Item	04
Manager's Report No.	30
Council Meeting	00/11/20

TO: CITY MANAGER 2000 NOVEMBER 07

FROM: CHIEF BUILDING INSPECTOR

SUBJECT: **REQUIREMENTS FOR SMOKE ALARMS IN HOMES AND SECONDARY SUITES**

PURPOSE: To provide council with information regarding the enforcement of requirements for smoke alarms within homes and secondary suites.

RECOMMENDATION:

1. **THAT** Council receive this report for information purposes.

REPORT

At its regular Meeting of 2000 July 31, Council directed staff to investigate the feasibility of enforcing a requirement of the installation of smoke alarms in homes and secondary suites in the City of Burnaby. This issue relates to the life safety of the occupants of residential dwellings. As directed by Council, at its meeting on 2000 June 26, staff will also be submitting a subsequent report on the desirability and feasibility of requiring sprinklers to be installed in all residential dwellings.

TERMINOLOGY

There are essentially three different types of devices used for the detection of heat and/or smoke. The following definitions are intended to provide a brief explanation of the application of each device within the context of residential development.

1) Heat Detector

This refers to a device designed to operate at a pre- determined temperature or rate of temperature rise. These devices are required within suites and other specific locations throughout a multi-family residential (apartment) building. The purpose of the device is to alert the residents of both the suite and the building of a fire occurrence. This device is actuated by heat only and is connected to the building fire alarm system.

2) Smoke Detector

This refers to a device designed to operate when the concentration of airborne combustion products exceeds a pre-determined level. These devices are actuated quicker than heat detectors and are required in areas of a multi-family residential (apartment) buildings where hazardous materials may be stored or used. They may also be used as a substitute for heat detectors under specific circumstances.

Like the heat detector, the purpose of this device is to alert the residents of the building of a fire occurrence through connection to the building fire alarm system.

3) Smoke Alarm

This refers to a device which is actually a combined smoke detector and audible alarm. It is designed to sound an alarm within the room or suite in which it is located upon the detection of smoke/fire within that room or suite. These alarms are activated when smoke either interferes with the ability of ionized air to conduct an electrical current or scatters light in a way which affects a photo-sensitive plate. This causes an alarm within the device to sound. With early detection, very small fires can be extinguished before they spread and residents are given enough time to escape from larger ones.

This device is required in all residential units, including single family dwellings. With the alarm built into the device, it is intended to alert only the occupants of the suite in a multi-family building or a single family dwelling. The 1998 B.C. Building Code requires that sufficient smoke alarms be installed so that there is at least one on each floor level, including basements, and each bedroom is protected by a smoke alarm either inside the bedroom or in the corridor within 5 m. of the bedroom door.

BACKGROUND

The requirement for wired-in-place smoke alarms within residential dwelling units was introduced in the 1980 National Building Code which was adopted for use in the Province of B.C. in 1983. All subsequent B.C. Building Codes since 1983, including the current 1998 B.C. Building Code, have retained the requirement for mandatory wired-in-place smoke alarms within residential units.

It should, however, be noted that these requirements only apply to new construction or major renovations where bedrooms are added or altered, or where basement finishing occurs. The Building Code does not apply to those existing homes built prior to the requirement for wired-in-place smoke alarms in 1983 unless extensive renovations/alterations occur.

Stand-alone battery operated smoke alarms were introduced in 1970. For the total stock of new and older housing, including apartments, Statistics Canada estimates that about 83 per cent of owner-occupied households and 74 per cent of tenant-occupied households were equipped with some form of smoke alarms in 1988. Over the years, numerous media campaigns have encouraged owners of older homes to install wired-in-place smoke alarms, or at the very least, battery-operated smoke alarms. While battery-operated smoke alarms do provide an increased level of life safety, they are also more dependent on routine maintenance and battery replacement by the owner or tenant. CMHC estimate that about 25 per cent of battery-operated alarms probably are not functioning reliably because of removed or non-functioning batteries. Battery-operated smoke alarms are estimated to have efficiencies approaching 97 per cent, the same as those for wired-in-place alarms, when maintained in operable condition.

At this time, the City does not permit secondary suites other than those created through the conversion of a single family residential dwelling located in an area zoned for two family dwellings, or those used as a registered in-law accommodation.

Wired-in-place smoke alarms, which are audible throughout the building, are required in both these instances.

In 1991, CMHC conducted a study regarding the costs and benefits of installing smoke alarms in residences. The report outlines that 277 people across Canada died in fires in one and two family dwellings in 1987. Even though the total number of houses had grown in 1987, this was a distinct improvement from 1980, when 442 people died. There are a number of reasons for this improvement in safety, but it is generally agreed that the one major difference is the advent of inexpensive battery-operated smoke alarms in existing homes and wired-in-place smoke alarms in all new construction and renovations.

CONCLUSION

Regulatory authorities, and those in the construction industry, support the proven benefits of installing smoke alarms within all residential construction. Wired-in-place smoke alarms are recommended over battery-operated smoke alarms due primarily to the need for a managed maintenance program for battery-operated alarms.

Unfortunately, Building Department records do not provide staff with the information necessary to determine which homes constructed prior to 1983 have or have not been equipped with smoke alarms, either battery-operated or wired-in-place. It would be an imposing task to create an inventory of all residential buildings constructed prior to 1983, and virtually impossible to undertake an inspection program to determine the status of each and subsequent enforcement of the installation of smoke alarms.

It would appear from statistics that Codes have adequately dealt with this issue since 1983. Since 1983, staff have been enforcing the installation of wired-in-place smoke alarms for all new construction, alterations or basement finishing. It should be noted that the number of homes without wired-in place smoke alarms will continue to diminish as the older housing stock is replaced with new construction or alterations and renovations take place.

The estimated cost of installing wired-in-place smoke alarms, within an existing pre-1983 residence, is between $300.00 and 500.00 for the installation and $60.60 for the permit fee. While mandatory installation of wired-in-place smoke alarms in pre-1983 dwellings is not recommended at this time, staff suggest the following alternatives for the consideration of Council:

1) Submit a resolution to UBCM requesting the creation of a program to provide financial assistance to owners installing smoke alarms in pre-1983 residences.

2) Develop an information package to encourage voluntary installation of wired-in-place smoke alarms, which may include a reduction or waiving of electrical permit fees for the installation.

GRH:ap
smokalarmrep.wpd

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CHIEF BUILDING INSPECTOR

cc: Director Planning & Building