ANSI/ASHRAE Standard 62.2-2010
including ANSI/ASHRAE Addenda b, c, e, g, h, i, j, l, and n

Prepared by California Energy Commission Staff

Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings

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This document is not the current version of ASHRAE Standard 62.2-2010. This document was the current version of ASHRAE Standard 62.2-2010 at the time the California Energy Commission adopted it for the 2013 update to the California Building Energy Efficiency Standards. To obtain the current edition of ASHRAE Standard 62.2, visit www.ashrae.org/bookstore.

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California Energy Commission Adaptation of ANSI/ASHRAE Standard 62.2-2010 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings

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(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)

FOREWORD

Standard 62.2 was first published in 2003 as the first national ventilation and indoor air quality (IAQ) standard developed specifically for low-rise residential buildings via the ANSI process. It has been maintained since then using the ANSI and ASHRAE continuous maintenance procedures. Users of the standard are encouraged to use these procedures to propose changes to the standard. The committee will consider and take formal action on every proposal received. Forms and procedures for submitting change proposals may be found on ASHRAE's Web site at www.ashrae.org. When proposed addenda are available for public review and when approved addenda are published, notices will be published on ASHRAE's Web site. The standard is now published in its entirety every third year and includes all approved addenda and errata. This procedure allows users to have certainty about when the new editions will be published. This 2010 edition incorporates the content of 20 addenda into the 2007 version, which were processed by the committee and approved by ASHRAE and ANSI. For brief descriptions of the addenda to ANSI/ASHRAE 62.2-2007, see Appendix B.

When this standard was published in 2004 and 2007, relatively few changes were made to the original 2003 version. However, since 2003, extensive experience has been gained in the application of this standard, due to its adoption by various building codes and use in numerous building programs. As such, many clarifications and improvements have been identified and incorporated through the approved addenda. However, as discussed below, the standard follows the same overall approach as before, and mechanical ventilation rates have not been changed. One significant addition is the addition of a new normative appendix addressing the application of the standard to existing buildings. This appendix allows some optional pathways for previously occupied buildings, which are intended to overcome barriers to application of the standard in existing buildings.

As in the previous versions of this standard, there are three primary sets of requirements and a number of secondary ones. The three primary sets involve whole-house ventilation, local exhaust, and source control. Whole-house ventilation is intended to dilute the unavoidable contaminant emissions from people, from materials, and from background processes. Local exhaust is intended to remove contaminants from those specific rooms (e.g., kitchens and bathrooms) that, because of their design function, are expected to contain sources of contaminants. Other source control measures are included to deal with those sources that can be reasonably anticipated to be found in a residence. The standard's secondary requirements focus on properties of specific items that are needed to achieve the main objectives of the standard. Examples of this include sound and flow ratings for fans and labeling requirements.

This standard does not address specific pollutant concentration levels. It also does not address certain potential pollutant sources such as unvented combustion space heaters and contamination from outdoor sources or from episodic occupant-controlled events such as painting, smoking, cleaning, or other high-polluting events. For information on residential ventilation and IAQ beyond the minimum requirements contained in this standard, users may wish to consult the companion guideline, which was also developed by this committee. ASHRAE Guideline 24-2008, Ventilation and Indoor Air Quality in Low-Rise Residential Buildings[1]*, provides explanatory and educational material not appropriate for a code-intended standard and addresses IAQ and ventilation issues where consensus could not be achieved for inclusion in the standard. Information previously contained in informative appendices to this standard (Operations and Maintenance and HVAC Systems) was moved to the guideline and will be maintained there in the future.*

1. PURPOSE

This standard defines the roles of and minimum requirements for mechanical and natural ventilation systems and the building envelope intended to provide acceptable indoor air quality (IAQ) in low-rise residential buildings.

2. SCOPE

This standard applies to spaces intended for human occupancy within single-family houses and multi-family structures of three stories or fewer above grade, including manufactured and modular houses. This standard does not apply to transient housing such as hotels, motels, nursing homes, dormitories, or jails.

2.1 This standard considers chemical, physical, and biological contaminants that can affect air quality. Thermal comfort requirements are not included in this standard (see *ANSI/ ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy*).

2.2 While acceptable IAQ is the goal of this standard, it will not necessarily be achieved even if all requirements are met

a. because of the diversity of sources and contaminants in indoor air and the range of susceptibility in the population;

b. because of the many other factors that may affect occupant perception and acceptance of IAQ, such as air temperature, humidity, noise, lighting, and psychological stress;
c. if the ambient air is unacceptable, and this air is brought into the building without first being cleaned (cleaning of ambient outdoor air is not required by this standard);
d. if the system(s) are not operated and maintained as designed; or
e. when high-polluting events occur.

2.3 This standard does not address unvented combustion space heaters.

3. DEFINITIONS

***acceptable indoor air quality*:** air toward which a substantial majority of occupants express no dissatisfaction with respect to odor and sensory irritation and in which there are not likely to be contaminants at concentrations that are known to pose a health risk.

***air cleaning*:** the use of equipment that removes particulate, microbial, or gaseous contaminants (including odors) from air.

***air, exhaust*:** air discharged from any space to the outside by an exhaust system.

***air, indoor*:** air in an occupiable space.

***air, outdoor*:** air from outside the building taken into a ventilation system or air from outside the building that enters a space through infiltration or natural ventilation openings.

***air, transfer*:** air moved from one occupiable space to another, usually through doorways or grilles.

***air, ventilation*:** outdoor air delivered to a space that is intended to dilute airborne contaminants.

***air change rate*:** airflow in volume units per hour divided by the volume of the space on which the air change rate is based in identical units (normally expressed in air changes per hour [ach]).

***balanced system*:** one or more fans that supply outdoor air and exhaust building air at substantially equal rates.

***bathroom*:** any room containing a bathtub, a shower, a spa, or a similar source of moisture.

***climate, hot, humid*:** climate in which the wet-bulb temperature is 67°F (19°C) or higher for 3500 h or more, or 73°F (23°C) or higher for 1750 h or more, during the warmest six consecutive months of a year that is typical for that geographic area (see Section 8).

***climate, very cold*:** climates that have more than 9000 annual heating degree-days base 65°F-day (5000 annual heating degree-days base 18°C-day) (see Section 8).

***conditioned space*:** the part of a building that is capable of being thermally conditioned for the comfort of occupants.

contaminant: a constituent of air that may reduce acceptability of that air.

***dwelling unit*:** a single unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking, and sanitation.

***effective annual average infiltration rate*:** the constant air infiltration rate that would result in the same average indoor pollutant concentration over the annual period as actually occurs under varying conditions.

***exhaust system*:** one or more fans that remove air from the building, causing outdoor air to enter by ventilation inlets or normal leakage paths through the building envelope.

***exhaust flow, net*:** flow through an exhaust system minus the compensating outdoor airflow through any supply system that is interlocked to the exhaust system.

***habitable space*:** building space intended for continual human occupancy; such space generally includes areas used for living, sleeping, dining, and cooking but does not generally include bathrooms, toilets, hallways, storage areas, closets, or utility rooms.

***heating degree-day*:** the difference in temperature between the outdoor mean temperature over a 24-hour period and a given base temperature of a building space; that is, for heating degree-day base 65°F (18°C), for any one day, when the mean temperature is less than 65°F (18°C), there are as many heating degree-days as degrees Fahrenheit (Celsius) temperature difference between the mean temperature for the day and 65°F (18°C). Annual heating degree-days are the sum of the heating degree-days over a calendar year.

***high-polluting events*:** isolated and occupant-controllable events that release pollutants in excess quantities. Typical cooking, bathing, and laundry activities are not considered high-polluting events.

***infiltration*:** uncontrolled inward leakage of air through cracks and interstices in any building element and around windows and doors of a building.

***kitchen*:** any room containing cooking appliances.

***mechanical cooling*:** reducing the temperature of a fluid by using vapor compression, absorption, desiccant dehumidification combined with evaporative cooling, or other energy-driven thermodynamic means. Indirect or direct evaporative cooling alone is not considered mechanical cooling.

***mechanical ventilation*:** the active process of supplying or removing air to or from an indoor space by powered equipment such as motor-driven fans and blowers but not by devices such as wind-driven turbine ventilators and mechanically operated windows.

***mixed-use building*:** a building containing commercial space (corridors, parking garages, and other common spaces may be present but are not classified as commercial space) in addition to dwelling units.

***multifamily building*:** a building containing multiple dwelling units.

***natural ventilation*:** ventilation occurring as a result of only natural forces, such as wind pressure or differences in air density, through intentional openings such as open windows and doors.

***occupiable space*:** any enclosed space inside the pressure boundary and intended for human activities, including, but not limited to, all habitable spaces, toilets, closets, halls, storage and utility areas, and laundry areas.

***pressure boundary*:** primary air enclosure boundary separating indoor and outdoor air. For example, a volume that has more leakage to the outside than to the conditioned space would be considered outside the pressure boundary. Exposed earth in a crawlspace or basement shall not be considered part of the pressure boundary.

***readily accessible*:** capable of being quickly and easily reached for operation, maintenance, and inspection.

***source*:** an indoor object, person, or activity from which indoor air contaminants are released; or a route of entry of contaminants from outdoors or sub-building soil.

***supply system*:** one or more fans that supply outdoor air to the building, causing indoor air to leave by normal leakage paths through the building envelope.

***system*:** equipment and other components that collectively perform a specific function, such as mechanical cooling or ventilation.

***toilet*:** space containing a toilet, water closet, urinal, or similar sanitary service.

***utility*:** laundry, lavatory, or other utility room containing sinks or washing equipment.

ventilation: the process of supplying outdoor air to or removing indoor air from a dwelling by natural or mechanical means. Such air may or may not have been conditioned.

4. WHOLE-BUILDING VENTILATION

4.1 Ventilation Rate. A mechanical exhaust system, supply system, or combination thereof shall be installed for each dwelling unit to provide whole-building ventilation with outdoor air each hour at a rate not less than specified in Section 4.1.1, Fan Ventilation Rate Method, or Section 4.1.2, Total Ventilation Rate Method.

4.1.1 Fan Ventilation Rate Method. The mechanical ventilation rate shall be as specified in Table 4.1a or Table 4.1b or, equivalently, Equation 4.1a or Equation 4.1b, based on the floor area of the conditioned space and number of bedrooms.

$$Q_{fan} = 0.01A_{floor} + 7.5(N_{br} + 1) \qquad (4.1a)$$

where
Q_{fan} = fan flow rate, cfm
A_{floor} = floor area, ft^2
N_{br} = number of bedrooms; not to be less than one

$$Q_{fan} = 0.05A_{floor} + 3.5(N_{br} + 1) \qquad (4.1b)$$

where
Q_{fan} = fan flow rate, L/s
A_{floor} = floor area, m^2

Exceptions: Whole-building mechanical systems are not required provided that at least one of the following conditions is met:

a. the building has no mechanical cooling and is in zone 1 or 2 of the IECC 2004 Climate Zone Map (see Figure 9.1), or

b. the building is thermally conditioned for human occupancy for less than 876 h per year,

and if the authority having jurisdiction determines that window operation is a locally permissible method of providing ventilation.

TABLE 4.1a (I-P)
Ventilation Air Requirements, cfm

Floor Area (ft^2)	Bedrooms				
	0-1	2-3	4-5	6-7	>7
<1500	30	45	60	75	90
1501-3000	45	60	75	90	105
3001-4500	60	75	90	105	120
4501-6000	75	90	105	120	135
6001-7500	90	105	120	135	150
>7500	105	120	135	150	165

TABLE 4.1b (SI)
Ventilation Air Requirements, L/s

Floor Area (m^2)	Bedrooms				
	0-1	2-3	4-5	6-7	>7
<139	14	21	28	35	42
139.1-279	21	28	35	42	50
279.1-418	28	35	42	50	57
418.1-557	35	42	50	57	64
557.1-697	42	50	57	64	71
>697	50	57	64	71	78

4.1.2 Total Ventilation Rate Method. The total required ventilation rate (Q_{tot}) shall be calculated using Equation 4.2a (I-P) or Equation 4.2b (SI).

$$Q_{tot} = 0.03A_{floor} + 7.5(N_{br} + 1) \quad (4.2a)$$

where
Q_{tot} = total required ventilation rate, cfm
A_{floor} = floor are of residence, ft^2
N_{br} = number of bedrooms (to be not less than one)

$$Q_{tot} = 0.15A_{floor} + 3.5(N_{br} + 1) \quad (4.2b)$$

where
Q_{tot} = total required ventilation rate, L/s
A_{floor} = floor are of residence, m^2

Effective Annual Average Infiltration Rate (Q_{inf}): Effective Annual Average infiltration Rate (Q_{inf}) shall be calculated using the normalized leakage calculated from measurements of envelope leakage using either ASTM E779[16] or CGSB 149.10[17]. The authority having jurisdiction may approve other means of calculating effective leakage area (ELA).

ASTM Procedure: To calculate the effective leakage area from the ASTM E779 Standard[16], the leakage area for pressurization and depressurization (using a 4 Pa reference pressure) shall be averaged using Equation 4.3.

$$ELA = (L_{press} + L_{depress})/2 \quad (4.3)$$

where
ELA = effective leakage area, ft^2 (m^2)
L_{press} = leakage area from pressurization, ft^2 (m^2)
$L_{depress}$ = leakage area from depressurization, ft^2 (m^2)

CGSB Procedure: To calculate the effective leakage area from CGSB-149.10[17], the following modifications to the test procedure must be made: (1) all vents and intentional openings must be in the same configuration as specified in the ASTM standard (i.e., HVAC dampers and registers should be in the normal operating position; fireplace and other dampers should be closed unless they are required for test operation), (2) height and floor area must be reported consistently with the definitions of this standard, and (3) the leakage area as calculated from the CGSB procedure must be converted using Equation 4.4.

$$ELA = 0.61 \cdot (0.4)^{n-0.5} \cdot L_{cgsb} \quad (4.4a)$$

where
n = exponent measured from the CGSB Standard[17]
L_{cgsb} = CGSB leakage area, as modified above, ft^2 (m^2)

Normalized leakage: *Normalized leakage* shall be calculated using Equation 4.5.

$$NL = 1000 \cdot \frac{ELA}{A_{floor}} \cdot \left[\frac{H}{H_r}\right]^z \quad (4.5)$$

where
NL = normalized leakage
H_r = reference height, 8.2 ft (2.5m)
H = vertical distance from lowest above grade floor to highest ceiling, ft (m)
z = 0.4 for the purpose of calculating Effective Annual infiltration Rate below

Effective Annual Average Infiltration Rate (Q_{inf}): Effective Annual Average Infiltration Rate (Q_{inf}) shall be calculated using Equation 4.6a (I-P) or Equation 4.6b (SI).

$$Q_{inf}(\text{cfm}) = \frac{NL \cdot wsf \cdot A_{floor}}{7.3} \quad (4.6a)$$

where
NL = normalized leakage

wsf = weather and shielding factor from Normative Appendix X

A_{floor} = floor are of residence, ft^2

$$Q_{inf}(\text{L/s}) = \frac{\text{NL}\cdot\text{wsf}\cdot A_{floor}}{1.44} \quad (4.6b)$$

where

A_{floor} = floor area of residence, m^2

Required Mechanical Ventilation Rate (Q_{fan}): Required Mechanical Ventilation Rate (Q_{fan}) shall be calculated using Equation 4.7.

$$Q_{fan} = Q_{tot} - Q_{inf} \quad (4.7)$$

where

Q_{fan} = required mechanical ventilation rate, cfm (L/s)

If Q_{fan} is less than or equal to zero, then no whole-building ventilation fan is required.

4.1.3 Different Occupant Density. Tables 4.1a and 4.1b and Equations 4.1a and 4.1b and Equations 4.2a and 4.2b assume two persons in a studio or one-bedroom dwelling unit and an additional person for each additional bedroom. Where higher occupant densities are known, the rate shall be increased by 7.5 cfm (3.5 L/s) for each additional person. When approved by the authority having jurisdiction, lower occupant densities may be used.

4.1.4 Alternative Ventilation. Other methods may be used to provide the required ventilation rates (of Tables 4.1a and 4.1b) when approved by a licensed design professional.

4.2 System Type. The whole-house mechanical ventilation system shall consist of one or more supply or exhaust fans and associated ducts and controls. Local exhaust fans shall be permitted to be part of a mechanical exhaust system. Outdoor air ducts connected to the return side of an air handler shall be permitted as supply ventilation if manufacturers' requirements for return air temperature are met. See Chapter 10 of Guideline 24[1] for guidance on selection of methods.

4.3 Airflow Measurement. The airflow required by this section is the quantity of outdoor ventilation air supplied and/ or indoor air exhausted by the mechanical ventilation system as installed and shall be measured using a flow hood, flow grid, or other airflow measuring device. Ventilation airflow of systems with multiple operating modes shall be tested in all modes designed to meet this section.

4.4 Control and Operation. The "fan on" switch on a heating or air-conditioning system shall be permitted as an operational control for systems introducing ventilation air through a duct to the return side of an HVAC system. Readily accessible override control must be provided to the occupant. Local exhaust fan switches and "fan on" switches shall be permitted as override controls. Controls, including the "fan-on" switch of a conditioning system, must be appropriately labeled.

Exception: An intermittently operating, whole-house mechanical ventilation system may be used if the ventilation rate is adjusted, according to Section 4.5.1. The system must be designed so that it can operate automatically based on a timer. The intermittent mechanical ventilation system must operate at least once per day and must operate at least 10% of the time.

4.5 Delivered Ventilation Rate. The delivered mechanical ventilation rate shall be calculated as the larger of the average total supply or average total exhaust flow rate during each hour of operation and shall be no less than specified in Section 4.1.

4.5.1 Intermittent Ventilation. When the required average mechanical ventilation rate is not supplied during every hour of operation, the delivered ventilation is deemed sufficient when the effective mechanical ventilation rate complies with this section. The effective mechanical ventilation rate of an intermittent system is the combination of the fan flow rate during the on-cycle, the fractional on-time, the cycle time, and the mechanical ventilation effectiveness as defined below. The fan flow rate required to achieve an effective mechanical ventilation rate that is equivalent to the continuous mechanical ventilation requirement is based on the principle of equivalent dose and shall be calculated from the following equation:

$$Q_{on} = Q_{fan}/(\varepsilon f) \quad (4.8)$$

where

Q_{on} = intermittent fan flow rate during the on-cycle

Q_{fan} = continuous mechanical ventilation air requirement (from Table 4.1a or 4.1b, or Equation 4.1a or 4.1b)

ε = mechanical ventilation effectiveness (from Table 4.2)

f = fractional on-time, defined as the on-time for one cycle divided by the cycle time

Table 4.2 also requires the calculation of the required turnover, N, as follows:

$$N = 12.8 \cdot Q_{fan} \cdot T_{cyc}/A_{floor} \text{ (I-P)} \quad (4.9a)$$

where

Q_{fan} = mechanical ventilation air requirement (from Table 4.1a or Equation 4.1a), cfm

T_{cyc} = fan cycle time, defined as the total time for one off-cycle and one on-cycle, h

A_{floor} = floor area, ft^2

$$N = 2.51 \cdot Q_{fan} \cdot T_{cyc}/A_{floor} \text{ (SI)} \quad (4.9b)$$

where

Q_{fan} = mechanical ventilation air requirement (from Table 4.1b or Equation 4.1b), L/s

T_{cyc} = fan cycle time, defined as the total time for one off-cycle and one on-cycle, h

A_{floor} = floor area, m^2

The maximum allowable cycle time is 24 hours.

For values not listed in Table 4-2, use the next higher value for N or the next lower value for f. Linear interpolation is allowed.

Switching between periods of intermittent mechanical ventilation and continuous or different periods of intermittent mechanical ventilation is acceptable. Cycle times and fractional on-times can vary from one intermittent cycle to the next as long as each cycle consists of an off-period followed by an on-period with a ventilation rate that meets the above criteria. If the fan flow rate during the on-cycle varies with time, the average rate during each hour must meet or exceed the intermittent mechanical ventilation requirement of Equation 4.8.

TABLE 4.2
Mechanical Ventilation Effectiveness for Intermittent Fans

Fractional On-Time, *f*	Turnover, *N*														
	0.0	1.0	1.5	2.0	2.5	3.0	3.5	4.0	5.0	6.0	8.0	12	20	40	100+
0.00	1.00	0.95	0.88	0.78	0.60	0.00									
0.05	1.00	0.96	0.90	0.81	0.67	0.41	0.00								
0.10	1.00	0.96	0.91	0.83	0.72	0.55	0.21	0.00							
0.15	1.00	0.96	0.92	0.85	0.76	0.63	0.44	0.18	0.00						
0.20	1.00	0.97	0.93	0.87	0.79	0.69	0.56	0.40	0.03	0.00					
0.25	1.00	0.97	0.94	0.89	0.82	0.74	0.64	0.53	0.26	0.02	0.00				
0.30	1.00	0.98	0.95	0.90	0.85	0.78	0.71	0.62	0.42	0.24	0.00				
0.35	1.00	0.98	0.95	0.92	0.87	0.82	0.76	0.69	0.54	0.39	0.14	0.00			
0.40	1.00	0.98	0.96	0.93	0.89	0.85	0.80	0.75	0.63	0.52	0.32	0.02	0.00		
0.45	1.00	0.99	0.97	0.94	0.91	0.88	0.84	0.79	0.70	0.61	0.45	0.21	0.00		
0.50	1.00	0.99	0.97	0.95	0.93	0.90	0.87	0.83	0.76	0.69	0.57	0.37	0.13	0.00	0.00
0.60	1.00	0.99	0.98	0.97	0.96	0.94	0.92	0.90	0.86	0.81	0.74	0.61	0.45	0.27	0.14
0.70	1.00	1.00	0.99	0.98	0.98	0.97	0.96	0.94	0.92	0.90	0.85	0.78	0.68	0.55	0.46
0.80	1.00	1.00	1.00	0.99	0.99	0.99	0.98	0.98	0.97	0.96	0.94	0.90	0.85	0.77	0.70
0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.98	0.97	0.96	0.93	0.88
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

5. LOCAL EXHAUST

5.1 Local Mechanical Exhaust. A local mechanical exhaust system shall be installed in each kitchen and bathroom. Each local ventilation system shall be either one of the following two:

a. an intermittent mechanical exhaust system meeting the requirements of Section 5.2 or

b. a continuous mechanical exhaust system meeting the requirements of Section 5.3.

Exception: *Alternative Ventilation*. Other design methods may be used to provide the required exhaust rates when approved by a licensed design professional.

5.2 Intermittent Local Exhaust. An intermittently operating, local mechanical exhaust system shall be designed to be operated as needed by the occupant.

5.2.1 Control and Operation. Control devices such as, but not limited to, the following are permissible provided they do not impede occupant control: shut-off timers, occupancy sensors, multiple-speed fans, combined switching, IAQ sensors, etc.

5.2.2 Ventilation Rate. The minimum airflow rating shall be at least the amount indicated in Table 5.1.

5.3 Continuous Mechanical Exhaust. A continuously operating mechanical exhaust system shall be installed to operate without occupant intervention. The system may be part of a balanced mechanical system. See Chapter 10 of Guideline 24[1] for guidance on selection of methods.

5.3.1 Control and Operation. The system shall be designed to operate during all occupiable hours. Readily accessible override control must be provided to the occupant.

5.3.2 Ventilation Rate. The minimum delivered ventilation shall be at least the amount indicated in Table 5.2 during each hour of operation.

5.4 Airflow Measurement. The airflow required by this section is the quantity of indoor air exhausted by the ventilation system as installed and shall be measured using a flow hood, flow grid, or other airflow measuring device.

Exception: The airflow rating, according to Section 7.1, at a pressure of 0.25 in. w.c. (62.5 Pa) may be used, provided the duct sizing meets the prescriptive requirements of Table 5.3 or manufacturer's design criteria.

TABLE 5.1
Intermittent Local Ventilation Exhaust Airflow Rates

Application	Airflow	Notes
Kitchen	100 cfm (50 L/s)	Vented range hood (including appliance-range hood combinations) required if exhaust fan flow rate is less than 5 kitchen air changes per hour.
Bathroom	50 cfm (25 L/s)	

TABLE 5.2
Continuous Local Ventilation Exhaust Airflow Rates

Application	Airflow	Notes
Kitchen	5 ach	Based on kitchen volume.
Bathroom	20 cfm (10 L/s)	

TABLE 5.3
Prescriptive Duct Sizing

Duct Type	Flex Duct				Smooth Duct			
Fan Rating CFM @ 0.25 in. wg (L/s @ 62.5 Pa)	50 (25)	80 (40)	100 (50)	125 (65)	50 (25)	80 (40)	100 (50)	125 (65)
Diameter, in. (mm)	**Maximum Length, ft. (m)**							
3 (75)	X	X	X	X	5(2)	X	X	X
4 (100)	70(21)	3(1)	X	X	105(32)	35(11)	5(2)	X
5 (125)	NL	70(21)	35(11)	20(7)	NL	135(42)	85(26)	55(17)
6 (150)	NL	NL	135(42)	95(29)	NL	NL	NL	145(45)
7 (175) and above	NL	NL	NL	NL	NL	NL	NL	NL

This table assumes no elbows. Deduct 15 feet (5 m) of allowable duct length for each elbow.
NL = no limit on duct length of this size.
X = not allowed, any length of duct of this size with assumed turns and fitting will exceed the rated pressure drop.

6. OTHER REQUIREMENTS

6.1 Adjacent Spaces. Measures shall be taken to minimize air movement across envelope components to occupiable spaces from garages, unconditioned crawl spaces, and unconditioned attics.

Supply and balanced ventilation systems shall be designed and constructed to provide ventilation air directly from the outdoors.

6.2 Instructions and Labeling. Information on the ventilation design and/or ventilation systems installed, instructions on their proper operation to meet the requirements of this standard, and instructions detailing any required maintenance (similar to that provided for HVAC systems) shall be provided to the owner and the occupant of the dwelling unit. Controls shall be labeled as to their function (unless that function is obvious, such as toilet exhaust fan switches). See Chapter 13 of Guideline 24[1] for information on instructions and labeling.

6.3 Clothes Dryers. Clothes dryers shall be exhausted directly to the outdoors.

Exception: Condensing dryers plumbed to a drain.

6.4 Combustion and Solid-Fuel Burning Appliances. Combustion and solid-fuel burning appliances must be provided with adequate combustion and ventilation air and vented in accordance with manufacturers' installation instructions, *NFPA 54/ANSI Z223.1, National Fuel Gas Code*[2], *NFPA 31, Standard for the Installation of Oil-Burning Equipment*[3], or *NFPA 211, Standard for Chimneys, Fireplaces, Vents, and Solid-Fuel Burning Appliances*[4], or other equivalent code acceptable to the building official. Where atmospherically vented combustion appliances or solid-fuel burning appliances are located inside the pressure boundary, the total net exhaust flow of the two largest exhaust fans (not including a summer cooling fan intended to be operated only when windows or other air inlets are open) shall not exceed 15 cfm/100 ft^2 (75 Lps/100 m^2) of occupiable space when in operation at full capacity. If the designed total net flow exceeds this limit, the net exhaust flow must be reduced by reducing the exhaust flow or providing compensating outdoor airflow. Atmospherically vented combustion appliances do not include direct-vent appliances.

6.5 Airtightness Requirements

6.5.1 Garages. When an occupiable space adjoins a garage, the design must prevent migration of contaminants to the adjoining occupiable space. Air seal the walls, ceilings, and floors that separate garages from occupiable space. To be considered air sealed, all joints, seams, penetrations, openings between door assemblies and their respective jambs and framing, and other sources of air leakage through wall and ceiling assemblies separating the garage from the residence and its attic area shall be caulked, gasketed, weather stripped, wrapped, or otherwise sealed to limit air movement. Doors between garages and occupiable spaces shall be gasketed or made substantially airtight with weather stripping.

6.5.2 Space-Conditioning System Ducts. All air distribution joints located outside the pressure boundary shall be sealed. HVAC systems that serve occupiable space shall not be designed to supply air to, or return air from, the garage. HVAC systems that include air handlers or ducts located outside the pressure boundary shall have total air leakage of no more than 6% of total fan flow when measured at 0.1 in. w.c. (25 Pa) using California Title 24[5] or equivalent. Method D of ANSI/ASTM E1554[6] may be used to meet this requirement. If the air handler and/or ducts are located in the garage, the garage door shall be open to the outside when the duct leakage is tested.

6.6 Ventilation Opening Area. Spaces shall have ventilation openings as listed below. Such openings shall meet the requirements of Section 6.8.

Exception: Spaces that meet the local ventilation requirements set for bathrooms in Section 5.

6.6.1 Habitable Spaces. Each habitable space shall be provided with ventilation openings with an openable area not less than 4% of the floor area nor less than 5 ft^2 (0.5 m^2).

6.6.2 Toilets and Utility Rooms. Toilets and utility rooms shall be provided with ventilation openings with an openable area not less than 4% of the room floor area nor less than 1.5 ft^2 (0.15 m^2).

Exceptions: (1) Utility rooms with a dryer exhaust duct; (2) toilet compartments in bathrooms.

6.7 Minimum Filtration. Mechanical systems that supply air to an occupiable space through ductwork exceeding 10 ft (3 m) in length and through a thermal conditioning component, except evaporative coolers, shall be provided with a filter having a designated minimum efficiency of MERV 6 or better when tested in accordance with *ANSI/ASHRAE Standard 52.2, Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size*[7] or a minimum Particle Size Efficiency of 50% in the 3.0–10 μm range in accordance with AHRI Standard 680, *Performance Rating of Residential Air Filter Equipment*.[13]. The system shall be designed such that all recirculated and mechanically supplied outdoor air is filtered before passing through the thermal conditioning components. The filter shall be located and installed in such a manner as to facilitate access and regular service by the owner.

6.7.1 Filter Pressure Drop. New mechanical and distribution systems covered by Section 6.7, installed after January 1, 2014, shall be designed to accommodate the clean-filter pressure drop as rated using AHRI Standard 680, *Performance Rating of Residential Air Filter Equipment*[13], for the system design flow. The filter locations shall be labeled with the design airflow and maximum allowable clean-filter pressure drop. The label shall be visible to a person replacing the filter.

6.8 Air Inlets. Air inlets that are part of the ventilation design shall be located a minimum of 10 ft (3 m) from known sources of contamination such as a stack, vent, exhaust hood, or vehicle exhaust. The intake shall be placed so that entering air is not obstructed by snow, plantings, or other material. Forced air inlets shall be provided with rodent/insect screens (mesh not larger than 1/2 in. [13 mm]).

Exceptions:

a. Ventilation openings in the wall may be as close as a stretched-string distance of 3 ft (1 m) from sources of contamination exiting through the roof or dryer exhausts.

b. No minimum separation distance shall be required between windows and local exhaust outlets in kitchens and bathrooms.

c. Vent terminations covered by and meeting the requirements of the National Fuel Gas Code (*NFPA 54/ANSI Z223.1, National Fuel Gas Code*[2]) or equivalent.

6.8.1 Ventilation Openings. Operable windows, skylights, through-the-wall inlets, window air inlets, or similar devices shall be readily accessible to occupants. Where openings are covered with louvers or otherwise obstructed, openable area shall be based on the free unobstructed area through the opening.

6.9 Carbon Monoxide Alarms. A carbon monoxide alarm shall be installed in each dwelling unit in accordance with NFPA 720, *Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment*[14], and shall be consistent with requirements of applicable laws, codes, and standards.

7. AIR-MOVING EQUIPMENT

All air-moving equipment used to comply with this standard shall meet the following criteria.

7.1 Selection and Installation. Ventilation devices and equipment shall be tested in accordance with *ANSI/ASHRAE Standard 51/AMCA 210, Laboratory Methods of Testing Fans for Aerodynamic Performance Rating*[8] and *ANSI/AMCA Standard 300, Reverberant Room Method for Sound Testing of Fans*[9], and rated in accordance with the airflow and sound rating procedures of the Home Ventilating Institute (*HVI 915, Procedure for Loudness Rating of Residential Fan Products*[10], *HVI 916, Air Flow*

Test Procedure[11], and *HVI 920, Product Performance Certification Procedure Including Verification and Challenge*[12]). Installations of systems or equipment shall be carried out in accordance with manufacturers' design requirements and installation instructions.

7.2 Sound Ratings for Fans. Ventilation fans shall be rated for sound at no less than the minimum airflow rate required by this standard, as noted below. These sound ratings shall be at a minimum of 0.1 in. w.c. (25 Pa) static pressure in accordance with the HVI procedures referenced in Section 7.1.

7.2.1 Whole-Building or Continuous Ventilation Fans. These fans shall be rated for sound at a maximum of 1.0 sone.

7.2.2 Intermittent Local Exhaust Fans. Fans used to comply with Section 5.2 shall be rated for sound at a maximum of 3 sone, unless their maximum rated airflow exceeds 400 cfm (200 L/s).

Exception: HVAC air handlers and remote-mounted fans need not meet sound requirements. To be considered for this exception, a remote-mounted fan must be mounted outside the habitable spaces, bathrooms, toilets, and hallways, and there must be at least 4 ft (1 m) of ductwork between the fan and the intake grille.

7.3 Multibranch Exhaust Ducting. If more than one of the exhaust fans in a dwelling unit shares a common exhaust duct, each fan shall be equipped with a back-draft damper to prevent the recirculation of exhaust air from one room to another through the exhaust ducting system.

8. MULTIFAMILY BUILDINGS

8.1 Summary. This section provides requirements for multifamily residential buildings. Multifamily buildings shall meet all the requirements of this standard, except as modified in this section.

8.2 Whole-Building Mechanical Ventilation. For multifamily buildings, the term "building" in Section 4 refers to a single dwelling unit.

8.2.1 Ventilation Rate. The required dwelling unit mechanical ventilation rate, Q_{fan}, shall be the rate in Section 4.1.1 plus 0.02 cfm per ft^2 (10 L/s per 100 m^2) of floor area or, equivalently, the rate from Tables 8.2.1a and 8.2.1b. The required mechanical ventilation rate shall not be reduced as described in Section 4.1.2.

8.2.2 Other Spaces. Corridors and other common areas within the conditioned space shall be provided with ventilation at a rate of 0.06 cfm per ft^2 (30 L/s per 100 m^2) of floor area.

8.2.3 Mixed-Use Buildings. Nonresidential spaces in mixed-use buildings shall meet the requirements of ANSI/ASHRAE Standard 62.1, *Ventilation for Acceptable Indoor Air Quality*[15].

TABLE 8.2.1a (I-P)
Dwelling Unit Ventilation Air Requirements, cfm

Floor Area, ft^2	Bedrooms				
	1	2	3	4	≥5
<500	30	40	45	55	60
500-1000	45	55	60	70	75
1001-1500	60	70	75	85	90
1501-2000	75	85	90	100	105
2001-2500	90	100	105	115	120
2501-3000	105	115	120	130	135
3001-3500	120	130	135	145	150
>3501	135	145	150	160	165

TABLE 8.2.1b (SI)
Dwelling Unit Ventilation Air Requirements, L/s

Floor Area, m^2	Bedrooms				
	1	2	3	4	≥5
<46	14	19	21	26	28
47-93	21	26	28	33	35
94-139	28	33	35	40	42
140-186	35	40	42	47	50
187-232	42	47	50	54	57
233-279	50	54	57	61	64
280-325	57	61	64	68	70
>326	63	68	70	75	78

8.3 Parking garage Exhaust. Common parking garages adjoining occupiable spaces shall be provided with exhaust ventilation at a rate of 0.4 cfm per ft^2 (200 L/s per 100 m^2) of floor area.

Exception: Parking garages with at least two walls that are at least 5% open to the outside.

8.4 Other Requirements

8.4.1 Transfer Air. Measures shall be taken to minimize air movement across envelope components separating dwelling units, including sealing penetrations in the common walls, ceilings, and floors of each unit and by sealing vertical chases adjacent to the units. All doors between dwelling units and common hallways shall be gasketed or made substantially airtight.

8.4.1.1 Compliance. One method of demonstrating compliance with Section 8.4.1 shall be to verify a leakage rate below a maximum of 0.2 cfm per ft^2 (100 L/s per 100 m^2) of the dwelling unit envelope area (i.e., the sum of the

area of the walls between dwelling units, exterior walls, ceiling and floor) at a test pressure of 50 Pa by a blower door test conducted in accordance with either ANSI/ASTM-E779-10, *Standard Test Method for Determining Air Leakage Rate by Fan Pressurization*[16], or ANSI/ASTM E1827, *Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door*[18]. The test shall be conducted with the dwelling unit as if it were exposed to outdoor air on all sides, top, and bottom by opening doors and windows of adjacent dwelling units.

8.5 Air-Moving Equipment

8.5.1 Exhaust Ducts. Exhaust fans in separate dwelling units shall not share a common exhaust duct. Exhaust inlets from more than one dwelling unit may be served by a single exhaust fan downstream of all the exhaust inlets if the fan is designated and intended to run continuously or if each inlet is equipped with a back-draft damper to prevent cross-contamination when the fan is not running.

8.5.2 Supply Ducts. Supply outlets to more than one dwelling unit may be served by a single fan upstream of all the supply outlets if the fan is designed and intended to run continuously or if each supply outlet is equipped with a back-draft damper to prevent cross-contamination when the fan is not running.

9. CLIMATE DATA

The IECC 2004 climate zones for U.S. locations are shown in Figure 9.1

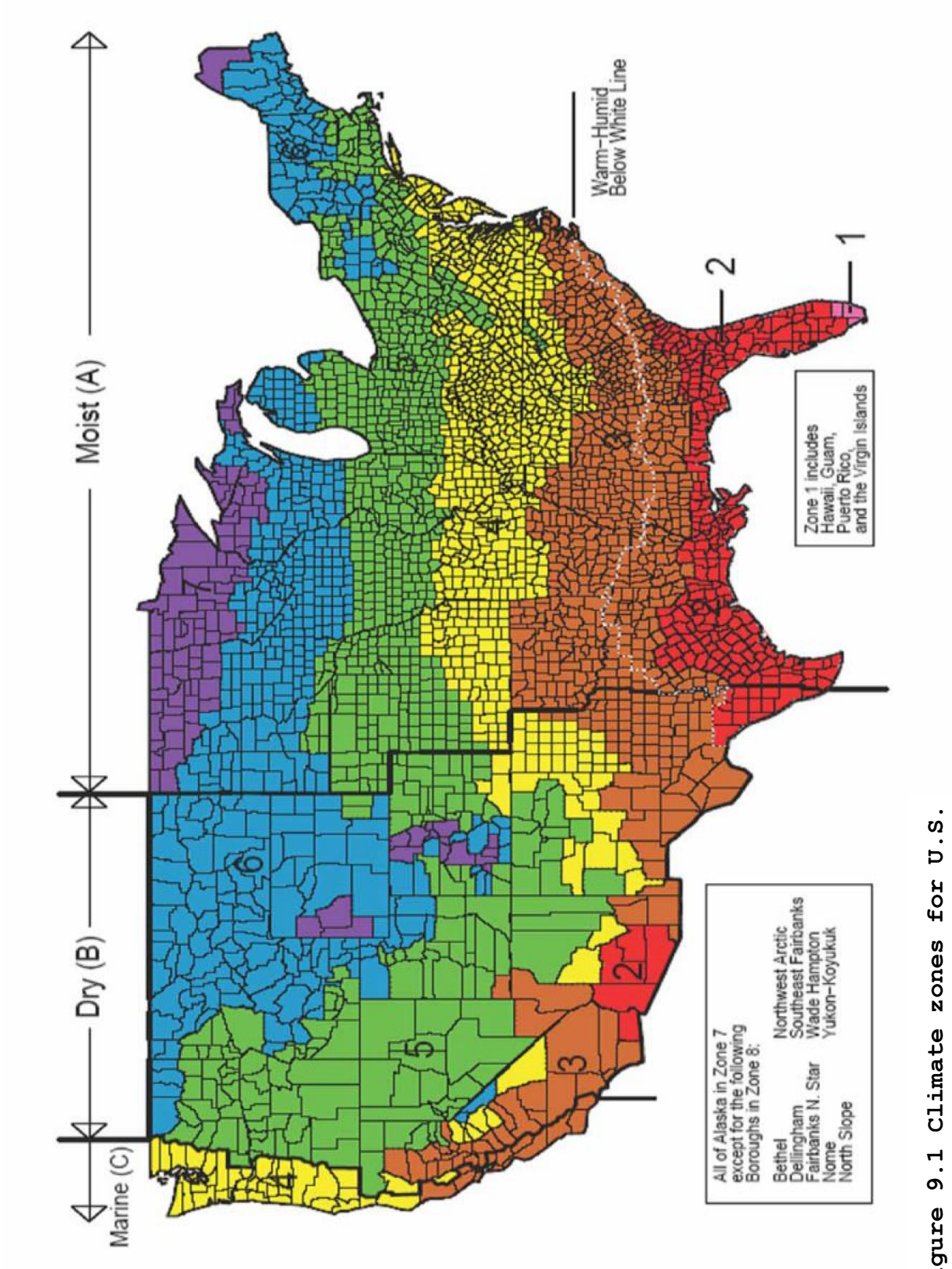

Figure 9.1 Climate zones for U.S.

10. REFERENCES

1. *ASHRAE Guideline 24-2008, Ventilation and Indoor Air Quality in Low-Rise Residential Buildings.* American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc., Atlanta, GA.

2. *NFPA 54-2002/ANSI Z223.1-2002, National Fuel Gas Code*. National Fire Protection Association and American Gas Association, Quincy, MA, and Washington, DC.

3. *NFPA 31-2006, Standard for the Installation of Oil-Burning Equipment*. National Fire Protection Association, Quincy, MA.

4. *NFPA 211-2006, Standard for Chimneys, Fireplaces, Vents, and Solid-Fuel Burning Appliances*. National Fire Protection Association, Quincy, MA.

5. California Energy Commission (2001). California Title 24 Standards, *ACM Manual*, Appendix F, Sections 4.3.8.2.1 and 4.3.7.2.

6. *ANSI/ASTM E1554-07, Standard Test Methods for Determining External Air Leakage of Air Distribution Systems by Fan Pressurization.* ASTM International, West Conshohocken, PA.

7. *ANSI/ASHRAE Standard 52.2-2007, Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.* American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., Atlanta, GA.

8. *ANSI/ASHRAE Standard 51-1999/AMCA Standard 210-99. Laboratory Methods of Testing Fans for Aerodynamic Performance Rating.* American Air Movement and Control Association International, Inc., Arlington Heights, IL.

9. *ANSI/AMCA Standard 300-05, Reverberant Room Method for Sound Testing of Fans.* American Air Movement and Control Association International, Inc., Arlington Heights, IL.

10. *HVI 915-06, Procedure for Loudness Rating of Residential Fan Products*. Home Ventilating Institute, Arlington Heights, IL.

11. *HVI 916-09, Air Flow Test Procedure.* Home Ventilating Institute, Arlington Heights, IL.

12. *HVI 920-09, Product Performance Certification Procedure Including Verification and Challenge*. Home Ventilating Institute, Arlington Heights, IL.

13. AHRI Standard 680-2009, *Performance Rating of Residential Air Filter Equipment*. Air-Conditioning, Heating, and Refrigerating Institute, Arlington, VA.

14. NFPA 720-2009, *Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment.* National Fire Protection Association, Quincy, MA.

15. *ANSI/ASHRAE Standard 62.1-2010, Ventilation for Acceptable Indoor Air Quality*. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., Atlanta GA.

16. ANSI/ASTM E779-10, "*Standard Test Method for Determining Air Leakage Rate by Fan Pressurization*," ASTM International, West Conshohocken, PA.

17. CAN/CGSB 149.10-M86. *Determination for the Airtightness of Building Envelopes by the Fan Depressurization Method*. Canadian General Standard Board, Gatineau, Quebec, Canada.

18. ANSI/ASTM E1827-07 "*Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door*" ASTM International, West Conshohocken, PA.

(This is a normative appendix and is part of the standard.)

NORMATIVE APPENDIX A: EXISTING BUILDINGS

A1. SUMMARY

This appendix provides an alternative compliance path for existing buildings and the associated ventilation equipment in existing buildings. This section is intended for buildings that have already been occupied without meeting the provisions of this standard. The authority having jurisdiction shall decide under what circumstances the provisions of this appendix are applicable. Use of this appendix as an alternate to sections of the main body of the standard does not provide an exemption from compliance with the remainder of the standard.

A2. WHOLE-BUILDING MECHANICAL VENTILATION RATE

If Section 4.1.1 is used to determine the fan flow requirement, then the required mechanical ventilation rate, Q_{fan}, shall be the rate in Section 4.1.1 plus the required additional airflow calculated in accordance with Section A3.

If Section 4.1.2 is used to determine the fanflow requirement, then the required additional airflow calculated

in accordance with Section A3 shall be added to Q_{tot} prior to application of Q_{inf}.

A3. LOCAL EXHAUST

When replacing equipment, and for any kitchens and bathrooms being renovated, all Section 5 requirements shall be met. For other existing kitchens and bathrooms, when the existing equipment does not meet those requirements, this section may be used to compensate for insufficient exhaust airflow for each room requiring local exhaust by adjusting the whole-building ventilation rate in Section A2.

A3.1 Initial Room Airflow Deficit. The airflow deficit for each bathroom or kitchen is the required airflow from Table 5.1 less the airflow rating from Section A4.2 of the exhaust equipment. If there is no exhaust device or if the existing device can neither be measured nor rated, the exhaust device airflow shall be assumed to be zero.

A3.2 Window Opening Credit. If the local authority having jurisdiction determines that window operation is a permissible method of providing local exhaust, the deficit may be reduced as follows: if there is an operable window in the room, the airflow deficit may be reduced by 20 cfm (10 L/s).

A3.3 Required Additional Airflow. The total airflow deficit is the sum of all the final airflow deficits from all bathrooms and kitchens. The required additional whole-building ventilation airflow is equal to one-quarter of the total airflow deficit.

A4. AIR-MOVING EQUIPMENT

For all replacement equipment and for any equipment in a room being renovated, all Section 6 and 7 requirements shall be met. For existing equipment, the following exceptions may be used.

A4.1 Selection, Installation, and Sound Rating. Sections 7.1 and 7.2 are not applicable to existing local exhaust fans being retained via the alternate compliance path of this appendix.

A4.2 Airflow Rating

A4.2.1 Existing fans intended for use as whole-building ventilation must be measured consistent with the requirements of Section 4.3.

A4.2.2 Existing fans intended for local exhaust only shall be measured consistent with the requirements of Section 5.4.

Exception: If the fan flow rate cannot be measured and fan airflow ratings at 0.25 in. w.c. (62.5 Pa) are not available, but fan airflow ratings are available for 0.1 in. w.c. (25 Pa) and the duct sizing requirements of Table 5.3 can be verified, those ratings may be used, provided they are reduced by 25%.

(This appendix is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)

INFORMATIVE APPENDIX B:
ADDENDA DESCRIPTION INFORMATION

ANSI/ASHRAE Standard 62.2-2010 incorporates ANSI/ASHRAE Standard 62.2-2007 and Addenda a, b, c, d, e, f, g, h, i, j, k, m, n, o, p, q, r, and t to ANSI/ASHRAE Standard 62.2-2007. Table B-1 lists each addendum and describes the way in which the standard is affected by the change. It also lists the ASHRAE and ANSI approval dates for each addendum.

TABLE B-1
Addenda to ANSI/ASHRAE Standard 62.2-2007

Addendum	Section(s) Affected	Description of Changes*	Approval Dates: • Standards Committee • ASHRAE BOD • ANSI
a	6.5 Garages; 10 References	This addendum clarifies the section and makes it easier for users to apply an ANSI consensus standard method to meet the requirements of Section 6.5. See also Addendum c below.	January 19, 2008 January 23, 2008 June 26, 2008
b	4.3 Control and Operation; 4.4 Delivered Ventilation; Table 4.2 Ventilation Effectiveness for Intermittent Fans; Informative Appendix B HVAC Systems, Example in B4.1 Sizing	This addendum replaces the current requirements for calculating equivalent delivered ventilation for an intermittently operating system with more accurate factors. See also Addenda f and n below.	January 19, 2008 January 23, 2008 June 26, 2008
c	6.5 Garages	This addendum modifies Section 6.5 to add specific requirements for separating the garage from adjoining occupiable space. See also Addendum a above.	January 19, 2008 January 23, 2008 June 26, 2008
d	7.1 Selection and Installation and 10 References	For testing and rating fans, Standard 62.2 currently references only the HVI standards but not the ASHRAE and AMCA standards upon which they are based. Adding these standards to Section 7.1 of 62.2 makes it clear as to the basis of these requirements.	January 24, 2009 January 28, 2009 January 29, 2009
e	NEW Normative Appendix C - Existing Buildings	This addendum adds an appendix to allow some optional pathways that will only be applicable for previously occupied buildings. The major focus is to overcome the barriers that exist to application of the standard in existing buildings. To that end, this appendix offers some options that allow more flexibility in this building population. The biggest conceptual change is to provide alternative methods for meeting the local exhaust requirement in kitchens or baths that do not have what is currently required by Standard 62.2. As stated in Section C1, compliance with the remainder of the standard is still required when using Appendix C.	June 20, 2009 June 24, 2009 June 25, 2009

TABLE B-1
Addenda to ANSI/ASHRAE Standard 62.2-2007

Addendum	Section(s) Affected	Description of Changes*	Approval Dates: • Standards Committee • ASHRAE BOD • ANSI
f	Table 4.2 Ventilation Effectiveness for Intermittent Fans	The existing Table 4.2 of Standard 62.2 does not provide sufficient resolution in defining ventilation effectiveness for the 24-hour cycle time and, as such, prevented energy saving strategies like nighttime ventilation cooling. The addendum allows linear interpolation for fractional on-times within the table as that is conservative relative to the fundamental equations on which Table 4.2 is based.	June 20, 2009 June 24, 2009 June 25, 2009
g	Informative Appendix A Operations and Maintenance, Informative Appendix B HVAC Systems, 4.2 System Type, 4.4 Delivered Ventilation, 5.3 Continuous Mechanical Exhaust, 6.2 Instructions and Labeling, and 10 References	ASHRAE Guideline 24 was published in 2008 and is a companion document to ASHRAE Standard 62.2. The new guideline's Chapters 10 and 13 include updated versions of the existing content of Appendices A and B of Standard 62.2. These Appendices contain no mandatory requirements and this information will be maintained in Guideline 24 in the future. Therefore, this addendum removes those unneeded appendices from Standard 62.2 in their entirety to avoid duplication and potential conflicts.	June 20, 2009 June 24, 2009 June 25, 2009
h	NEW Section 6.1.1 Multifamily Buildings	This change adds an additional specific requirement on the prevention of transfer air that is only relevant to multifamily buildings. It includes an exception for the possibility of systems designed to supply ventilation air from the corridor, which may be allowed by code in some jurisdictions.	June 20, 2009 June 24, 2009 June 25, 2009
i	6.1 Transfer Air	This change clarifies Section 6.1. The existing language is not appropriate if applying Standard 62.2 to existing buildings that have already been designed and constructed.	June 20, 2009 June 24, 2009 June 25, 2009
j	7.2.1 Continuous Ventilation Fans; 7.2.2 Intermittent Fans	This addendum clarifies the intent of the standard that fans used for whole-house ventilation should be relatively quiet (1 sone) compared to those that are manually controlled for local exhaust needs (3 sones).	January 23, 2010 January 27, 2010 February 24, 2010
k	4.1 Ventilation Rate	This addendum deletes Exception 4.1(a) from Standard 62.2-2007.	June 23, 2007 June 27, 2007 July 25, 2007
m	3 Definitions; 6.5 Airtightness Requirements	This addendum revises and extends duct tightness requirements. It moves the duct-tightness requirements for ducts in garages to a new subsection 6.5.2, and expands its coverage to all unconditioned spaces. It keeps the original prescriptive language regarding the air-tightness of the garage-house interface in subsection 6.5.1. In order to clearly identify when this new provision applies for ducts in unconditioned crawlspaces, subsection 6.5.2 refers to the pressure boundary and an additional clarification was added to the definition of pressure boundary.	January 23, 2010 January 27, 2010 January 28, 2010

TABLE B-1
Addenda to ANSI/ASHRAE Standard 62.2-2007

Addendum	Section(s) Affected	Description of Changes*	Approval Dates: • Standards Committee • ASHRAE BOD • ANSI
n	Table 4.2 Ventilation Effectiveness for Intermittent Fans	This addendum corrects an error in the values of Table 4.2 that were published in Addendum b to Standard 62.2-2007 currently posted on the ASHRAE website. Ventilation Effectiveness is a function of the ceiling height and occupant density (bedrooms per unit volume) of a dwelling. The values in Table 4.2 in Addendum b were unintentionally based on a 3-bedroom house with 2500 ft^2 of floor area and 8-foot ceilings but were intended to be based on a small dwelling to be sufficiently conservative. The table is being corrected based on a more "typical" 3-bedroom house with 1764 ft2 and 8-ft ceilings.	January 23, 2010 January 27, 2010 January 28, 2010
o	6.7 Minimum Filtration	This addendum deletes the provision limiting pressure drop through the HVAC system filter. Filter manufacturers typically do not make this type of pressure drop information available, so it is difficult to enforce this requirement	January 23, 2010 January 27, 2010 January 28, 2010
p	7.3 Airflow Rating; New 4.3 Airflow Measurement; New 5.4 Airflow Measurement	Builders and code authorities using 62.2-2007 were unsure which systems can use the prescriptive sizing approach and which systems need to measure airflow. For some systems the current requirements are ambiguous as to which air flow must be measured. This addendum moves the requirements to the relevant sections to help clarify the application of the airflow measurement requirements.	January 23, 2010 January 27, 2010 January 28, 2010
q	6.1 Transfer Air	Builders and code authorities were unsure what is required to comply with the current language of Section 6.1. This addendum clarifies the requirements.	January 23, 2010 January 27, 2010 February 24, 2010
r	4.1.3 Infiltration Credit	This addendum clarifies the language without changing the intent. The added text inserts language into the standard consistent with an interpretation provided in 2007.	January 23, 2010 January 27, 2010 February 24, 2010
t	10 References	This addendum updates the normative references in Section 9 of the standard.	January 23, 2010 January 27, 2010 January 28, 2010

*These descriptions may not be complete and are provided for information only.

NOTE

Approved addenda, errata, or interpretations for this standard can be downloaded free of charge from the ASHRAE Web site at www.ashrae.org/technology.

(This is a Normative Appendix and is part of the standard.)

NORMATIVE APPENDIX X:
INFILTRATION EFFECTIVENESS WEATHER AND SHIELDING FACTORS (WSF)

TABLE X1 U.S. Climates

TMY3	wsf	Weather Station	Latitude	Longitude	State
690150	0.50	Twentynine Palms	34.30	–116.17	California
722860	0.43	March AFB	33.90	–117.25	California
722868	0.45	Palm Springs Intl	33.83	–116.50	California
722869	0.42	Riverside Muni	33.95	–117.45	California
722880	0.39	Burbank–Glendale–Pasadena AP	34.20	–118.35	California
722885	0.39	Santa Monica Muni	34.02	–118.45	California
722886	0.39	Van Nuys Airport	34.22	–118.48	California
722895	0.55	Lompoc (AWOS)	34.67	–120.47	California
722897	0.51	San Luis Co Rgnl	35.23	–120.63	California
722899	0.45	Chino Airport	33.97	–117.63	California
722900	0.38	San Diego Lindbergh Field	32.73	–117.17	California
722903	0.39	San Diego/Montgomery	32.82	–117.13	California
722904	0.40	Chula Vista Brown Field NAAS	32.58	–116.98	California
722906	0.39	San Diego North Island NAS	32.70	–117.20	California
722926	0.40	Camp Pendleton MCAS	33.30	–117.35	California
722927	0.38	Carlsbad/Palomar	33.13	–117.28	California
722930	0.39	San Diego Miramar NAS	32.87	–117.13	California
722950	0.42	Los Angeles Intl Arpt	33.93	–118.40	California
722956	0.38	Jack Northrop Fld H	33.92	–118.33	California
722970	0.38	Long Beach Daugherty Fld	33.83	–118.17	California
722976	0.34	Fullerton Municipal	33.87	–117.98	California
722977	0.36	Santa Ana John Wayne AP	33.68	–117.87	California
723805	0.51	Needles Airport	34.77	–114.62	California
723810	0.59	Edwards AFB	34.90	–117.87	California
723815	0.58	Daggett Barstow–Daggett AP	34.85	–116.80	California
723816	0.62	Lancaster Gen Wm Fox Field	34.73	–118.22	California

TABLE X1 U.S. Climates

TMY3	wsf	Weather Station	Latitude	Longitude	State
723820	0.57	Palmdale Airport	34.63	–118.08	California
723830	0.68	Sandberg	34.75	–118.72	California
723840	0.43	Bakersfield Meadows Field	35.43	–119.05	California
723890	0.45	Fresno Yosemite Intl AP	36.78	–119.72	California
723895	0.42	Porterville (AWOS)	36.03	–119.07	California
723896	0.43	Visalia Muni (AWOS)	36.32	–119.40	California
723910	0.45	Point Mugu Nf	34.12	–119.12	California
723925	0.44	Santa Barbara Municipal AP	34.43	–119.85	California
723926	0.43	Camarillo (AWOS)	34.22	–119.08	California
723927	0.45	Oxnard Airport	34.20	–119.20	California
723940	0.52	Santa Maria Public Arpt	34.92	–120.47	California
723965	0.53	Paso Robles Municipal Arpt	35.67	–120.63	California
724800	0.55	Bishop Airport	37.37	–118.35	California
724815	0.46	Merced/Macready Fld	37.28	–120.52	California
724830	0.51	Sacramento Executive Arpt	38.50	–121.50	California
724837	0.45	Beale AFB	39.13	–121.43	California
724838	0.50	Yuba Co	39.10	–121.57	California
724839	0.51	Sacramento Metropolitan AP	38.70	–121.58	California
724915	0.49	Monterey Naf	36.60	–121.87	California
724917	0.54	Salinas Municipal AP	36.67	–121.60	California
724920	0.50	Stockton Metropolitan Arpt	37.90	–121.23	California
724926	0.47	Modesto City–County AP	37.63	–120.95	California
724927	0.53	Livermore Municipal	37.70	–121.82	California
724930	0.54	Oakland Metropolitan Arpt	37.72	–122.22	California
724935	0.47	Hayward Air Term	37.67	–122.12	California
724936	0.53	Concord–Buchanan Field	38.00	–122.05	California
724940	0.60	San Francisco Intl AP	37.62	–122.40	California
724945	0.48	San Jose Intl AP	37.37	–121.93	California
724955	0.55	Napa Co. Airport	38.22	–122.28	California

TABLE X1 U.S. Climates

TMY3	wsf	Weather Station	Latitude	Longitude	State
724957	0.49	Santa Rosa (AWOS)	38.52	–122.82	California
725845	0.44	Blue Canyon AP	39.30	–120.72	California
725846	0.66	Truckee–Tahoe	39.32	–120.13	California
725847	0.64	South Lake Tahoe	38.90	–120.00	California
725905	0.47	Ukiah Municipal AP	39.13	–123.20	California
725910	0.50	Red Bluff Municipal Arpt	40.15	–122.25	California
725920	0.47	Redding Municipal Arpt	40.52	–122.32	California
725945	0.56	Arcata Airport	40.98	–124.10	California
725946	0.60	Crescent City Faa Ai	41.78	–124.23	California
725955	0.55	Montague Siskiyou County AP	41.78	–122.47	California
725958	0.59	Alturas	41.50	–120.53	California
745090	0.45	Mountain View Moffett Fld NAS	37.40	–122.05	California
745160	0.67	Travis Field AFB	38.27	–121.93	California
746120	0.52	China Lake Naf	35.68	–117.68	California
747020	0.50	Lemoore Reeves NAS	36.33	–119.95	California
747185	0.46	Imperial	32.83	–115.58	California
747187	0.46	Palm Springs Thermal AP	33.63	–116.17	California
747188	0.48	Blythe Riverside Co Arpt	33.62	–114.72	California

POLICY STATEMENT DEFINING ASHRAE'S CONCERN FOR THE ENVIRONMENTAL IMPACT OF ITS ACTIVITIES

ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted standards and the practical state of the art.

ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the standards and guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive technical committee structure, continue to generate up-to-date standards and guidelines where appropriate and adopt, recommend, and promote those new and revised standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date standards and design considerations as the material is systematically revised.

ASHRAE will take the lead with respect to dissemination of environmental information of its primary interest and will seek out and disseminate information from other responsible organizations that is pertinent, as guides to updating standards and guidelines.

The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.

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