



REPORT

Report Date: June 10, 2020
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VanRIMS No.: 08-2000-20
Meeting Date: July 7, 2020
[Submit comments to Council](#)

TO: Vancouver City Council
FROM: Fire Chief, General Manager of Fire Rescue Services
SUBJECT: Alignment of Occupancy Limits between Building and Fire By-Laws

RECOMMENDATION

THAT Council approve, in principle, amendments to the Fire By-law No. 12472 to align Vancouver's occupant load with the occupant load set out in the BC Fire Code;

FURTHER THAT the Director of Legal Services be instructed to bring forward for enactment by Council a By-law to amend the Fire By-law, generally in accordance with Appendix A, to come into force and take effect upon enactment.

REPORT SUMMARY

The determination of the maximum occupant load in Vancouver has been for many years unique from the remainder of the province due to issues and concerns specific to the City. The proposed amendment to the Fire By-law to align and harmonize with the BC Fire Code may in some cases result in an increased occupant load permitted.

Applications for increased occupant load require interdepartmental review beginning with review against the Building By-law to mitigate the risk of allowing, without a commensurate level of building safety upgrading, a higher number of people in the building. The outcome of these reviews may necessitate new building and development permits, and amendments to business licences. Depending on the number of applications submitted for occupancy permit amendments, this regulatory change could have significant implications for staff workload and turnaround times for permit review and issuance. This report does not include a proposed budget increase to accommodate increased application volumes.

Liquor-licensed establishments would also require approval from the Liquor and Cannabis Regulation Branch (LCRB) for corresponding liquor seat/capacity increases; and liquor primary

establishments (bars and pubs) require additional staff review and pre-approval for conformance with City liquor policy. City liquor policy including distancing and neighbourhood moratoria on additional liquor seats will limit opportunities for some liquor primary businesses.

COUNCIL AUTHORITY/PREVIOUS DECISIONS

Under Section 311 of the *Vancouver Charter*, Council may make By-laws to maintain acceptable standards for fire safety in buildings and facilities within the city and within the scope of the provincial Fire Services Act.

Through the City's Fire By-law, the City regulates the health and safety of persons, and fire protection of buildings and properties in the City.

Since 1992, the method of determining the maximum occupant load to prevent overcrowding in a building was provided in the Fire By-law, and was based on the room's net floor space and using a calculation factor unique to Vancouver.

In 1999, Council approved an amendment to the Fire By-law unique to Vancouver that required twice the exit width for a licenced beverage establishment, compared to other assembly uses, further limiting the occupant load permitted.

In 2015, Council approved a new Fire By-law which deleted the requirement for doubling the exit width of a licenced beverage establishment. The determination of maximum occupant load based on net floor space was unchanged.

In a Special Council meeting on June 11, 2020, the following motion was carried:

“THAT Council direct staff to prepare necessary Fire by-law amendments to enable Liquor Primary establishments and other assembly uses to expand their occupant load capacity, to align with Provincial building and fire code requirements.”

CITY MANAGER'S/GENERAL MANAGER'S COMMENTS

The City Manager recommends approval of the foregoing.

REPORT

Background/Context

Relationship between the Building By-law and the Fire By-law

Vancouver's Building and Fire By-laws are based on the provincial Building and Fire Codes which, in turn, are based on the National Building and Fire Codes of Canada. These codes have been developed as complementary documents and should not be seen as have conflicting requirements.

Canadian building codes regulate how a building is to be constructed based on the fundamental characteristics of the building – such as intended use, area, and height. Following the national

convention, Vancouver's Building By-law likewise provides for a minimum acceptable level of fire safety, safety of persons, structural and seismic sufficiency, and health; as well as a minimum level of energy and water efficiency, and a minimum level of accessibility.

Once a building is occupied, the building is regulated by the fire code to ensure the use of the building is in conformance with its design, and to ensure the fire protection systems are maintained. Any change to the use or design of the building necessitates a review of the building code to determine if building alterations or upgrades are required.

Maximum Occupant Load Determination

Occupant load is defined in both the BC Building and Fire Codes as the number of persons the building is designed for.

In British Columbia, the determination of maximum number of persons permitted inside a building varies between municipalities, but generally can be summarized by three different approaches. The first is the singular use of the BC Building Code; the second is the singular use of the BC Fire Code; and the third, which is unique to Vancouver, is a hybrid of the BC Building and Fire Codes.

In the BC Building Code, occupant load is based on the "gross floor area" and the typical amount of furnishings associated with the intended use. The Building Code occupant load is a design load – the minimum number of people the building must be designed to accommodate. This ensures that a sufficient number of exits are provided, and that structural design and health considerations are appropriate, including sufficiency of washrooms, ventilation, heating, and air conditioning. At all times, the Building Code allows the designer the option to design for a higher number of people than the code minimum.

By comparison, the BC Fire Code uses the concept of the density of people in the "net floor space". In this approach, the occupant load is the maximum number of persons that a room or building can accommodate so that the people inside are not overcrowded and can safely move to the exits in a timely manner. The calculation is based on every person occupying 0.4 m² of net floor space which resembles a group of people standing shoulder to shoulder side by side and front to back. The net floor space is the resulting area in a room after deducting all areas occupied by furniture, and equipment. The Fire Code calculation does not take into consideration structural sufficiency, ventilation, or other design concerns related to the ability of the building to sustain that use.

Although the Building Code provides for a minimum number of people to design for, and the Fire Code contains the ceiling for the number of people allowed inside a room or building, both the Fire Code and the Building Code provisions should at all times be taken into consideration. For example, a building which contains an occupant load exceeding the building code minimum but less than the fire code maximum, may still be prone to structural collapse causing injury or death because structural design is not considered in the Fire Code.

In practice, most jurisdictions in British Columbia use the occupant load calculation in the BC Building Code and not in the Fire Code for restaurants, bars, licenced premises and other assembly uses. In other words, the minimum "design" occupant load becomes the default maximum occupant load. The reason is primarily to ensure that the building has been designed to be structurally safe and has adequate sanitation facilities.

Vancouver is unique in that the Fire By-law is a hybrid of the provincial Building and Fire Codes. Instead of the BC Fire Code factor of 0.4 m² per person, the Fire By-law uses the Building Code factor of 1.2 m² per person applied over the net floor space. The result is a maximum occupant load that is less than the BC Fire Code and also may be less than the Building Code number. Refer to Appendix B for additional details of Building Code occupant load determination and a comparison between the Building Code and the current Fire By-law calculations.

In all cases the maximum permissible occupant load cannot exceed the capacity of exits from the room and building.

In the past, the Fire By-law was used as an administrative tool to achieve previous Council objectives to limit the number of people inside individual liquor primary establishments so that the total number of people coming out onto the streets at closing time is reduced. In a staff report from 1999, staff identified Vancouver Police concerns as well as that of neighbourhood associations such as the Gastown Ratepayers Association, that an increase in licenced seats will exacerbate the problems on licenced spaces in areas such as the Downtown Eastside.

Occupant Load Permit Process

The current Fire By-law requires that any room that might contain over 60 persons have an occupant load permit that is posted in a conspicuous location on the premises, together with a sign noting the maximum number of persons permitted.

Every application for an occupant load permit for a new assembly occupancy, or for an increase to an existing occupant load permit requires confirmation that the requested occupant load meets the Building By-law.

If the application is for an increased number of occupants, a Building Code review is required to mitigate the risk of allowing, without a commensurate level of building safety upgrading, a higher number of people in the building. The level of building upgrade that would be required is described in the Building By-law. This review may include structural capacity and washroom capacity, as well as whether a new development permit would be required. Existing older buildings may require improvements to comply with current by-law requirements for fire and life safety where the design is deficient and could include sprinklers or fire alarm, or improvements to the existing system.

Refer to Appendix C for an illustration of the occupant load permit review process.

Where an application for a new or an increased occupant load permit involves a liquor-licensed premise (restaurant, bar, theatre etc.), the application requires approval from the Liquor and Cannabis Regulation Branch (LCRB) to increase the corresponding liquor seats, or capacity. LCRB sets the capacity of the premises for the purpose of the liquor licence. Generally licensees seek to increase the liquor capacity to match the increased occupant load. While the capacity, or liquor seats, could theoretically be set lower than the approved occupant load, the licensee cannot exceed the approved liquor licence capacity, whether they are consuming liquor or not. For example, if a location had an approved occupant load of 300, and an LCRB approved liquor capacity of 200, the licensee cannot exceed 200 patrons in the facility at any time. It would be a contravention of the liquor licence to have more than 200 patrons. Liquor primary establishments (bars and pubs) require additional City review and pre-approval for conformance with the City liquor policy. The process for an applicant seeking a new or

increased occupant load permit for a liquor primary establishment is as follows (Appendix D illustrates this process for an applicant):

- Applicant submits a Liquor and Cannabis Regulation Branch new or Structural Change application form to the City and LCRB;
- Staff assesses the application to ensure that it meets current City by-laws, liquor policies and guidelines
- The province requires local government input. For new licence applications, a Council resolution is required. For amendments to existing licences, Council has delegated authority to comment to the Chief Licence Inspector.
- For licence amendment applications, staff can decide whether to “opt-out” of providing comments and leading the public notification process, and leave this to the LCRB to complete. The decision is made by looking at the history of the establishment (i.e. how long the business has operated; if the operator is considered a known good operator; reviews of any community complaints and outstanding enforcement issues; etc.) and soliciting comments from other internal City departments (Planning, VPD, Vancouver Fire, Social Policy, Cultural Services, Housing, and Development Services) to look at neighbourhood fit;
- If the City opts out:
 - the licence amendment application is signed off by the Chief Licence Inspector (CLI) and a letter is provided to the applicant instructing the applicant to continue the process with the LCRB
 - The applicant is instructed to apply for relevant City permits (Development, Building and/or Occupancy Permit);
 - The applicant submits floor plans to VFRS; VFRS determines the occupant load in alignment with liquor policy, and stamps the floor plan with the occupant load number; VFRS also issues the applicant an Occupant Load Permit
 - The LCRB will ask the applicant to conduct public notification according to LCRB Guidelines
 - LCRB will amend or issue a new liquor licence if they support the application
 - The applicant will be issued an amendment to their existing COV business licence.
- If the City opts in:
 - City staff would conduct the public notification according to City process;
 - Staff reviews public comments and refers to Council for approval (new licence applications) or the CLI provide written comments (licence amendment applications) to the LCRB;
 - If approved, the applicant is instructed to apply for relevant permits (Development, Building and/or Occupancy Permit);
 - The applicant submit floor plans to VFRS; VFRS determines the occupant load in alignment with liquor policy, and stamps the floor plan with the occupant load number; VFRS also issues the applicant an Occupant Load Permit
 - LCRB will amend or issue a new liquor licence if they support the application
 - The applicant will be issued a new/or amend their existing COV business licence

Strategic Analysis

There are a number of existing policies, guidelines, and by-laws which are related to occupancy limits on liquor primary and other assembly uses in the city.

Building By-law

For any building, the design occupant load number is typically less than the Fire Code maximum occupant load. In the case of existing buildings, particularly those with limited records, it may be unclear what the design occupant load was or what the level of performance provided is. In such cases, a more detailed review of the building may be required, and may lead to the need for a building permit to enable changes in the design, layout, or building characteristics to accommodate the desired occupant load. If the change in occupant load is substantial or results in a change in occupancy classification, then the needed improvements could lead to costly improvements such as additional washroom capacity or sprinklers. An upfront review by a registered professional will assist an owner in establishing what occupant load can be sustained by their current configuration, and will reduce risk and uncertainty for the owner for the remainder of the occupant load permit process.

City Liquor Policy

The City has liquor related policies that will impact the feasibility of additional liquor seats resulting from an occupant load increase, for some businesses.

Moratoria on additional liquor seats in the Granville Entertainment District and the Downtown Eastside

These moratoria have been in place for several years and were reconfirmed by Council in 2017 following a city-wide liquor policy review that included broad stakeholder engagement. In the Granville Entertainment District (GED), which includes Granville Street (W. Georgia to Drake Streets), the moratorium is on any additional liquor primary seats with limited exceptions for live performance venues, and seat relocations in conjunction with creative solutions for net seat reductions in the GED. The moratoria for the Downtown Eastside (DTES) includes a moratorium on new liquor primary (LP) licences and seat expansions for existing licences.

The aim of these moratoria have been to limit the social and public health harms experienced in connection with the high concentration of liquor retail and service in these areas. The moratoria were strongly supported by Vancouver Coastal Health, and by the Vancouver Police Department. Liquor establishments located in the moratoria areas would not be eligible for additional liquor seats unless the policy on moratoria were reconsidered; best practice dictates thorough stakeholder consultation and consideration of possible impacts be carried out.

Distancing requirements for liquor primaries based on number of patrons

The City has liquor policy and guidelines that manage the density and clustering of liquor primary establishments with distancing requirements between establishments of the same size classification. Increasing the occupant load of a liquor primary establishment may trigger the reclassification of the business, putting it in conflict with the existing guidelines, or limiting its ability to qualify for increased occupancy. At this time, staff from DBL and PDS do not have work plans to revisit these guidelines or the broader implications of implementing changes to the guidelines.

While a liquor establishment may qualify for an increased occupant load as a result of the proposed new occupant load calculations, moratoria and distancing requirements may mean that the increase cannot be applied to the establishment's liquor service area (ie. no additional liquor seats or capacity). Exceptions may apply in the GED, where they may be allowed for live performance venues, seat relocations and creative solutions for net seat reductions. An increase in occupant load could theoretically be applied to a physically separate, non-licensed part of the premises where no liquor is served or consumed); however LCRB's separation requirements would need to be met, and the application would be reviewed and considered by the LCRB on a case-by-case basis. This type of increase would still require a provincial Structural Change Application.

Implications of a Change in Occupant Load Determination

The proposed amendment to the Fire By-law may allow an increase in the occupant load permitted in a restaurant, liquor primary establishment, and other assembly spaces at many but not all premises. Appendix E illustrates the possible maximum occupant loads when the Fire By-law is harmonized with the BC Fire Code.

There are approximately 250 liquor primary establishments and 1200 food primary premises in the city. Staff anticipate that the proposed changes to the Fire By-law would lead to a large number of applications for a new occupant load permit. Given the staff resources required to complete each department review, staff would be challenged to process these applications without impacting other development, building, and licencing applications. City liquor policy including distancing and area moratoria will limit opportunities for occupant load increases at some liquor primary establishments. If there is any increase in occupant load, the applicant will have to change their provincial liquor licence and amend their Vancouver business licence to reflect the change and pay an adjusted business licence fee for the increase.

To expedite the Building By-law review process (and to address any work that was done without a permit, and any upgrades needed), staff recommend implementing policies and procedures that will facilitate a preliminary assessment by a registered professional retained by the owner to examine the current potential of the building to accommodate an occupant load increase. Registered professionals would be able to provide to an owner a preliminary review of the Building By-law requirements and other regulations to assess the feasibility of their project. This could in turn reduce, though not eliminate, some of the resourcing demand on city staff as there will remain a significant need for internal review and coordination between city departments to ensure that the overall level of life safety and performance is consistent with the requirements of the Building By-law.

Staff advise that the review of an application for a new occupant load permit or an increase in an existing occupant load permit is mostly a manual process as the review is unusually complex and takes much staff resources involving multiple departments. The application process for a business owner is not online; however, staff will work towards automating the process as much as possible, and will work to find ways to expedite the anticipated surge of applications from existing businesses.

Implications/Related Issues/Risk

Financial

There are no financial implications.

Human Resources/Labour Relations

The proposed amendment to the Fire By-law occupant load calculation is expected to lead to a significant number of occupant load permit applications. Depending upon the general uptake by the public, this may lead to further strain on existing resources dedicated to processing fire, development and building permits, with potential ripple effects on supporting groups or departments.

Legal

Legal Services concurs.

Other

In light of the City policy regarding the COVID-19 pandemic responses and recovery, an increase in occupant load may benefit economic recovery. Staff caution, though, that the benefit to owners will be highly dependent upon the current design of their building and its current capacity to take advantage of the proposed fire by-law amendments, in the absence of further capital investment.

A business which is applying for an increased occupant load will need to consider multiple factors in determining if they want to proceed with a new occupancy level including building code requirements, development permit requirement, provincial liquor licencing requirements, business licencing and liquor policy requirements.

CONCLUSION

The proposed amendment to the Fire By-law to align with the BC Fire Code may result in a higher maximum occupant load permitted. A liquor primary establishment, restaurant, or other assembly occupancy that will have more than 60 people requires an occupant load permit from the Fire Department. Occupancies having fewer than 60 persons may apply for an increased occupant load under a similar process. The occupant load permit application will undergo an interdepartmental review, which includes the Development, Building and Licencing department, to determine the governing maximum occupant load. Licensed establishments are required to gain approval from the LCRB for any occupant load increase. City liquor policy including distancing and area moratoria will limit opportunities for occupant load increases at some liquor primary establishments. Staff anticipate the proposed Fire By-law amendment will result in a surge of new permit applications for existing assembly occupancies which will result in an increased strain on staff resources to process other development, building, licencing and fire permit applications.

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**DRAFT By-law to amend Fire By-law No. 12472
Regarding Occupant Load**

Note: A By-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting.

1. This By-law amends the indicated provisions of Fire By-law No. 12472.
2. In section 1(c) of Schedule A, Council strikes out the definition of “*Net floor area*”.
3. In section 14 of Schedule B, Council:
 - (a) strikes out Sentence 2.7.1.3.(3) and substitutes:

“3) Except as provided in Sentence (7), the maximum permissible *occupant load* for a *floor area* or part of a *floor area* shall be the lesser of

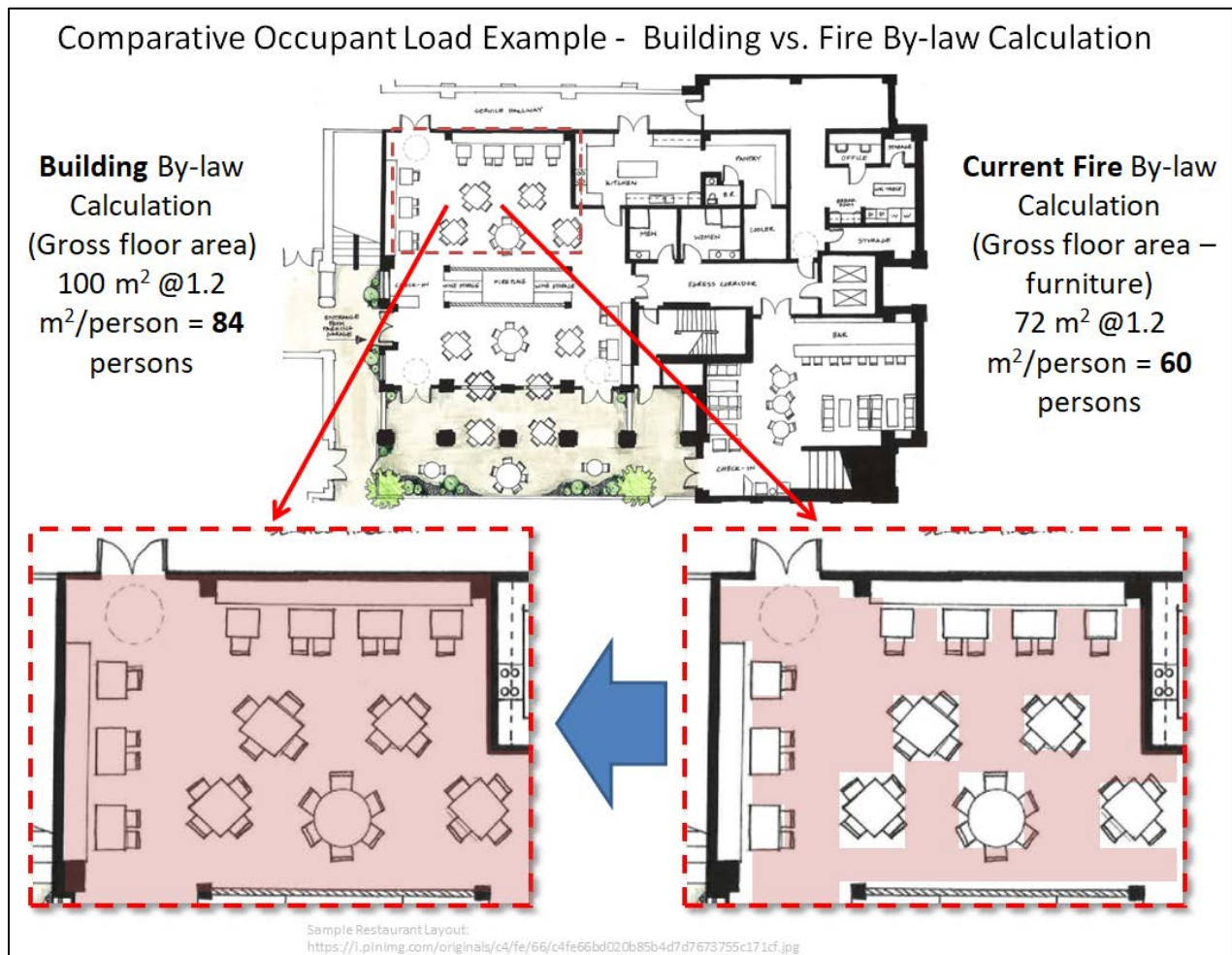
 - a) 0.4 m² of net floor space per occupant; or
 - b) the *occupant load* for which *means of egress* are provided in accordance with Sentence (6).

(See Note A-2.7.1.3.(3).)”;
 - (b) in Sentence 2.7.1.3.(4), strikes out “(See Note A-2.7.1.3.(4))”;
 - (c) strikes out Sentence 2.7.1.3.(8); and
 - (d) strikes out Table 2.7.1.3.

Comparison of Occupant Loads in Building Code and Current Fire By-law

The “design” occupant load, established through the Building By-law, is used to design the building based its intended use and occupancy. This establishes a baseline for the number of people who are normally assumed to be occupying the building, and takes into consideration other factors related to the design of that building, including but not limited to structural safety, ventilation, and sanitation for health safety (which the Fire Code does not).

The occupant load factor in many an assembly uses will typically vary between 0.4 m² to 1.2 m², depending on the various uses in a room, applied over the “gross floor area” of the room. Areas occupied by furniture and equipment associated with that use is included in the gross floor area. The “design” occupant load then determines the minimum number of washrooms, the minimum widths of exits, and whether supplemental fire safety systems such as a fire alarm system are required.



The maximum occupant load, established through the fire code, ensures that the number of people in the “net floor space” allows safe and timely movement to the exits from the room. The net floor space is the gross floor area minus the areas occupied by furniture and equipment.

In most cases, the design minimum occupant load is less than the permissible maximum occupant load.

The current Fire By-law uses the factor of 1.2 m²/person whereas the BC Fire Code uses the factor of 0.4 m²/person, and therefore the Fire By-law provides for a maximum occupant load substantially lower than the provincial fire code. For example, in the diagram shown above, the BC Fire Code would permit 180 persons maximum, while the current Fire By-law permits 60 persons.

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Occupant Load Permit Review Process

Occupant Load Permit Application

- Applicant applies to VFRS
- Conducts general review
 - Coordinates Internal Group Reviews including Building

Supplementary Permits (if required)

Where significant deviations between the applicant proposal and the existing building design exist, additional permits or permissions may be required



Evaluation

Applicant review potential with consultant

- Review existing building condition and documentation
- Estimate OL increase
- Identifies potential work needed
- Establish feasibility for applications to minimize risk

Building Review

General review of existing building design

- Confirm design occupant load
- Fire & Life Safety
- Structural capacity
- Adequacy of health facilities and ventilation
- Evaluate existing building condition

Permit Issuance

Fire completes issuance of an updated maximum Occupant Load meeting current Building By-law requirements

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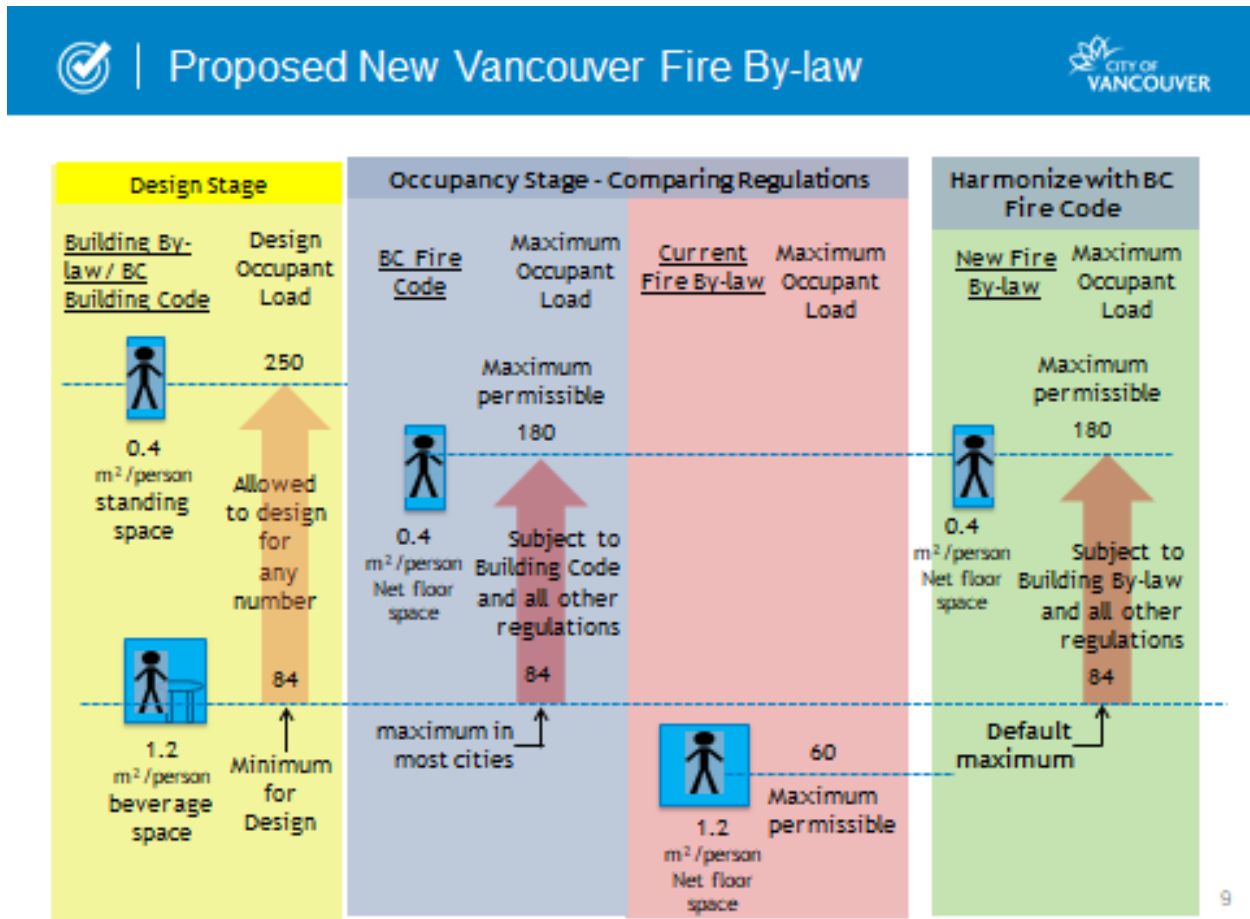
Process for Applicants Seeking New or Increased Occupancy Permit for Liquor Establishments



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Comparison of Occupant Load Calculations and the Proposed Fire By-law Amendment

For the hypothetical floor plan shown in Appendix B, the diagram below illustrates the possible outcomes of each occupant load calculation under their respective regulations.



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Amendment to Schedule B of Fire By-law No. 12472 regarding Occupant Load

2.7.1.3. Occupant Load

1) Every *building* with an *assembly occupancy* over 60 persons must have an *occupant load permit*, except that the temporary use of a *building* for an *arts and culture indoor event* shall not require an *occupant load permit* provided that the temporary maximum permissible *occupant load* for the *arts and culture indoor event* has been calculated pursuant to the provisions of this By-law.

2) For the purpose of determining the maximum permissible *occupant load* after the *occupant load permit* is issued, the *Fire Chief* may refer to the *permit* or the approved plans attached to the *permit*, or both.

~~3) Except as provided in Sentences (7) and (8) the maximum permissible *occupant load* for a *floor area* or part of a *floor area* shall be the lesser of~~

~~a) the number of persons permitted for the type of use, based on the *net floor area*, and the area per person factor from Table 2.7.1.3., or in the case of *assembly occupancy* having fixed seats, the number of fixed seats, or~~

~~b) the *occupant load* for which means of egress are provided in conformance with Sentence (6).~~

3) Except as provided in Sentence (7), the maximum permissible *occupant load* for a *floor area* or part of a *floor area* shall be the lesser of

a) 0.4 m² of net floor space per occupant; or

b) the *occupant load* for which *means of egress* are provided in accordance with Sentence (6).

(See Note A-2.7.1.3.(3).)

4) The number of persons permitted to enter or remain in a *floor area* or part of a *floor area* shall not exceed the number on the *occupant load permit*. ~~(See Note A-2.7.1.3.(4))~~

5) Despite the provisions of Sentence (4), if an *occupant load permit* is not required, the number of persons permitted to enter or remain in a *floor area* or part of a *floor area* shall not exceed the *occupant load* as determined in accordance with this Article.

6) Means of egress shall be provided in *buildings* in conformance with the provisions of the *Building By-law* regarding exit capacity.

7) The *occupant load*, in a *building* that is not provided with a fire alarm system conforming to Subsection 3.2.4. of the *Building By-law*, shall not exceed

- a) 300 persons in the *building*, other than in open air seating areas,
- b) 150 persons in a *storey* above or below the *first storey* of the *building*, other than in open air seating areas,
- c) 40 persons in a school, college, child care facility, or day care facility located in the *building*, and
- d) 150 persons in a *licensed beverage establishment* or a restaurant located in the *building*.

~~8) Where Table 2.7.1.3. does not specify the type of use, the figure 1.2 m² per person shall be used to determine the occupant load under Clause 2.7.1.3.(3)(a), unless the Fire Chief permits a greater occupant load based on similar uses and the fire hazards associated with the premises.~~

~~**Table 2.7.1.3.
Occupant Load
Forming Part of Article 2.7.1.3.**~~

Type of Use	Area per person m²	Type of Use	Area per person m²
Assembly Uses		Business and personal services uses	
—Space with fixed seats	(1)	—personal services shops	4.60
—Space with non-fixed seats	0.75	—offices	9.30
—Stages for theatrical performances	0.75		
—Space with non-fixed seats and tables	0.95	Mercantile uses	3.70
—Standing space	0.40	—Basements and first storeys	
—Stadia and grandstands	0.60	—Second storeys having a principal entrance from a pedestrian thoroughfare or a parking area	3.70
—Bowling alleys, pool and billiard rooms	1.85	—Other storeys	5.60
—Classrooms	1.20		
—School shops and vocational rooms	4.60	Industrial uses	4.60
—Reading or writing rooms or lounges	1.20	—Manufacturing or process rooms	28.00
—dining, beverage and cafeteria space		—Storage garages	46.00
—Laboratories in schools		—Storage spaces (warehouse)	
		—Aircraft hangars	

—Licensed Beverage Establishments			
Care or detention uses		Other uses	
—Treatment and sleeping room areas	10.00	—Cleaning and repair goods	4.60
—Detention quarters	11.60	—Kitchens	9.30
		—Storage	46.00
Residential uses	(2)	—Public corridors intended for occupancies in addition to pedestrian travel	3.70
—Dwelling units	4.60		
—Dormitories			

Notes to Table 2.7.1.3.:

- (1) The number of seats in an *assembly occupancy* having fixed seats
(2) 2 persons per sleeping room in a *dwelling unit*.