

## Fan Requirements

Multi Family ventilation incentives are based on systems complying with the Vermont Residential Building Energy Code Handbook, effective January 1, 2005. The Ventilation Section 2.1 is reprinted here:

Fans installed as part of a whole-house ventilation system must meet the following requirements. (Fans installed as local exhaust do not need to meet these requirements.)

### What's a Sone?

A sone is a measure of loudness. One sone has been described as being like a quiet refrigerator. Sound volume is important in ventilation systems because most people will disable a fan they find annoying. Ceiling-mounted exhaust fans range from about 1/2 sone to five sones or more.

- **Durability:** Fans must be rated for "continuous duty."
- **Efficiency:** Single-port fans (those with only one connection to the conditioned space) must not exceed 50 watts as listed by the manufacturer. This refers to fan power only; it does not include power used for lights, heaters, nightlights, timers, etc. This power limit does not apply to multiport fans that have more than one connection to the living space.
- **Sound:** Whole-house ventilation equipment located less than 4 feet from louvers, grilles or openings must have a sound rating no greater than 2 sones.

Fans meeting the EPA ENERGY STAR® standard for household ventilation equipment are considered to meet the three requirements above.

## Capacity

Whole-house ventilation systems that are not tested must be able to provide the minimum *rated* flow rates listed in Table 2.1.

Alternatively, flow rates can be tested on site, using approved methods (i.e., a flow hood or a calibrated orifice combined with a digital manometer). If the system is tested, it does not need to meet the capacity requirements of Table 2.1, but it must provide a minimum of 15 cubic feet per minute (CFM) plus 15 CFM for each bedroom.

# of Bedrooms	Minimum Rated Capacity (CFM - 1)	Minimum # of Fans (If not Centrally ducted System)
1	50	1
2	75	1
3	100	1
4	125	2
5	150	2
Homes over 3000 sq. ft.	0.05 x sq. ft.	2

1 - CFM = cubic feet per minute

## Controls

The ventilation system must have an automatic control or be capable of being set remotely for continuous operation. Intermittently operated systems must have an automatic control capable of operating the system without the need for occupant intervention, such as a time switch. Twist or crank-style timers are not acceptable as controls for the whole-house system. Continuously operated systems must have a remotely mounted (i.e, not in the living space) on/off switch that is appropriately labeled. Continuously operated systems cannot have any local controls unless such controls affect the speed only and cannot turn the system off.

## Installation

- All ventilation equipment (both whole-house and local) must be installed according to the manufacturer's instructions and in accordance with the following requirements:
- Fan housings for ceiling - or wall- mounted fans must be sealed to the ceiling or wall.
- Inlet grilles for ducted systems must be sealed to the ceiling or wall.
- Ducts that run more than 8 feet must be a smooth wall (not corrugated or flexible material). All ducts in unheated locations must be insulated.
- Mechanical fasteners - not tape - must be used to connect the ducts to the fan.
- Joints and connections must be securely fastened and air-sealed with durable and appropriate materials. Standard duct tape is not allowed for sealing ducts.
- Noise reduction of remote whole-house fans must be provided by isolating the fan from the hard ducting using at least 1 foot, but no more than 2 feet, of insulated, flexible ducting. (This requirement does not apply to fans mounted in ceilings or walls.) The fan also must be acoustically isolated from the framing of the building.
- Intake openings, if used, must be located a minimum of 10 feet from any hazardous or noxious contaminant, such as vents, chimneys, fuel fills, streets, alleys, parking lots and loading docks. The bottom of the intake opening(s) must be at least 1 foot above the expected snow accumulation level.
- Outside openings for both supply and exhaust must be protected with screens, louvers or grilles having a minimum opening size of ¼ inch and a maximum opening size of ½ inch.