Support Document for Guidelines for Risk Analysis for Monitoring Entities in British Columbia

BRITISH COLUMBIA | Office of the Fire Commissioner

Table of amendments	
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Introduction

The Support Document for Guidelines for Risk Analysis for Monitoring Entities in British Columbia document is a supplement document to the Fire Safety Act Guidelines for Risk Analysis for Monitoring Entities in British Columbia manual. Both documents can be found on the BC government website here.

The intent of the supplemental document is to provide the monitoring entity with examples of the methods to determine total risk values of a premise and how the risk factors might be applied to complete a risk analysis to determine frequency of the associated compliance monitoring activities, fire safety inspection or fire safety assessments.

Section 20 of the Fire Safety Act requires a monitoring entity to implement a "risk-based compliance monitoring system" for public buildings within its jurisdictional boundaries. This legislative requirement replaces the former Fire Services Act requirement of a "regular system of inspections" of hotels and public buildings.

When implementing a risk-based compliance monitoring system, a monitoring entity must conduct a risk analysis in accordance with the regulations. The risk analysis framework is intended to support decisions about the required frequency of physical fire safety inspections and the use of fire safety assessments for achieving the monitoring of fire safety compliance within their jurisdiction.

The compliance monitoring system should identify and consider the fire-related risks associated with the public buildings. Refer to the Fire Safety Act Guidelines for Risk Analysis for Monitoring Entities in British Columbia manual for information when conducting a risk-analysis and the various categories of risk that both must, and should, be considered when determining the total risk of the public building.

The compliance monitoring system must incorporate both fire safety inspections and fire safety assessments.

Examples provided within this document are for fictitious public buildings with total risk determinations of low risk, medium/moderate risk, high risk, as well as critical infrastructure. Monitoring entities can apply this methodology to establish or adjust the frequency of fire safety inspections as deemed appropriate by the monitoring entity. The monitoring entities should be familiar with section 20 of the Fire Safety Act and the Fire Safety Act Guidelines for Risk Analysis for Monitoring Entities in British Columbia manual prior to reviewing this document.

Risk Matrix

The risk matrix table considers both general and specific (static and dynamic) risk factors and is meant to illustrate to the monitoring entity how to potentially determine frequency of fire safety inspections and fire safety assessments.

The table below is not meant to dictate how to determine total risk.

Monitoring entities should refer to the Fire Safety Act Guidelines for Risk Analysis for Monitoring Entities in British Columbia manual for details on how to determine the total risk for public buildings in their respective jurisdiction.

All compliance monitoring frequencies are suggestions based on the National Fire Prevention Association (NFPA) 1730. The final decisions regarding compliance monitoring frequency and manner of compliance are at the discretion of the monitoring entity, though must conform to the Fire Safety Act.

Note: 'Inspection' refers to the fire safety inspections performed by a designated fire inspector and 'assessment' refers to the fire safety assessments completed by building owners or their authorized agent when requested by the monitoring entity.			
General occupancy risk (based on occupancy type)	**Specific risk** (combined static and dynamic risk factors, based on an analysis of building age, building condition, history of compliance, occupant behaviour, etc.)		
	Low	Medium / Moderate	High
Low	Primary - assessment (annual) Secondary – inspection (tri-annual)	Primary – assessment (annual) Secondary – inspection (bi-annual)	Primary – inspection (bi-annual) Secondary – assessment (annual)
Medium / Moderate	Primary – assessment (annual) Secondary – inspection (bi-annual)	Primary – inspection (bi-annual) Secondary – assessment (annual)	Primary – inspection (annual) Secondary – assessment (annual)
High	Primary – inspection (bi-annual) Secondary – assessment (annual)	Primary – inspection (annual) Secondary – assessment (annual)	Primary – inspection (annual) Secondary – assessment (annual)

Risk analysis steps

The following section describes a four-step risk analysis process for monitoring entities to follow to designate a total risk value for a public building. This process also describes how a monitoring entity may determine the frequency of compliance monitoring activities (fire safety inspections and fire safety assessments) based on the general and specific risk values.

Before embarking on a compliance monitoring program, monitoring entities are to refer to section 20 of the Fire Safety Act and the associated regulation Fire Safety (Risk Analysis for Compliance Monitoring) Regulation 249/2024, along with the Fire Safety Act Guidelines for Risk Analysis for Monitoring Entities in British Columbia manual to confirm their requirement to establish their compliance monitoring framework for their jurisdiction.

A risk-based compliance monitoring system must consist of both fire safety inspections and fire safety assessments by building owners at a frequency determined by the monitoring entity post a risk analysis.

Step 1: General risk determination

The monitoring entity must identify the major occupancy of the public building to determine the level of general risk.

Refer to the table in the Fire Safety (Risk Analysis for Compliance Monitoring) Regulation Reg. 249\2024, section 3. The general risk value for the public building will be low, medium/moderate, or high, depending on the occupancy classification.

Step 2: Specific risk determination

The monitoring entity must identify the specific risk (the combination of static and dynamic risk factors which together, represent the specific risk for a public

building) factors that they will consider in their risk analysis. It is up to each monitoring entity to determine which specific risk factors they will consider. A monitoring entity may consider some or all of the suggested specific risk factors described in the FSA Guidelines for Risk Analysis for Monitoring Entities in British Columbia if they wish to do so. Or they may consider previously established specific risk factors if they already have a risk analysis process in place.

Once a monitoring entity has confirmed which specific risk factors it will consider, the monitoring entity must apply these factors to arrive at a specific risk value (low, medium/moderate, high) for any public building.

It is expected that specific risk factors may either be immediately apparent or may be observed over time. As the monitoring entity captures more information about a public building's risk factors over time, a more comprehensive assessment of specific risk may evolve, and an adjustment to the compliance monitoring activities and frequencies may occur.

Step 3: Total risk determination

Apply the general risk factors and specific risk factors to determine the total risk of the building.

Step 4: Compliance monitoring activity and frequency determination

Based on the general and specific risk values, the monitoring entity must determine the frequencies of each compliance monitoring activity (fire safety inspections and fire safety assessments) for each public building. A monitoring entity may follow the suggested compliance monitoring activities and frequencies described in the matrix table on page 7 of this document. This table illustrates how general occupancy risk and specific risk are combined and may be used to

determine possible fire safety assessment and fire safety inspection frequencies. This table is also reflected in the Fire Safety Act Guidelines for Risk Analysis for Monitoring Entities in British Columbia manual, that can be found on the B.C. government website here. In all cases, a monitoring entity has the responsibility and flexibility to determine how and when to apply both fire safety inspections and fire safety assessments (note that both fire safety inspections and fire safety assessments must be used for each public building, regardless of the general and specific risk ratings).

To confirm the identification and applicability of all general and specific risk factors, the monitoring entity may wish to conduct a fire safety inspection for each public building in establishing their compliance monitoring process. Once all the risk factors are confirmed and documented, the monitoring entity should have a high level of confidence that they are applying the appropriate compliance monitoring activities at the appropriate frequencies.

Risk Analysis Follow-up

Once the monitoring entity has completed the four-step risk analysis process, they must inform the building owner or building owner's agent of the designated frequency of the compliance monitoring activities and how to provide fire safety assessment information to the monitoring entity. It is the responsibility of the monitoring entity to record and safeguard all files and documents related to compliance monitoring for each public building.

Examples

Example 1: Low Risk Public Building

The building is a community hall used as an assembly occupancy and is classified as an A2-1 major occupancy. The general risk determined to be low.

The building was constructed in the 1990s, has no combustible materials, has a sprinkler system installed, and has a fire alarm system that meets the requirements of the BC Fire Code. There are fire hydrants within 90 meters of the building. The static risk is determined by the monitoring entity to be low.

The building is in good repair and the building owner has maintained the building in compliance with the BC Fire Code. Fire safety inspection history does not reveal non-compliance issues, or only reveals minor non-compliance issues that were immediately resolved. The dynamic risk is determined by the monitoring entity to be low.

Determination:

(Low general risk + low specific risk (dynamic and static) = low total risk)

It would be reasonable for the monitoring entity to determine the total risk for this public building to be low.

The monitoring entity may wish to use the fire safety assessment as a primary tool to monitor and assess compliance in this situation. In this instance, the monitoring entity may set a fire safety inspection frequency to tri-annually and use fire safety assessments on an annual or even bi-annual frequency between fire safety inspections.

Example 2a: Medium/Moderate Risk Public Building

The building is an auto-repair garage and is designated as an F2 major occupancy. The general risk determined to be medium/moderate.

The building was constructed in 1970s, is made of ordinary construction materials, has a sprinkler system installed in conjunction with a fire alarm system, is accessible by the fire department from three sides, and there are fire hydrants

within 90 m of the building. The static risk is determined by the monitoring entity to be medium/moderate.

The building is in good repair for its age and the building owner's compliance with the BC Fire Code is good but not excellent. The fire safety inspection history reveals some minor non-compliance at minimal occurrences that took some time to resolve. The dynamic risk is determined by the monitoring entity to be medium/moderate.

Determination:

(General risk-medium/moderate + specific risk-medium/moderate= Total risk determination - medium/moderate)

It would be reasonable for the monitoring entity to determine the total risk for this public building to be medium/moderate.

The monitoring entity could use the fire safety inspection as the primary tool on a bi-annual basis in this situation and set the frequency of a fire safety assessment more frequently. The monitoring entity may request a fire safety assessment be completed by building owner annually between bi-annual fire safety inspections.

Example 2b: Medium/Moderate Risk Public Building

(Note: although this example illustrates a low general risk and medium specific risk the same commentary will apply to the public buildings that are determined to have a medium general risk and low specific risk. Both scenarios should equate to a total risk determination of medium/moderate.

The building is a community hall used as an assembly occupancy and is designated as an A2-1 major occupancy. The general risk determined to be low.

The building was constructed in 1990s, is made of non-combustible materials, has a sprinkler system installed in conjunction with fire alarm system that meets the requirements of the BC Fire Code, and there are fire hydrants within 90 m of the building. The static risk is determined by the monitoring entity to be low.

However, the building is showing signs of disrepair, and the building owner has a consistent history of minor non-compliance with the BC Fire Code. The fire safety inspection history reveals increased non-compliance since a new owner purchased the property. The dynamic risk is determined by the monitoring entity to be medium/moderate.

Determination:

(General risk-low + specific risk-medium/moderate = Total risk determination - medium/moderate)

As the specific risk determined to be medium/moderate, due to the combined static and dynamic risks, it is reasonable for the monitoring entity to determine the total risk to be medium/moderate.

Because this building has a medium/moderate level of total risk, the monitoring entity may require that compliance monitoring is to be done by a fire safety inspection on a bi-annual frequency.

The monitoring entity could request a fire safety assessment be completed annually by the building owner between bi-annual fire safety inspections.

Example 3a: High Risk Public Building

The building is a residential occupancy-3 storey apartment building and is designated as a C major occupancy. The general risk determined to be high.

The building was constructed in 1960s, using a wood frame construction type, and has no sprinkler systems or fire alarm system. The building is accessible from all sides using fire department ground ladders, though only one side of the building is accessible using a fire department aerial apparatus ladder. There are fire hydrants within 90 m of the building. The static risk is determined by the monitoring entity to be high.

The building is in disrepair due to a lack of regular maintenance and a review of previous fire safety inspection documentation indicates a history of non-compliance with the BC Fire Code. The dynamic risk is determined by the monitoring entity to be high.

Determination:

(General risk-high + specific risk-high= Total risk determination- high)

It is reasonable for the monitoring entity to determine the building has a high level of total risk and would decide to set a fire inspection frequency to annually.

The monitoring entity may request a fire safety assessment be completed by building owner between fire safety inspections and set a frequency of every four months.

Example 3b: High Risk Public Building

Note: although this example illustrates a medium/moderate general risk and high specific risk, the same commentary will apply to public buildings that have a high general risk and medium/moderate specific risk. Both scenarios should equate to a total risk determination of high.

The building is a day care facility designated as a A2-II major occupancy. The general risk determined to be medium/moderate.

The building was constructed in 1970s, using a wood frame construction type, and has no sprinkler system or fire alarm system. The building is accessible from two sides using fire department ground ladders though it is accessible on only one side using a fire department aerial apparatus ladder. There are fire hydrants within 90 m of the building. The static risk is determined by the monitoring entity to be high.

The building is in disrepair due to lack of regular maintenance and the building owner's compliance history is not good. A review of previous fire safety inspection documentation indicates a history of non-compliance with the BC Fire Code. The dynamic risk is determined by the monitoring entity to be high.

Determination:

(General risk-medium/moderate + specific risk-high= Total risk determination - high)

It is reasonable for the monitoring entity to determine the building has a high level of total risk and would set a fire safety inspection frequency to annually.

The monitoring entity may require a fire safety assessment be completed by building owner between fire safety inspections and set a frequency deemed appropriate for the building. This might be every four months in this circumstance.

Example 4: Risk for Critical Infrastructure

The building is a wastewater treatment plant designated as Group F, Division 2 with offices designated as Group D on site. The office space meets the definition of a public building and is determined to be a critical area for this critical infrastructure. General risk for the office space is determined to be low.

The building was constructed in 2005 using both fire resistive and non-combustible materials. The building is of modern design and meets appropriate

standards with all associated fire safety design features. The fire alarm system is maintained to comply with the BC Fire Code, the office is sprinklered, and there are fire hydrants within 90 m of the structure. The static risk is determined by the monitoring entity to be low.

The office space in the building is in good repair and has an excellent safety record with regular industry inspections and maintenance. A review if the fire safety inspection history does not reveal any non-compliance issues. The dynamic risk is determined by the monitoring entity to be low.

Determination:

It is reasonable for the monitoring entity to determine the total risk for the office space in this critical infrastructure location, to be low.

The frequency of fire safety inspections for the critical infrastructure non-public space is influenced by critical infrastructure regulations, but the frequency of fire safety inspections and fire safety assessments for the publicly accessible office space is determined by the monitoring entity.

In this example it is reasonable for the monitoring entity to schedule fire safety inspections tri-annually for the office space and to schedule fire safety assessments in between fire safety inspections.