

July 29, 2021 Bulletin No. 21-02

## Kitchen Ventilation with HRV Systems

BC Building Code minimum requirements for kitchen exhaust

### Purpose

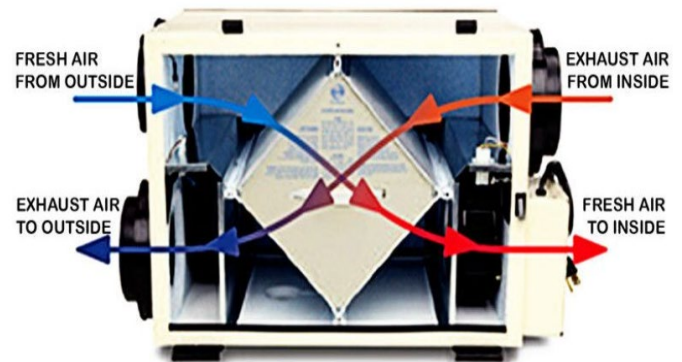
To inform building contractors and mechanical trades on the minimum requirements for kitchen ventilation requirements when incorporating Heat Recovery Ventilation (HRV) Systems.

### References and Background

#### Minimum ventilation requirements for Dwelling Units

Currently there are no prescriptive BCBC allowances for HVR systems to supersede the requirement for a separate kitchen exhaust fan. Continuous HRV flow is only permitted to replace bathrooms spot ventilation as outlined in Section 9.32.3.6 of the BC Building Code. (Table 9.32.3.6)

The BCBC does not specify where the required kitchen fan is to be located as long but it is recommended that its placed in an area that is in close proximity to the cooking appliances and which is not negatively affected by grease laden vapours.



#### References:

- **Thermal Environmental Comfort Association (TECA)** – Rationale for Kitchen exhaust requirements – Attachment A
- [Alternative Solutions Application](#) – see [www.penticton.ca/permits/applications](http://www.penticton.ca/permits/applications)
- [Current BC Building Code](#)

### Implementation

An HRV can not prescriptively be used to provide the required ventilation in a kitchen unless formally approved as an Alternate Solution.

Residential dwelling units incorporating an HRV systems must supply a separate kitchen ventilation system meeting minimum air-flow requirements (Table 9.32.3.6.), and exhausting directly to the exterior. Where it is desired to only use the HRV system for the principal kitchen exhaust, an Alternative Solution from a person with certification in mechanical ventilation systems (Eng, TECA, HRAI) will be required prior to installation.

**Table 9.32.3.6.**  
**Kitchen/Bathroom Exhaust Fan Minimum Air-Flow Rate**  
 Forming Part of Sentence 9.32.3.6.(1)

Room	Minimum Exhaust Fan Air-Flow Rate, L/s	
	Intermittent	Continuous
Kitchen	47	N/A
Bathroom	23	9

Please note: Building Bulletins are prepared to provide convenient information for customers, and should not be considered a replacement for reviewing the bylaw or associated legal documents. If there is any contradiction between this guide and relevant municipal bylaws and/or applicable codes, please refer to the bylaws and/or codes for legal authority.

Have questions? We're here to help. Please contact the Building Department at 250 - 490-2571 or email [buildinginfo@penticton.ca](mailto:buildinginfo@penticton.ca).

Attachment A:



Thermal Environmental Comfort Association  
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**Rationale for Kitchen exhaust requirements**

Sept. 20, '16

15 + years ago TECA's Ventilation Committee was persuaded by 2 groups to introduce a kitchen exhaust requirement applicable to new dwelling units.

The natural gas utility

It was and still is actively promoting the use of gas for residential cooking. It appeared that there was concern that there may be a public backlash develop against gas cooking if widespread awareness arose about the known CO release from these appliances. As the choice of stove 'fuel' is often not made until late framing stage, it was decided to incorporate, unilaterally across all dwelling units, the least costly requirement which would potentially mitigate that risk and at the same time help deal with the localized cooking moisture. Both concerns could be dealt with one, more or less, publicly acceptable single low cost requirement. When first introduced, because all exhaust fan requirements were already based on air flow ratings @ .20" W.C. ESP, we chose 80 cfm (.20") The thinking was that the commonly available kitchen range hoods rated @ 100 cfm @ .10" W.C. could probably meet that requirement. Our confidence was increased because the minimum duct sizes had previously been established for all code required exhaust fans: 5" smooth duct for fans exhausting >53 cfm < 95 (or 6"ø flex; although that was not allowed if connected directly to a range hood) and 6"ø smooth up to 147 cfm. With duct sizing specified, code required fans were no longer being 'suffocated' by undersized ducts 'unknowingly' reducing their capacity.

Social Housing Administration:

There was strong concern expressed that the smoke detectors, code required in hallways between bedroom doors were being relegated to the job of 'dinner alarms'. Without kitchen exhaust, cooking particulate regularly triggered these safety devices causing annoyed tenants to disconnect them. This unnecessarily increased the fire/smoke risk to adjacent 'innocent' neighbours if a kitchen fire got out of control in the offender's dwelling unit.

Our committee would have liked to include a range hood requirement. That appliance provides much more effective odour removal/cfm of exhaust compared to that of general kitchen exhaust currently acceptable. However, island cook tops are becoming increasingly popular. Many interior designers/architects refuse to allow hoods over island ranges which they claim obscure the visual effect of an open kitchen/dining space. As of yet, most are totally unaware that small particulate and odor, which is not exhausted immediately from source will adsorb onto the surface of all house finishes and degrade indoor air quality. Down-draft range tops, acceptable by those same designers, are recognized by the HVAC industry, as having low effectiveness per cfm exhausted compared to overhead extractor hoods. These same, often large capacity exhausters also cause other technical problems, but remain, under current wording, acceptable ventilation exhaust devices. To quote current requirements:

Current kitchen exhaust requirements:

"An exhaust fan that provides at least the air-flow rate specified in Table 9.32.3.6 shall be installed in every kitchen and every bathroom.....; the rate for the kitchen = 100 cfm @ .20" W.C. ESP"

In keeping with the ASHRAE Std 62.2, which the 2012 BCBC was built on, we increased the kitchen exhaust requirement by 25% to 100 cfm and did so comfortably following discovery a few years ago that the installed capacity of the smallest mass marketed kitchen range hoods had risen to 200+ cfm, well above the new 100 cfm (installed) requirement.

David A. Hill  
Volunteer Chair, Ventilation Committee