



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

## Planning, Urban Design and Sustainability Department

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# ZERO EMISSIONS BUILDING CATALYST BULLETIN

*Authority - Director of Planning  
Effective May 23, 2018  
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## **1 Application and Intent**

This bulletin must be read in conjunction with the Zero Emissions Building Catalyst Policy and the applicable sections of the Zoning and Development By-law. Within this bulletin, zero emissions building refers to developments meeting the definition in the Zero Emissions Building Catalyst Policy.

The intent of the bulletin is to illustrate how the Director of Planning may use discretion in applying Planning policies and the Zoning and Development By-law to accommodate a zero emissions building. This bulletin is not prescriptive, and the examples given do not create an obligation for the Director of Planning. Each proposal will be evaluated on a case by case basis.

The bulletin is also intended to assist applicants in the design of zero emissions buildings, and to assist City staff in their evaluation of development permit applications.

## **2 Principles**

Most aspects of zero emissions buildings can be accommodated while meeting other Planning policies and guidelines, and within the regulatory parameters of the zoning. Design teams are expected to meet these parameters wherever possible.

The number of relaxations should be limited to one or two instances to reduce complication and the potential for conflict among issues. Any proposed relaxation should be identified and discussed with staff during initial enquiries, and a rationale provided. See Submission Materials for more details.

The Director of Planning may decline to relax policies. Refer to the Zero Emissions Building Catalyst Policy for examples.

Where a departure is proposed, designers should show how they have given consideration to other goals, especially those listed in the policy. Other considerations may include shadow, view or daylight impacts to open space or nearby residences, and avoiding undue impacts to mature trees on or near the site.

### **3 Materials**

To arrive at a common understanding of the design challenges and potential for relaxations, design teams should provide drawings and other material that illustrates the specific challenge and proposed solution. The documentation at each stage of the process should include, but may not be limited to, the material listed below. For additional material required for permit applications on a rezoned site, see the Green Buildings Policy for Rezoning - Process and Requirements bulletin. The following should be provided along with normally required material.

#### **Rezoning and Development Permit Enquiries**

The enquiry material should:

- Provide contact information for zero emissions building consultants, indicating relevant credentials and experience
- State what certification is being pursued
- Identify the key design strategies anticipated to meet the standard
- Note any proposed relaxations that are related to the strategies, and
- Provide schematic drawings and preliminary data to support proposed relaxation.

#### **Rezoning Application**

In addition to the enquiry information, applications should include:

- Well-developed drawings and data supporting their proposed relaxation, and
- A letter from a qualified consultant confirming they have been retained on the project, summarizing the main criteria of the standard and describing the key design strategies to achieving certification.
- Passive House projects should provide a preliminary Passive House Planning Package model and include a Certified Passive House Consultant or Certified Passive House Designer on the design team.

#### **Development Permit Application**

As well as integrating and updating previous information, applications should include:

- Dimensioned drawings, studies, and other complete material to support the relaxation, and
- Material demonstrating how the requirements of the building standard are being met.
- Passive House (PH) projects must provide a letter from their accredited consultant noting that a PH Certifier has been retained on the project and will review the detailed design before building permit application.

#### **Building Permit Application**

Applicants must submit:

- The project's energy model together with a design summary report that details critical assemblies, components, and strategies
- A letter from the certifier noting specifications (assemblies, building components), and stating that the project design and specifications have been reviewed and that the project is capable of achieving certification

#### **Occupancy Permit Application**

Include a letter from the building certifier stating that the final models and relevant documentation have been received and are being reviewed for final certification. The certifier's letter must include a date by which the City may expect to be notified of final certification to the chosen standard.

#### **Post-Occupancy**

Certification to the chosen standard must be achieved to support any relaxations pursued. The building certifier will review the project documentation, including the energy model, building

envelope drawings, mechanical systems and other information. Once the project is certified by the relevant institute, a copy of the certificate must be provided to the City of Vancouver.

## 4 Examples

Different regulations, policies and guidelines may be considered for relaxation or variation to facilitate a zero emissions building.

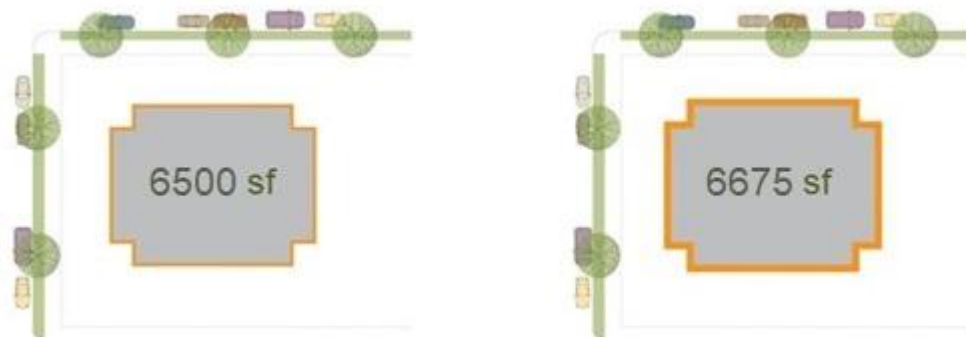
### Frontage regulations

Zero emissions buildings may be designed with a more compact form to reduce thermal energy losses related to building corners or the envelope to space ratio. In addition, the opportunity for air ventilation through cross-draft ventilation in corner units may be alternately provided by advanced air circulation systems in a zero emissions building. For these and other reasons, carefully designed zero emissions buildings may be more viable on smaller frontages than conventional buildings.

Design teams must show how they have addressed the constraints of smaller sites with reference to specific built features of the building, and how the development potential of adjacent lots can be maintained.

### Floor plate policies

Zero emissions buildings require more thermal insulation than conventional buildings, and may include mechanical equipment that is larger than typical building (illustrated below).

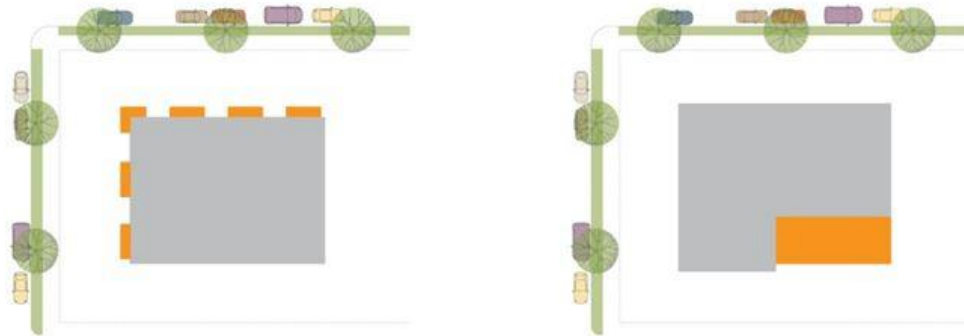


At the same time, Planning policies may restrict the maximum size of floor plates to limit the effect of new buildings on daylight, shadowing, views, and open space. These limits are typically found in policies and guidelines rather than regulations, and include all enclosed space before exclusions. Design teams seeking relaxations of plate limits must show how these effects will be mitigated through the design of the building or otherwise addressed.

## Balconies

Cantilevered balconies are typically supported by extending the internal structure through the building envelope, creating a thermal bridge that challenges the efficiency needed for a zero emissions buildings. Design teams should assess a range of alternate approaches to mitigate this effect, including:

- Providing a thermal break between the balcony and interior structure
- Insulating the projecting balcony
- Providing exterior supports such as columns or cables that allow reduced thermal connection to the internal structure. Consideration should be given to the effect of supports on natural light and the calculation of floor area, among other issues.
- Providing generously proportioned shared open space in lieu of private balconies (illustrated). Shared space should be commensurate with the area of balconies being replaced and offer an enhanced outdoor experience in terms of solar access, protection from noise, and amenities provided.
- Where the building form, such as tall towers, does not readily accommodate shared open space within a few floors of dwelling units, additional indoor spaces should be provided on nearby floors.



Shared spaces must be carefully designed in order to be an enhanced alternative to balconies. Drawings should show how the shared space performs in terms of sunlight access, acoustic quality, built features such as seating and planting, and adjacent indoor amenity spaces.

## Built form

Various policies, guidelines, and even some regulations exist to articulate the built form of a development in response to its local context, apparent scale, or other urban design goals. In some cases this building articulation, especially if it results in multiple setbacks or bays, can create a challenge in designing a thermally efficient envelope by increasing the number of building corners and the ratio of envelope to enclosed space. Where design teams have identified a specific thermal design issue through energy modelling, an alternate approach that relaxes or varies a policy or regulation may be considered.

For example, policies that normally result in three-dimensional articulation of the primary façade using projections of the enclosed space may be addressed by projections of non-enclosed features such as sun shades, through material and colour variations, thermally efficient balconies, landscaping elements.

In all cases, the design must demonstrate how the intent of the policy has been met through other built features or is otherwise mitigated.

## **Glass area**

The extensive use of conventional vision glazing and lightly insulated spandrel glazing as an exterior finish is especially challenging to the design of a zero emissions building. In most cases, there is no policy or regulation requiring extensive glass finishes. Design teams seeking wide areas of vision glass should therefore be prepared to show they will mitigate their thermal effect, which may include the use of triple glazing, highly insulated frames, improved mechanical systems, or other design strategies.

## **5 References**

- Zero Emissions Building Catalyst Policy
- Larger Zero Emission Buildings Bulletin
- Green Buildings Policy for Rezoning
- Green Buildings Policy for Rezoning - Process and Requirements bulletin