



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

Community Services, 453 W. 12th Ave Vancouver, BC V5Y 1V4 ☎ 604.873.7000 fax 604.873.7060

[planning@vancouver.ca](mailto:planning@vancouver.ca)

## **PASSIVE DESIGN: BAY WINDOWS AND FLOOR SPACE**

*Authority - Director of Planning*

*Effective July 13, 2011*

### **1 Introduction**

On May 7, 2009 Vancouver City Council endorsed the Passive Design Toolkits. On May 31, 2011, Council amended the Zoning and Development By-law to define what is to be included in floor space calculation for bay windows or boxed out windows.

The purpose of this bulletin is to provide clarification to staff and applicants on the change related to bay windows and floor space.

### **2 Passive Design and Bay Windows**

Passive design aims to maximize occupant health and comfort while minimizing energy use by relying less on mechanical and electrical systems. Vancouver's two Passive Design Toolkits (one looks at homes and the other at larger buildings) detail ways to reduce energy use - and associated greenhouse gases - in new buildings. The Toolkits are a Vancouver-specific resource for passive design techniques.

A key element of passive design is to avoid heat loss. Bay windows increase surface/wall area and thermal bridging and therefore contribute to heat loss.

### **3 Bay Windows and Floor Space**

Because of the way bay windows had been treated in development applications (the space in the bay had not been counted as floor space), some applications included multiple bay windows to try and increase effective floor space. This issue has been addressed by adopting the same limitations set out in RS-6 zoning, section 4.7.2(e) in all relevant residential district schedules: any floor space in excess of one per cent of the total floor area permitted above the basement will be included in the computation of floor space. Thus while the effective incentive has been limited, a bay window can still be employed as part of a design.

### **4 Submission Requirements**

Regular submission requirements apply, and the floor space in bay windows will be calculated as noted above.



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## **PASSIVE DESIGN: DEMOUNTABLE GREEN WALLS**

*Authority - Director of Planning*

*Effective July 13, 2011*

### **1 Introduction**

On May 7, 2009 Vancouver City Council endorsed the Passive Design Toolkits. On May 31, 2011, Council amended the Zoning and Development By law to introduce discretion to the Director of Planning to consider, under certain conditions, projections into required yards and setbacks for demountable green walls.

The purpose of this bulletin is to provide clarification to staff and applicants on what may be considered, and the criteria that will apply in evaluation.

### **2 Passive Design and Green Walls**

Passive design aims to maximize occupant health and comfort while minimizing energy use by relying less on mechanical and electrical systems. Vancouver's two Passive Design Toolkits (one looks at homes and the other at larger buildings) detail ways to reduce energy use - and associated greenhouse gases - in new buildings in Vancouver.

One element of passive design is incorporating green or "living" walls - walls that are covered with vegetation. A green wall typically takes the form of a lightweight structural framework affixed to an exterior wall to support plant growth, and may include a growing medium and/or irrigation system. Green walls reduce glare, noise, and the heat island effect (in which urban areas are warmer than rural ones because of heat-absorbing city surfaces).

### **3 Discretionary Criteria**

When designing a green wall, conflicts may arise in terms of projections into required yards and setbacks. Green walls may be considered for projections into required yards and setbacks, provided that:

- (a) the wall is demountable and not permanently affixed to the building;
- (b) the structure and vegetation do not extend more than 254mm (10") measured horizontally from the face of the building;
- (c) the Director of Planning has considered whether the wall is appropriately sited, oriented and sized to contribute to sustainable design performance such as reducing glare and noise, and
- (d) the wall complies with the Vancouver Building By-law.

The design of a green wall should also be considered in terms of any relevant Council policies and guidelines, and Vancouver's Water Wise Guidelines are a related resource. As well, CPTED principles should be considered.

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# **PASSIVE DESIGN: NATURAL VENTILATION AND LIGHT**

*Authority - Director of Planning*

*Effective July 13, 2011*

## **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 3.7m 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.

## **4 Submission Requirements**

To apply for a projection for a green wall, the following will be required in addition to standard submission materials:

- (a) A written rationale for the green wall(s) which addresses relevant sections of the by-laws, policies, guidelines as well as the criteria noted above;
- (b) Drawings that illustrate the design and placement of the green wall(s), and specify the plant material and long term maintenance plan (integral irrigation system, hose bibs, etc.); and
- (c) Details of the proposed method of fastening the green wall to the building exterior.

Depending on the extent of the projection and the design proposed, the Director of Planning may also require additional information or approvals from other City departments. Further review from Planning, Landscape Review, and/or Engineering Services may be required.