



# ENERGY STANDARDS Indoor Ventilation and Mechanical Ventilation

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ASHRAE STANDARDS 62.2

**PROJECT ADDRESS:** \_\_\_\_\_

**NEW SQ.FT** \_\_\_\_\_ **EXISTING SQ.FT.** \_\_\_\_\_ **ADDITION SQ.FT.** \_\_\_\_\_

**Permit Number BD-** \_\_\_\_\_

## INDOOR AIR QUALITY & MECHANICAL VENTILATION (New Mandatory Measures)

The 2008 updates include mandatory measures for all new residential construction and additions greater than 1,000 sq.ft to comply with the requirements of ANSI/ASHRAE Standards 62.2 for air Quality and Mechanical Ventilation regardless of the compliance approach used prescriptive or performance approach.

ASHRAE Standards 62.2 specifies two mechanical ventilation requirements:

1. Local exhaust ventilation, and
2. Whole-Building Ventilation

ASHRAE 62.2 provides some approaches to meet these two requirements. The following is the simplified Prescriptive Approach for meeting the local exhaust and Whole-building Ventilation requirements.

### LOCAL EXHAUST VENTILATION:

- o Bathroom: Any room containing a bathtub, a shower, a spa, or a similar source of moisture. Each bathroom is required to have an exhaust fan ducted to the outside with a minimum ventilation rate of 50 cfm. And the duct to be sized according to table 7.1 from 62.2 or table 4-9 of the Residential Compliance Manual. These local exhaust fans may operate continuously or intermittently.

#### Local Ventilation Rate Summary:

Enter the required fan flow rate (cfm)

Bathroom Fan Flow (cfm)= \_\_\_\_\_ (number of bathrooms \_\_\_\_\_ )

Use the fan flow from this summary for selection of the local ventilation fan and for the duct design for the local ventilation from table 7.1.

Duct size (in)= \_\_\_\_\_

Maximum Allowable Duct Length (ft)= \_\_\_\_\_

- o Kitchen: any room containing cooking appliances. Each kitchen is required to have an exhaust fan ducted to the outside with a minimum ventilation rate of 100 cfm. The range hood above the stove may be used to meet this requirement, but the range must vent to the outside. This local exhaust fan may operate continuously or intermittently.

**Local Ventilation Rate Summary:**

Enter the required fan flow rate (cfm)

kitchen Fan Flow (cfm)= (number of kitchens )

Use the fan flow from this summary for selection of the local ventilation fan and for the duct design for the local ventilation from table 7.1.

Duct size (in)=

Maximum Allowable Duct Length (ft)=

**Sound Rating for Local Exhaust Fan:**

Most of the local exhaust fans operate intermittently, and are required to be rated for sound at a maximum 3 sone, unless their maximum rated airflow exceeds 400 cfm.

**WHOLE BUILDING VENTILATION:**

In addition to the local exhaust fans in the bathrooms and kitchen, an exhaust fan shall be sized to provide ventilation for the whole house. The minimum required ventilation rate for the whole-building exhaust fan is given by the following equation (ASHRAE standard 62.2 equation 4.1 (a)):

$$\text{Ventilation Rate (cfm)} = \text{CFA}/100 + 7.5 \times (\text{number of bedrooms} + 1)$$

Where:

CFA = conditioned floor area

Example on how to complete the equation for an existing 1,500 sq.ft house with 4 bedrooms and a 1,000 sq.ft addition with 1 bedroom.

$$\text{Ventilation Rate (cfm)} = (2,500)/100 + 7.5 (5+1)$$

$$\text{Ventilation Rate (cfm)} = 25 + 7.5 (6) = 25 + 45 = 70 \text{ cfm}$$

Note: This equation should be included on the plans with the whole-building ventilation Summary.

**Whole-Building Ventilation Rate Summary:**

Continuous Fan Flow (cfm)=

Use the fan flow rate from this summary for selection of the whole building ventilation, fan and for the duct design for the whole building ventilation system from table 7.1 (section 62.2 of Ashrae)

Duct size (in)=

Maximum Allowable Duct Length (ft)=

Instead of using the equation for Ventilation rate, table 4-7 from the 2008 Residential compliance Manual can be used:

Table 4-7- Continuous Whole-Building Ventilation Rate (cfm)

Conditioned Floor Area (FT <sup>2</sup> )	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 7.1 of ASHRAE SECTION 62.2.

Duct type	Flex Duct				Smooth Duct			
	50	80	100	125	50	80	100	125
Fan Rating (cfm @ 0.25 in w.c.)								
Diameter (in)	Maximum Length ( ft)							
3	X	X	X	X	X	X	X	X
4	70	3	X	X	105	35	5	X
5	NL	70	35	20	NL	135	85	55
6	NL	NL	125	95	NL	NL	NL	145
7 and above	NL	NL	NL	NL	NL	NL	NL	NL
This table assumes no elbows. Deduct 15 ft of allowable duct length for each turn, elbow, or fitting. NL= no limit on duct length of this size X= not allowed, any length of duct of this size with assumed turns, elbows, fitting will exceed the rated pressure drop								

Notes for the whole Exhaust Fan: The whole exhaust Fan for an addition can be located in either the existing house or the addition.

#### Sound Rating for whole-Building Exhaust Fan:

The whole-building ventilation exhaust fan shall operate continuously and is required to be rated for sound at a maximum of 1 sone. This exhaust fan can be controlled by a standard on/off switch, but the switch must be labeled to inform the occupant that the exhaust fan is the whole-building ventilation exhaust fan and is intended to operate continuously.

One of the local exhaust fans in the bathroom or kitchens can be used to meet the whole-building ventilation, provided the exhaust fan meets the minimum ventilation rates for both the local and Whole-Building ventilation.

PRINT OWNER'S NAME: \_\_\_\_\_

OWNER'S SIGNATURE: \_\_\_\_\_ Date: \_\_\_\_\_