

## **Development of a Fire Safety Cover Plan**

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Québec's Fire Safety Act, which came into effect on April 1, 2001, requires each regional authority to develop a Fire Safety Cover Plan and submit the proposed plan to the Minister of Public Security. Several large cities in Québec, which are considered to be equivalent in size and population to a regional authority, are also required to prepare and submit their own Fire Safety Cover Plans. The purpose of this article is to discuss some of the factors that must be considered when preparing a Fire Safety Cover Plan for a large city or urban area.

This article discusses the deployment of firefighters, fire apparatus and fire stations, although these firefighting resources are only one component of the overall fire protection system in a community. The focus on firefighting resources is based on the immediate need to provide fire protection for the community, as it exists today. The additional elements, which include fire prevention and public education, are equally important and can have a very large influence on the level of fire safety over a longer period of time.

### **Historical Perspective**

When the fire risk analysis is conducted, many communities in Québec will find that they have fire risks that greatly exceed the capabilities of their local fire departments. In the past there has been no requirement to provide public fire protection that is in proportion to the risks in a community or, conversely, to limit the risks that can be permitted in a community according to the capabilities of the local fire department. The requirement to conduct a fire risk analysis and develop a fire protection plan should provide a learning experience for those communities.

In the long term, many different approaches and strategies can be considered to reduce the level of risk, including fire prevention measures and improving built-in protection within the community. In the short term there must be a plan in each community to respond effectively, with firefighters and fire apparatus, if a fire occurs in any of the risks that currently exist. The conclusion in some cases will be that the level of fire risk exceeds the capabilities of the local fire department.

### **A series of rational decisions**

The steps that must be performed to develop a Fire Safety Cover Plan are intended to cause each region or city to make a series of rational decisions, so that the resources dedicated to fire protection will produce the most effective results and the level of fire protection will be based on the level of fire risk in each community. The ultimate decisions can only be made by elected officials, since they involve public policy issues and large expenditures of tax revenue. The planning process should clearly define the risks that are present the options that should be considered to protect those risks.

A city is a much greater fire protection challenge than a region composed of several small communities separated by rural areas. The fire protection plan for an urban area must consider concentrations of population, large and closely spaced buildings, traffic congestion, and many other factors that do not apply to smaller communities. A city is a very complex combination of different risks in different geographic areas.

The situation is particularly complicated in large cities where municipal mergers have occurred. These new cities often include areas with very different characteristics, from a densely populated central core to rural perimeter areas. The fire protection that was previously provided in some of those areas, using volunteer or part-time firefighters, might have been appropriate for a small community with limited resources, however it is a lower level of service than the city provides in other areas. Do the taxpayers in perimeter areas deserve a level of fire protection that is equivalent to other parts of the city, or should they only expect the level of service that was provided prior to consolidation? The process of developing a Fire Safety Cover Plan should assist city officials in making these important determinations.

### Background Information

The process of preparing and submitting a Fire Safety Cover Plan is a new concept in Québec and introduces several issues that must be carefully considered by members of the fire service and municipal officials. Members of the general public should also be interested in this process, since it will have a direct impact on the level of fire protection that will be provided in each community, as well as the cost of providing fire services. The procedures that must be followed in preparing and adopting a Fire Safety Cover Plan require public consultation in order to make citizens aware of the proposed plan and to provide an opportunity for public comments.

The Fire Safety Act and the accompanying document « *Les Orientations du Ministre de la Sécurité-publique en matière de Sécurité-incendie* » provide specific instructions to municipal officials regarding the procedures that must be followed to prepare and submit a Fire Safety Cover Plan. They also provide guidance in the factors that must be considered in developing a plan, however they leave a very large margin for discretion and decision-making at the local level. The *Orientations* document includes guidelines and considerations, without setting firm policies.

Bien que l'énoncé d'orientations en matière de sécurité incendie par le ministre de la Sécurité publique soit prévu dans la *Loi sur la sécurité incendie*, et que le présent document fasse l'objet, à l'instar de dispositions réglementaires, d'une publication à la *Gazette officielle du Québec*, celui-ci ne constitue pas, à strictement parler, un règlement pris par le ministre de la Sécurité publique ou par le gouvernement en application de la *Loi sur la sécurité incendie*. Cela dit, les orientations ne sont pas moins déterminantes pour autant dans le cadre de l'exercice de planification exigé des municipalités, dans la mesure où elles font référence aux standards les plus couramment reconnus dans le milieu nord-américain de la sécurité incendie. Elles se trouvent en effet à codifier, pour le bénéfice des municipalités québécoises, les pratiques représentant généralement les règles de l'art dans le domaine. Les municipalités seraient donc bien avisées de se référer aux objectifs qui y

sont énoncés et aux modalités qui y sont suggérées avant de considérer toute autre norme qu'elles pourraient juger mieux adaptée à leur situation géographique ou organisationnelle.

The Fire Safety Cover Plan is intended to identify the means that will be employed and the resources that will be dedicated to provide fire protection in the future. The process requires each local jurisdiction to perform a systematic fire risk analysis of the properties within the municipality or region and to evaluate the levels of fire protection services that are currently provided. To a large extent it is left to local elected officials to determine if the existing level of fire protection is acceptable or if improvements should be implemented.

When a draft plan is submitted, the Minister of Public Security has 120 days to issue a certificate of compliance or to propose amendments to correct any deficiencies that are noted. It is assumed that someone within the Ministry of Public Security will carefully review each plan and make recommendations to the Minister on whether it should be approved or changes should be required. Once again, the published policies and guidelines leave a large measure of discretion in determining whether a proposed plan is acceptable or deficient. Three years after the adoption of the Fire Safety Act, no specific directives have been published to define options that will be considered acceptable or unacceptable in different circumstances.

While each regional authority is required to develop and submit a plan, there is no mandatory requirement to obtain approval of the Fire Safety Cover Plan from the Minister of Public Security. The Fire Safety Act appears to allow for the possibility that a regional authority or municipality could reject the recommendations of the Minister and proceed without a certificate of compliance. In effect, a local jurisdiction that makes this decision would not be eligible for the exemption from liability that comes with the adoption of an approved Fire Safety Cover Plan, however this is an option that appears to be available to local elected officials.

### Public Policy Options

The *Orientations* document is intended to serve as a guide for persons who are responsible for preparing a Fire Risk Coverage Plan, however the recommendations are not mandatory and they only provide some basic objectives and approaches that should be considered.

The key word in the Fire Safety Act and the orientations document is **optimum**. The persons responsible for developing a fire safety plan are required to “*propose the optimum protection objectives that may be achieved by the development of appropriate measures and the efficient management of all available resources.*” This could be interpreted to mean that it is only required to develop a plan that makes the most efficient and effective use of the resources that are currently available. A different interpretation would suggest that the plan should identify the resources that are required to provide an optimum level of fire protection in relation to the risks that are identified. This leads to

the question of what constitutes an “optimum” level of protection versus a “reasonable” level of protection.

From a legal perspective, it might be sufficient to require local authorities to make the best use of the resources that are available today in order to protect their community. The Minister of Public Security may be unable or unwilling to require a local jurisdiction to spend more money to provide improved firefighting capabilities. The conclusion could be that the Government of Québec can only require the most effective system that can be provided at the current level of expenditures.

The alternative viewpoint would be that Québec should require regional authorities and cities to provide a level of fire protection that is appropriate for the level of risk in the community, even if that plan requires higher expenditures. It is not clear if the Minister of Public Security can require a community to provide a higher level of fire protection or only recommend improvements.

It is up to the elected officials in each community to decide how much should be spent to provide fire protection. It is the responsibility of fire service professionals, and consultants in some cases, to present and explain the options. As a consultant, I believe that it is essential to present a range of reasonable alternatives to the local elected officials for consideration.

### Risk Analysis

The first step in the process of developing a Fire Safety Cover Plan is to conduct a systematic fire risk analysis of the entire area. The procedures that are defined in the *Orientations* document place each building or property into one of four fire risk classifications; low, medium, high and very high. The fire protection capabilities and requirements can then be evaluated in relation to the actual level of fire risk in the community or in each sector of a large community. Most cities will have very different risk classifications in different areas.

One of the limitations of the *Orientations* document is that it only refers to the “low risk” classification when describing the considerations for determining the appropriate level of fire protection for a community. No guidance is provided for the “medium”, “high” or “very high” risk categories. Some individuals have interpreted this omission as suggesting that the Minister of Public Security will not require a local jurisdiction to provide a higher level of fire protection, even for an area with higher risk occupancies.

The policy of the Minister on this question is unknown at this time. The Fire Safety Act requires each community to perform a comprehensive fire risk analysis. From a fire protection perspective, it would be illogical to require only the lowest level of fire protection in an area where higher risks are identified. This is a policy decision that could only be made by elected officials.

### Performance Objectives

The considerations for determining the appropriate level of fire protection that are described in the *Orientations* document are very similar to the requirements that are listed in National Fire Protection Association (NFPA) Standards 1710 and 1720. The two NFPA standards were in the final stage of development when the Fire Safety Act came into force in Québec. It would be reasonable to conclude that the *Orientations* document was influenced by the efforts that went into developing the NFPA standards.

The NFPA documents are consensus standards that are used across North America to define the basic performance expectations for public fire departments. NFPA 1710 applies to permanent fire departments and includes mandatory response time standards. NFPA 1720 applies to volunteer fire departments and does not include response time standards.

The NFPA standards and the *Orientations* agree that 4 firefighters must be present to initiate an interior attack on a structure fire. This is a widely accepted health and safety requirement, also included in NFPA Standard 1500 and adopted by CSST. They also make reference to a *force de frappe*, which is the number of firefighters required to conduct a basic offensive interior fire attack operation. In both cases the basic requirements for the *force de frappe* are based on an interior fire in a small residential occupancy.

There are several additional parallels between the *Orientations* and NFPA 1710, although the recommendations are not identical. A direct comparison indicates that the response time objectives are very similar, however the NFPA standard requires more firefighters to respond to a fire in a low-risk occupancy.

- Both NFPA 1710 and *Orientations* require at least 4 firefighters to be on the scene of a structure fire before an interior fire attack can be initiated.
- NFPA 1710 requires the first unit with at least 4 firefighters to arrive at the scene of a structure fire within 5 minutes after dispatch, including one minute for preparation and 4 minutes for travel. The *Orientations* refer to 5 minutes as an appropriate response time for an effective interior attack.
- NFPA 1710 requires at least 14 firefighters to provide a standard initial attack force for a single-family dwelling. The *Orientations* require 10 firefighters to provide a *force de frappe* for a low-risk occupancy.
- NFPA 1710 requires the full initial attack force to arrive within 9 minutes after dispatch. The *Orientations* state that up to 10 minutes response time for the *force de frappe* is a “[délai favorisant l’efficacité de l’intervention](#)”.

In both cases the minimum requirements are based on a fire in a low-risk occupancy. It is significant to note that the typical dwelling that is described in NFPA 1710 is limited to one family and one story, with no basement. A low-risk occupancy, as defined in the *Orientations*, can be either one-story or two-stories and may include one or two dwelling units. A low-risk occupancy in the *Orientations* can be approximately twice as large as the model occupancy that is used in the NFPA standards.

There is a reason why NFPA 1710 only includes mandatory requirements for a single-family dwelling. It took more than 10 years of discussion and debate to develop the first edition of this standard and the scope had to be limited in order to reach the required consensus. It will take several more years to develop equivalent mandatory standards for higher risk occupancies. The NFPA standard states that more firefighters and more vehicles are required for higher risk occupancies, but it does not provide specific numbers. It is left to the user of the standards to determine the requirements that are appropriate for higher risks. Since the *Orientations* appears to be modeled after the NFPA standards, it would be reasonable to assume that the same relationships should apply.

The *Orientations* document makes references to response time objectives using terminology that is open to interpretation. The table that refers to a 4-person team to initiate an interior attack indicates that “moins de 5 minutes” would be a “délai favorisant l’efficacité de l’intervention”. This table also indicates that “entre 5 et 10 minutes” would be a “délai compatible avec une intervention efficace”.

The table that refers to a *force de frappe* states that “moins de 5 minutes” and “entre 5 et 10 minutes” would both be a “délai favorisant l’efficacité de l’intervention” and “entre 10 et 15 minutes” would be a “délai compatible avec une intervention efficace”.

The use of the term “compatible” is misleading in both cases. Response times longer than 5 minutes for an initial unit or 10 minutes for the *force de frappe* do not meet the accepted standards for public fire protection in an urban area. NFPA Standard 1710 sets the objective for initial response time as a maximum of 5 minutes, and a maximum of 9 minutes for the *force de frappe*.

The ability for firefighters to rescue occupants from a fire is directly related to response time. If the first unit with the capability to conduct interior operations does not arrive within 5 minutes, the potential for saving lives is greatly reduced. The opportunity to successfully control a fire using offensive tactics is very limited if the initial interior attack is delayed beyond 5 minutes and the *force de frappe* does not arrive within 10 minutes. A coverage plan that allows up to 10 minutes for the first unit to arrive will not provide a level of service that citizens should expect in an urban area.

The terminology used in the *Orientations* document does not adequately explain the difference between “délai favorisant l’efficacité de l’intervention” and “délai compatible avec une intervention efficace”. The longer response times that are described as “compatible” could be reasonable expectations in rural areas and in the perimeter areas of cities where the population density is very low. Citizens who live in these areas should understand that it will take longer for firefighters to respond and their effectiveness will be limited.

The 5-minute objective for initial response time is even more critical when the fire department is the first responder to medical emergencies. Rapid intervention is critical to save the life of a person in cardiac arrest or respiratory arrest. The 5-minute objective is generally considered as an outer limit for saving lives in the most critical medical

situations. Across North America today, the great majority of fire departments provide this service to their communities. Unfortunately, in Québec most fire departments are still not trained or equipped to respond to medical emergencies.