



City of Vancouver *Planning - By-law Administration Bulletins*

Planning, Urban Design and Sustainability Department

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PASSIVE DESIGN: NATURAL VENTILATION AND LIGHT

Authority - Director of Planning

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1 Introduction

On May 7, 2009 Vancouver City Council endorsed the Passive Design Toolkits, which describe building features that reduce energy consumption, increase natural light or improve natural ventilation. Because these features may have implications for building height or floor area, Council also amended the Zoning and Development By-law to allow the Director of Planning to consider certain exclusions to accommodate them.

This bulletin is intended to provide an introduction to passive design, the changes to the By-law, the discretionary criteria that will be considered by the Director of Planning, and the requirements to apply for exemptions.

2 Passive Design

Passive design aims to maximize occupant health and comfort while minimizing energy use by relying less on mechanical and electrical systems. A key part of passive design is to allow for natural light and ventilation.

Natural daylight provides a quality of illumination that contributes to occupant comfort and lowers energy consumption by reducing the need for artificial lighting. For example, natural daylight can be improved by providing clerestory windows, set high in a space, to allow light to penetrate deeper into the building interior.

Natural ventilation reduces the demand for mechanical heating and cooling. For example, a vertical open space can be designed to improve natural ventilation by placing opening windows or skylights at the top of the space and similar openings at lower levels so that warmer, lighter, air can be released and replaced by cooler, heavier air. This replacement provides ventilation without mechanical equipment.

Vancouver's two Passive Design Toolkits (one for homes and one for larger buildings) provide more details and other methods of reducing energy use.

3 Zoning and Development By-law

Section 10 has been amended to allow specific passive design features to be excluded from height.

District Schedules that contain a clause requiring open, interior volumes above 3.7 m to be counted as floor area have been amended to allow a portion of this volume to be excluded for certain passive design features. In zones that do not contain the clause, the Director of Planning may permit open to below spaces to be exempted from floor area when designed in combination with venting skylights, opening clerestory windows or similar features. This exclusion is limited to a maximum of one per cent of permitted floor area.

4 Discretionary Criteria and Submission Requirements

In reviewing applications for exclusion, the Director of Planning will consider how well the proposed design serves a passive design goal; what amount of exemption is reasonably required to meet the goal; the size, orientation and siting of the feature; and any relevant Council policies and guidelines. Compliance with the Vancouver Building By law should also be considered in advance.

To apply for an exemption, the following material will be required:

- (a) A written rationale for the design elements that addresses the above criteria along with any relevant by-laws, policies, or guidelines, including design guidelines; and
- (b) Drawings and dimensions illustrating the design and placement of the proposed elements.

This information may be incorporated into the standard submission material for a permit application, as long as the passive design features are clearly identified.

Depending on the design, the Director of Planning may also require additional information demonstrating that the proposed features help to reduce energy consumption and improve natural ventilation and daylight.