

Whole House Ventilation Fans

IECC: TABLE R403.6.1

Proponent: Eric Makela, representing New Buildings Institute (ericm@newbuildings.org); Mike Moore, Newport Ventures, representing Broan-NuTone (mmoore@newportventures.net)

2018 International Energy Conservation Code

Revise as follows:

**TABLE R403.6.1
WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM FAN EFFICACY^a**

FAN LOCATION	AIR FLOW RATE MINIMUM(CFM)	MINIMUM EFFICACY(CFM/WATT)	AIR FLOW RATE MAXIMUM(CFM)
HRV or ERV	Any	1.2 cfm/watt	Any
Range hoods	Any	2.8 cfm/watt	Any
In-line fan	Any	2.8 <u>3.8</u> cfm/watt	Any
Bathroom, utility room	10	1.4 <u>2.8</u> cfm/watt	< 90
Bathroom, utility room	90	2.8 <u>3.5</u> cfm/watt	Any

For SI: 1 cfm = 28.3 L/min.

- a. When tested in accordance with HVI Standard 916.

Reason Statement: Whole-house ventilation fan efficacies were introduced in the code in 2012 for low-rise residential buildings and have not been updated since. The current residential fan efficacies are from an older version of Energy Star.

This proposal will update the requirements to the latest Energy Star requirement Version 4.0. The fan efficacy values are very conservative based on what is currently on the market. Although they are substantially better than current requirements, they are still lower than the average efficiency of fans in the Home Ventilating Institute’s fan database. These requirements are below the average efficiency for each fan type on the market and reflect hundreds of available options, but higher than the standard set in the residential code. For example, according to the HVI database of fans, the average efficiency of bath fans is around 8 CFM/W.

A proposal has also been submitted to add similar requirements for similar low-capacity fans in the commercial section of the code.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposal is not expected to increase the cost of construction. Cost for the kinds of fans covered by this requirement are driven primarily by flow rate, finishes, design and noise and whether they include other features like lights or heaters and not efficiency. Fans that meet this requirement can be obtained for less than other fans that do not. A survey of pricing from a major retailer revealed that the lowest cost bathroom fans from major manufacturers that currently comply with Table R403.6.1 would also comply with the proposed increase in efficacy, resulting in no cost increase.

Lowest cost exhaust fans for major manufacturers meeting current IECC fan efficacy requirement at 0.1” w.c. and IRC flow rate requirement at 0.25” w.c, flow < 90 cfm:

Fan	Efficacy at 0.1” w.c.	Flow at 0.25” w.c.
AirKing BFQ75	3.0	70
DeltaBreeze SLM70	4.7	54
Broan AE80B	3.0	60

Pricing for these fans ranged between \$35-\$53 retail. Note that the fan efficacy for each of these lowest-cost fans that are currently compliant with the IECC and IRC would also comply with the proposed revision in fan efficacy to 2.8 cfm/W, so there is no additional cost.

Lowest cost exhaust fans for major manufacturers meeting current IECC fan efficacy requirement at 0.1" w.c. and IRC flow rate requirement at 0.25" w.c, flow ≥ 90 cfm:

Fan	Efficacy at 0.1" w.c.	Flow at 0.25" w.c.
AirKing AK110LS	3.9	90
DeltaBreeze VFB25AEH	5.9	105
Broan-NuTone AEN110	4.7	92

Pricing for these fans ranged between \$89-\$105 retail. Note that the fan efficacy for each of these lowest-cost fans that are currently compliant with the IECC and IRC would also comply with the proposed revision in fan efficacy to 3.5 cfm/W, so there is no additional cost.

Source www.homedepot.com, pricing as of 1/9/2019.