fan light kits, whole house fans, residential exhaust fans, ~~and dehumidifiers,~~ and commercial and industrial fans and blowers.

...[skipping (e) through (x)]

The following documents ~~is~~ are incorporated by reference in section 1601.

Number

Title

ASSOCIATION INTERNATIONAL, INC (AMCA)~~AMERICAN NATIONAL STANDARDS~~
~~INSTITUTE (ANSI)~~

...[skipping "INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)" through end of section]

Note Authority cited: Sections 25213, 25218(e), 25401.9, 25402(a)-25402(c), and 25960, Public Resources Code; and Sections 16, 26, and 30, Governor's Exec. Order No. B-29-15 (April 1, 2015). Reference: Sections 25216.5(d), 25401.9, 25402(a)-25402(c), 25402.5.4, and 25960, Public Resources Code; and Section 16, Governor's Exec. Order No. B-29-15 (April 1, 2015).

§ 1602. Definitions.

...[skipping (a) through (c)]

(d) Portable Air Conditioners, Evaporative Coolers, Ceiling Fans, Ceiling Fan Light Kits, Whole House Fans, Residential Exhaust Fans, Dehumidifiers, and Residential Furnace Fans, and Commercial and Industrial Fans and Blowers.

...[skipping "Adjusted cooling capacity at 83°F conditions" through "Adjusted cooling capacity at 95°F conditions"]

"Air curtain unit" means equipment providing a directionally controlled stream of air moving across the entire height and width of an opening that reduces the infiltration or transfer of air from one side of the opening to the other and/or inhibits the passage of insects, dust, or debris.

...[skipping "Airflow" through "Annual energy consumption in off-cycle mode"]

"Axial impeller" means an impeller (propeller) with a number of blades extending radially from a central hub in which airflow through the impeller is axial in direction; that is, airflow enters and exits the impeller parallel to the shaft axis with a fan flow angle less than or equal to 20 degrees. Blades can either be single thickness or airfoil shaped.

"Axial-inline fan" means a fan with an axial impeller and a cylindrical housing with or without turning vanes. Inlets and outlets can optionally be ducted.

"Axial-panel fan" means a fan with an axial impeller mounted in a short housing, non-cylindrical, that can be a panel, ring, or orifice plate. The housing is typically mounted

to a wall separating two spaces, and the fans are used to increase the pressure across this wall. Inlets and outlets are not ducted.

“Axial power roof ventilator (PRV)” means a fan with an axial impeller and a cylindrical housing as well as a housing to prevent precipitation from entering the building with or without turning vanes used to supply or exhaust air from a building. Inlets and outlets can optionally be ducted.

“Bare shaft fan” means a fan without a driver.

...[skipping “Basic model” through “Belt-driven ceiling fan”]

“Belt driven fan” means a driven fan configuration which the fan impeller is connected to the driver through a set of belts and sheaves mounted on the driver shaft and fan shaft. This includes fans with V-belt or synchronous belt power transmission.

...[skipping “Blade span” through “Centrifugal ceiling fan”]

“Centrifugal housed fan” means a fan with a centrifugal or mixed flow impeller in which airflow exits into a housing that is generally scroll-shaped to direct the air through a single fan outlet. Inlets and outlets can optionally be ducted. It does not include a radial impeller.

“Centrifugal impeller” means an impeller with a number of blades extending between a back plate and shroud in which airflow enters axially through one or two inlets and exits radially at the impeller periphery. The airflow exits either into open space, or into a housing with a fan flow angle greater than or equal to 70 degrees. Impellers can be classified as single inline or double inlet. Blades can be tilted backward or forward with respect to the direction of impeller rotation. Impellers with backward-tilted blades can be airfoil-shaped (AF), backward-curved single-thickness (BC), backward-incline single-thickness flat (BI), or radial-tipped (RT). Impellers with forward titled blades are known as forward-curved impellers (FC).

“Centrifugal inline fan” means a fan with a centrifugal or mixed-flow impeller in which airflow enters axially at the fan inlet and the housing redirects radial airflow from the impeller to exit the fan in an axial direction. Inlets and outlets can optionally be ducted.

“Centrifugal power roof ventilator exhaust (PRV-E) fan” means a PRV with a centrifugal or mix-flow impeller that exhausts air from a building. Inlets are typically ducted, but outlets are not ducted.

“Centrifugal power roof ventilator supply (PRV-S) fan” means a PRV with a centrifugal or mix-flow impeller that supplies air to a building. Inlets are not ducted, and outlets are typically ducted.

“Centrifugal unhooded fan” means a fan with a centrifugal or mix-flow impeller in which airflow enters through a panel and discharges into free space. Inlets and outlets are not ducted. This fan type also includes fan designed for use in fan arrays that have partition walls separating the fan from other fans in the array.

“Circulating fan” means a fan that is not a ceiling fan that is used to move air within a space, that has no provision for connection to ducting or separation of the fan inlet from its outlet. The fan is designed to be used for the general circulation of air.

...[skipping “Combined energy efficiency ratio (CEER)”]

“Commercial and industrial fan and blower” means a rotary-bladed machine used to convert mechanical power to air power, with a specific work limited to 25 kilojoule per kilogram (kJ/kg) or less and have a rated fan shaft power greater than or equal to 1 horsepower, or, for fans without a rated shaft input power, an electrical input power greater than or equal to 1 kW, and a fan output power less than or equal to 150 horsepower. They consist of an impeller, a shaft, bearings, and a structure or housing, including any transmissions, driver, and/or controls if integrated, assembled, or packaged by the manufacturer at the time of sale.

(1) Commercial and industrial fans and blowers do not include:

- (A) safety fans as defined in Section 1602(d) of this Article;
- (B) ceiling fans as defined in 10 CFR 430.2;
- (C) circulating fans;
- (D) induced-flow fans;
- (E) jet fans;
- (F) cross-flow fans;
- (G) embedded fans as defined in ANSI/AMCA 214-21;
- (H) fans mounted in or on motor vehicles or other mobile equipment;
- (I) fans that create a vacuum of 30 in. water gauge or greater;
- (J) air curtain unit as defined in Section 1602(d) of this Article.

...[skipping “Cooling efficiency ratio (CER)”]

“Cross-flow fan” means a fan with a housing that creates an airflow path through the impeller, in a direction at right angles to the axis of rotation and with airflow both entering and exiting the impeller at the periphery. Inlets and outlets can optionally be ducted.

...[skipping “Dehumidifier” through “Direct evaporative cooler”]

“Driver” means a machine, such as a motor, used to provide mechanical power to the impeller, either directly or through a transmission.

...[skipping “Dual-duct portable air conditioner”]

“Dual-use fan” means a fan having two operating modes to serve long-term ventilation purposes as well as short-time emergency duty at higher speeds for fire or smoke extraction.

...[skipping “Energy factor for dehumidifiers” through “Evaporative cooler”]

“Fan array” means multiple fans in parallel and in a single enclosure between two plenum sections in an air distribution system, where plenum means a compartment or chamber that forms a part of the air distribution system, and that is not used for occupancy or storage.

“Fan Energy Index or FEI” means the ratio of the electrical input power of a reference fan to the electrical input power of the actual fan as calculated under the test method in section 1604(d)(2) of this Article.

“Fan Electrical Power or FEP” means the electrical power required to operate a fan, including any motor controllers at a given duty point. It is calculated in the test method in section 1604(d)(2) of this Article.

“Fan flow angle” means the angle of the centerline of the air-conducting surface of a fan blade measured at the midpoint of its trailing edge with the centerline of the rotation axis, in a plane through the rotation axis and the midpoint of the trailing edge.

“Fan output power” means the power delivered to air by the fan; it is proportional to the product of the fan airflow rate, the fan total pressure and the compressibility coefficient as determined in accordance with the test procedure specified in section 1604(d)(2) of this Article.

“Fan series” means a group of fan models that are geometrically similar per the proportionality and dimensional requirements explained in Annex K of the test method in section 1604(d)(2) of this Article.

“Fan shaft power” means the mechanical input power to the shaft that is connected directly to the impeller.

...[skipping “Furnace fan” through “Highly decorative ceiling fan”]

“Housing” means any component or components of the fan that direct airflow into or away from the impeller and/or provide protection to the internal components. It may serve as the structure of the fan.

...[skipping “Hugger ceiling fan”]

“Impeller” means a rotary bladed aerodynamic component of a fan that transfers mechanical energy to the airstream.

...[skipping “Indirect evaporative cooler”]

“Induced-flow fan” means a type of laboratory exhaust fan with nozzle and windband; the fan’s outlet airflow is greater than the inlet airflow due to induced airflow. All airflow entering the inlet exits through the nozzle. Airflow exiting the windband includes the nozzle airflow as well as the induced airflow.

“Inline mixed-flow fan” means a fan with a mixed-flow impeller in which airflow enters axially at the fan inlet, and the housing redirects radial airflow from the impeller to exit the fan in an axial direction. Inlets and outlets can optionally be ducted.

...[skipping “Input power”]

“Jet fan” means a fan designed and marketed specifically to produce a high-velocity air jet in a space to increase its air momentum. Jet fans are rated using thrust. Inlets and outlets are not ducted but may include acoustic silencers.

...[skipping "Lamp ballast platform" through "Low-speed small-diameter (LSSD) ceiling fan"]

"Mixed-flow impeller" means an impeller with construction characteristics between those of an axial and centrifugal impeller with a fan flow angle greater than 20 degrees and less than 70 degrees. Airflow enters axially through a single inlet and exits with combined axial and radial directions at a mean diameter greater than the inlet.

"Mixed-flow fan" means a fan with fitted mixed-flow impeller that has a fan flow angle greater than 20 degrees and less than 70 degrees.

...[skipped "Multi-head ceiling fan" through "Portable or Spot Evaporative Cooler"]

"Power roof ventilator (PRV)" or "power wall ventilator (PWV)" means a fan with an internal driver and a housing to prevent precipitation from entering the building. It has a base designed to fit over a rood or wall opening, usually by means of a roof curb.

...[skipping "Product capacity for dehumidifiers"]

"Radial-housed fan" means a fan with a radial impeller in which airflow exits into a housing that is generally scroll-shaped to direct the air through a single fan outlet. Inlets and outlets can optionally be ducted.

"Radial impeller" means a form of centrifugal impeller with a number of blades extending radially from a central hub. The airflow enters axially through a single inlet and exits radially at the impeller periphery. The housing has impeller blades positioned such that the outward direction of the blade at the impeller periphery is perpendicular within 25 degrees to the axis of rotation. Impellers can optionally have a back plate and/or shroud.

...[skipping "Residential exhaust fan"]

"Safety fan" means:

- (1) a fan that is designed and marketed to operate only at or above 482 degrees Fahrenheit (250 degrees Celsius);

- (2) a reversible axial fan in cylindrical housing that is designed and marketed for use in ducted tunnel ventilation that will reverse operations under emergency ventilation conditions;
- (3) a fan bearing an Underwriter Laboratories or Electric Testing Laboratories listing for "Power Ventilators for Smoke Control Systems";
- (4) an open discharge exhaust fan with integral discharge nozzles which develop or maintain a minimum discharge velocity of 3000 FPM;
- (5) a fan constructed in accordance with AMCA type A or B spark resistant construction as defined in ANSI/AMCA Standard 99-16 Standards Handbook;
- (6) a fan designed and marketed for use in explosive atmospheres and tested and marked according to EN 13463-1:2001 Non-electrical Equipment for Potentially Explosive Atmospheres; or
- (7) an electric-motor-driven- Positive Pressure Ventilator as defined in ANSI/AMCA Standard 240-15 Laboratory Methods of Testing Positive Pressure Ventilators for Aerodynamic Performance Rating.

...[skipping "Seasonally adjusted cooling capacity (SACC)"]

"Series calculated fan " means the fan models for which the performance data was calculated based on a series-tested fan from the same fan series using the allowable fan laws listed in the test method in section 1604(d)(2) of this Article.

"Series tested fan " means the fan model tested in a laboratory to provide performance data for a fan series as explained in the test method in section 1604(d)(2) of this Article.

...[skipping "Single-duct portable air conditioner" through "Spot air conditioner"]

...[skipping the rest of (d) through (x)]

The following documents are incorporated by reference in section 1602.

<i>Number</i>	<i>Title</i>
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...[skipping FEDERAL STATUTES AND REGULATIONS through ADOBE SYSTEMS INCORPORATED]

AMERICAN NATIONAL STANDARDS INSTITUTE AIR MOVEMENT AND CONTROL
ASSOCIATION INTERNATIONAL, INC (AMCA/ANSI)

ANSI/AMCA Standard 214-21
ANSI/AMCA Standard 99-16

Test Procedure for Calculating Fan
Energy Index for Commercial and
Industrial Fans and Blowers
Standards Handbook

ANSI/AMCA Standard 214-21

Test Procedure for Calculating Fan
Energy Index for Commercial and
Industrial Fans and Blowers

ANSI/AMCA Standard 240-15

Laboratory Methods of Testing
Positive Pressure Ventilators for
Aerodynamic Performance Rating

... [skipping AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
through SOCIETY OF MOTION PICTURE AND TELEVISION ENGINEERS
(SMPTE)

THE EUROPEAN COMMITTEE FOR STANDARDIZATION

EN 13463-1:2001

Non-electrical Equipment for
Potentially Explosive Atmospheres

... [skipping ANSI C78.3-1991 (R1996) through the end of section 1602]

Note: Authority cited: Sections 25213, 25128(e), 25401.9, 25402(a)-25402(c) and 25960, Public Resources Code; and Sections 16, 26 and 30, Governor's Exec. Order No. B-29-15 (April 1, 2015). Reference: Sections 25216.5(d), 25401.9, 25402(a)-25402(c), 25402.5.4 and 25960, Public Resources Code; and Section 16, Governor's Exec. Order No. B-29-15 (April 1, 2015).

§ 1604. Test Methods for Specific Appliances.

...[skipping (a) through (c)]

(d) Portable Air Conditioners, Evaporative Coolers, Ceiling Fans, Ceiling Fan Light Kits, Whole House Fans, Residential Exhaust Fans, Dehumidifiers, ~~and Residential Furnace Fans,~~ and Commercial and Industrial Fans and Blowers.

- (1) The test methods for portable air conditioners, evaporative coolers, ceiling fans, ceiling fan light kits, whole house fans, residential exhaust fans, dehumidifiers, and-residential furnace fans are shown in Table D-3.

Table D-3
~~Portable Air Conditioner, Ceiling Fan, Ceiling Fan Light Kit, Evaporative Cooler, Whole House Fan, Residential Exhaust Fan, Dehumidifier, and Residential Furnace Fan Test Methods~~ Testing Requirements for the following Appliances

Appliance	Test Method
Spot Air Conditioners	ANSI/ASHRAE 128-2001
Single-Duct and Dual-Duct Portable Air Conditioners	10 C.F.R. section 430.23(dd) (Appendix CC to subpart B of part 430)
Ceiling Fans	10 C.F.R. section 430.23(w) (Appendix U to subpart B of part 430)
Ceiling Fan Light Kits	10 C.F.R section 430.23(x) (Appendix V to subpart B of part 430)
Evaporative Coolers	ANSI/ASHRAE 133-2008 for packaged direct evaporative coolers and packaged indirect/direct evaporative coolers; ANSI/ASHRAE 143-2007 for packaged indirect evaporative coolers
Whole House Fans	HVI-Publication 916 29 September 2015 HVI Airflow Test Procedure, as specified in section 5.2. Use setups for whole house comfort ventilators.
Dehumidifiers	10 C.F.R. section 430.23(z) (Appendix X to subpart B of part 430, active mode portion only)

Appliance	Test Method
Portable Dehumidifiers and Whole-Home Dehumidifiers Manufactured On or After June 13, 2019	10 C.F.R. section 430.23(z) (Appendix X1 to subpart B of part 430)
Residential Exhaust Fans	HVI-Publication 916 29 September 2015 HVI Airflow Test Procedure, as specified in section 5.2.
Residential Furnace Fans	10 C.F.R. section 430.23(cc) (Appendix AA to subpart B of part 430)

- (2) Commercial and Industrial Fans and Blowers. The test method for Commercial and Industrial Fans and Blowers is ANSI/AMCA Standard 214-21 Test Procedure for Calculating Fan Energy Index (FEI) for Commercial and Industrial Fans and Blowers with the following additions:
- (A) lab reports and calculated results used for certification and marking shall be maintained by the manufacturer per the requirements of Annex J of ANSI/AMCA 214-21. Records shall be retained per the requirements of section 1608(c)(1) of this Article.;

...[skipping (e) through (x)]

The following documents are incorporated by reference in section 1604.

Number

Title

...[skipping "CALIFORNIA ENERGY COMMISSION TEST METHODS" through "AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) AIR-CONDITIONING, HEATING AND REFRIGERATION (AHRI)"]

AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL, INC (AMCA)

ANSI/AMCA Standard 214-21

Test Procedure for Calculating Fan Energy Index (FEI) for Commercial and Industrial Fans and Blowers

...[skipping "~~ANSI C78.43-2004~~AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)" through the end of section 1604]

Note: Authority cited: Section cited: Sections 25213, 25218(e), 25401.9, 25402(a)-25402(c) and 25960, Public Resources Code; and Sections 16, 26 and 30, Governor's Exec. Order No. B-29-15 (April 1, 2015). Reference: Sections 25216.5(d), 25401.9,

25402(a)-25402(c) and 25960, Public Resources Code; and Section 16, Governor’s Exec. Order No. B-29-15 (April 1, 2015).

§ 1606. Filing by Manufacturers; Listing of Appliances in MAEDbS.

...[Skipping (a) through “Residential Furnace Fans” section D of Table X]

	Appliance	Required Information	Permissible Answers
	<u>Commercial and Industrial Fans and Blowers</u>	<u>Fan type</u>	<u>Centrifugal housed, centrifugal inline, centrifugal unhooded, centrifugal PRV supply, centrifugal PRV exhaust, axial inline, axial PRV, inline mixed-flow, power roof/wall ventilators, axial panel, radial housed</u>
		<u>Fan impeller diameter (in.)</u>	
		<u>Motor model number (if fan is certified with a motor)</u>	
		<u>Transmission</u>	<u>Direct, V-belt, synchronous-belt, flexible coupling, none</u>
		<u>Controller model number (if fan is certified with a controller)</u>	
		<u>Maximum fan speed (RPM) at FEI=1.0</u>	
		<u>Maximum pressure (inches water gauge) at FEI=1.0</u>	
		<u>Maximum compliant air flow (SCFM) at FEI=1.0</u>	
		<u>FEP_{act}</u>	<u>Tested, calculated</u>
		<u>Associated Series Tested Fan Model Number (if calculated)</u>	<u>Fan product line and model, (N/A if tested)</u>
		<u>Method of FEP_{act} determination</u>	<u>Section 6.1, 6.2, 6.3, 6.4, or 6.5 of the test method</u>
		<u>FEP_{ref} at FEI=1.0</u>	<u>Reference fan electrical power (kW)</u>

	<u>FEP_{act} at FEI=1.0</u>	<u>Actual fan electrical power (kW)</u>
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...[skipping through the end of section 1606]

Note: Authority cited: Sections 25213, 25218(e), 25401.9, 25402(a)-25402(c) and 25960, Public Resources Code; and Sections 16, 26 and 30, Governor's Exec. Order No. B-29-15 (April 1, 2015). Reference: Sections 25216.5(d), 25401.9, 25402(a)-25402(c), 25402.5.4 and 25960, Public Resources Code; and Section 16, Governor's Exec. Order No. B-29-15 (April 1, 2015).

§ 1607. Marking of Appliances.

...[skipping (a) through (d)(15)]

(16) Commercial and Industrial Fans and Blowers. Each commercial and industrial fan and blower shall be marked with a legible and permanently fixed label, which may be in tabular form (as shown below):

(A) The label shall include the following information:

1. manufacturer name;
2. brand name or brand code;
3. model number;
4. serial number;
5. date of manufacture;
6. FEP_{ref} at FEI=1.0;
7. maximum air flow (SCFM) at FEI=1.0;
8. maximum speed (RPM) at FEI=1.0; and
9. maximum pressure (inches water gauge) at FEI=1.0.

(B) No marketing or catalog information shall provide performance data for any duty point where the FEI is less than 1.0. Performance data provided to consumers shall be provided only for the operation of the fan where the FEI is equal or greater than 1.0.

...[skipping through the end of section 1607]

Note: Authority cited: Sections 25213, 25218(e), 25402(a)-25402(c) and 25960, Public Resources Code. Reference: Sections 25216.5(d), 25401.9, 25402(a)-25402(c) and 25960, Public Resources Code