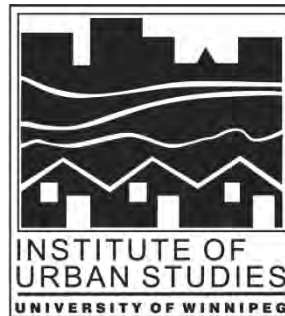
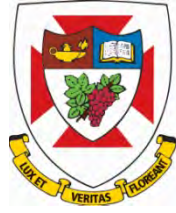


Winnipeg Building Code Study

by Gene Milgram & Sybil Frenette
1978

The Institute of Urban Studies





THE UNIVERSITY OF
WINNIPEG

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WINNIPEG BUILDING CODE STUDY

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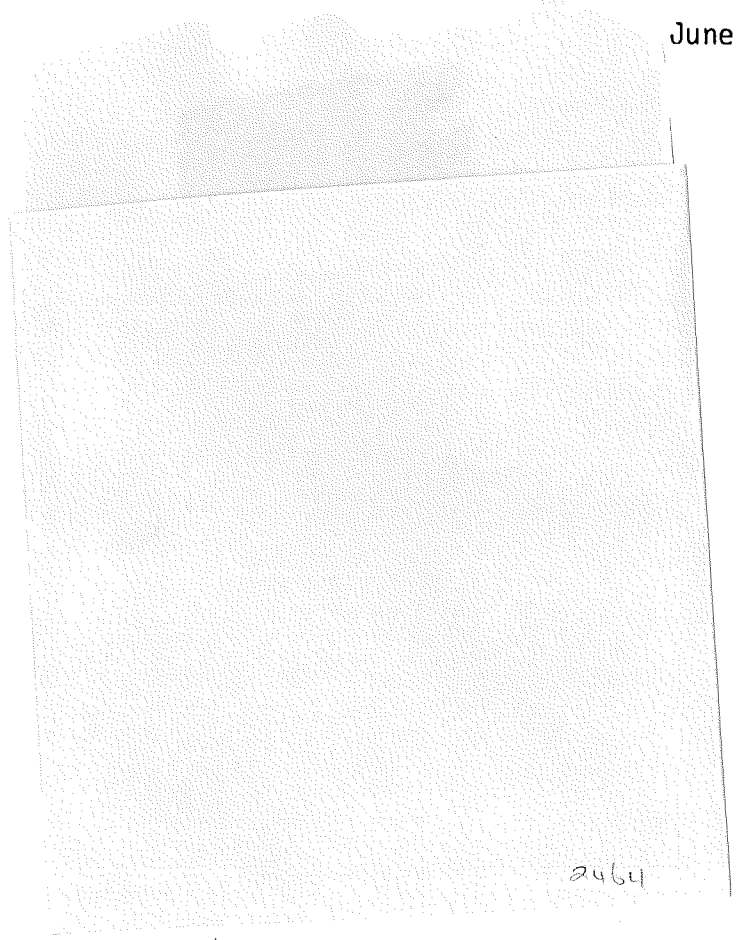
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INTRODUCTION

Housing codes are a prescriptive device which require that an individual accept the responsibility of maintaining his ownership properties in a safe and healthy state of repair in accordance with minimal requirements of the law. They deal with an owner's duty to ensure proper repair, to maintain sanitary conditions, to see that the property remains properly ventilated and lighted, to make sure that it has the required facilities for fire safety, and that required machinery and services are in good working order.

In response to several tragic fires, the City of Winnipeg has been forced to re-assess their housing code enforcement policies, the adequacy of their provision for fire safety, and the efficiency of their inspection branch. The process of evaluation involves both technical and political measures: technical in that there is a need to comply with national codes, political as there is a need to reply to the vigilance of public pressure groups to prevent any further loss of life.

The first major attention given to fire in the inner city was the result of the Patrick Street Fire in the early 1970's. Despite a major public outcry, there was no discernable attention paid to a concerted fire prevention program. Then, on January 18, 1974, the Haslemere Apartment block burned killing nine persons by smoke inhalation. The Fire Department responded in a report dated January 30, 1974,¹ which made recommendations to improve fire safety in older apartment blocks by emphasizing the physical construction of these buildings combined with improved inspection. An apartment upgrading by-law proposed by the Building Commission was received by Council May 15, 1974. It contained eighteen guidelines which were to be followed in determining what improvements were necessary to a building. Fifteen months later, on August 20, 1975, a by-law containing seventeen guidelines was adopted. Significantly, guideline number eighteen, permitting an owner to phase improvements over a three year period after receipt of an order, was omitted.²

1. City of Winnipeg, Minutes of City Council Meeting, May 15 1974, item 690 "Guidelines for Improvement to Existing Apartment Buildings, Files GF-1 and EB-1", p.799.

2. The item dropped read "18. Where improvements to the building are required the owner should present and obtain approval, within six months time, of all work proposed so as to meet these requirements. The work itself should be completed within a three-year period with an acceptable proportion of such work being done each year." City Council Minutes, May 15, 1974, p.301.

It was decided that a list of all apartment buildings (approximately 1,500) would be prepared establishing the priority order in which they should be dealt, the intention being to deal with the oldest buildings first. The program of apartment upgrading was to operate with an inspection staff checking existing apartment buildings to determine their compliance with the guidelines. The guidelines were such that no building constructed prior to the 1970's could meet the specifications. Non-compliance was to become the rule rather than the exception.

The actual implementation of the by-law and its guidelines proved to entail tremendous complexities. The question of fire safety could not be isolated from the associated enforcement programs of maintenance, occupancy and health which were also designed to "safeguard life and limb, property and public welfare with respect to design, construction, alteration and use of buildings."³ The inspection program would require a substantial increase in staff to cope with the heavy demands of inspecting 1,500 odd apartment blocks. As the aggregate of the inspection forces entails three distinct divisions: -- the building inspection division under the Department of Environmental Planning, the

3. Department of Environmental Planning, A Description of the City of Winnipeg's Inspection Forces, presented to Committee of the Environment, January 1978, File #-2; p.1.

Fire Prevention Branch of the Fire Department and the Inspection Branch of the Health Department -- considerable co-ordination was required.

Most frustrating, however, was the multiplicity of enabling legislation, the lack of amalgamation of municipal by-laws under Unicity, the tri-governmental building codes, the lack of consistency in interpretation of code regulations between departments at all levels of government.

In the interim there was the increasing annual toll of fire losses and two major disasters, the Fort Gary Court fire, February 1, 1976, and the Town and Country Lodge, January 31, 1977. Tremendous pressure was placed on city council to expedite the inspection program, to close down those buildings posing the greatest fire threat and accelerate the system of up-grading all rental premises. At the same time rent controls were introduced throughout the province creating a financial constraint to the owners of apartment buildings.

By-law 1046/75, the City of Winnipeg Apartment Upgrading By-law has been a first step in making older apartment blocks safer from fire. However, since its inception, there has been an unfortunate consequence, namely, the loss of a substantial amount of unsubsidized low income rental accommodation through the strict and costly enforcement procedure. This loss has

occurred either through rent increases accompanying compliance, or the subtraction of apartments through demolition in cases where owners have refused to comply.

OBJECTIVES OF THIS STUDY

The following study is an examination of precisely how the housing codes have contributed to the loss of apartment units in the inner city.

This research has been organized under three areas of inquiry:

1. an evaluation of the execution of housing codes and enforcement programs
 - codes for new construction
 - codes for the maintenance of existing buildings
 - upgrading codes which address fire safety
2. the effectiveness of these enforcement programs in terms of their own objectives and in solving the problems with respect to unsafe conditions in older structures
3. discussion of alternative measures to improve life safety in older apartment blocks.

Several questions are at stake. Can fire and health safety measures be enforced in older apartment blocks in such a way that the proposed upgrading orders are economically feasible to the owner? Can safety be ensured solely through the alterations of the physical structure? How extensive is the city's responsibility to ensure that its tenant population is not victimized by fire and/or the consequences of the apartment upgrading standards?

This study has made recommendations which should provide improvement to the present state of code inspection, enforcement, and legislation in Winnipeg.

I. THE NATURE, OBJECTIVES AND ENFORCEMENT OF WINNIPEG'S CODE PROGRAMS

The nature and objectives of Winnipeg's building codes have been the product of the influential personalities and historical precedents within the inspection, implementation and enforcement divisions of the City administration. Although the emphasis of this report is the Apartment Upgrading Program, it is not the only program which has bearing on the present code enforcement issue. The following chapter will therefore first outline the historical precedents of previous initiatives to determine to what we owe the nature of the present code structure. Secondly, the current housing codes, which include: 1) codes for new construction, 2) codes for the maintenance of existing buildings and, 3) upgrading codes will be outlined. Included in the discussion will be a description of each code, the inspection branch responsible for its implementation and the means of appeal.

1-1 Historical Precedents to the Present Code System

Four items stand out as historical benchmarks in Winnipeg's history of dealing with existing buildings through fire protection efforts.

From the earliest to the most recent, these events are:

1. the Hotel Upgrading Program (1947-1957),
2. the installation of smoke detector alarm systems in the old City of Winnipeg school buildings (early 1960s),
3. the Fire Department's Nursing Home Program (1964) and,
4. the Rooming House By-law 19019 (1964).

A. Hotel Upgrading Program

The old City of Winnipeg's first program for improving safety in existing buildings was attempted with its "hotel upgrading program." It started in the late 1940's and extended to about 1957, affecting fifty-seven hotels. It was a program to improve the fire protection design features in the existing hotels. A three-year period of study and consultation occurred before any safety measures were recommended. The hotel owners were given the judgemental authority to determine the speed at which the improvements were made over a

five year period subject to the approval of the Building Commission. The program proved to be generally acceptable as owners were not placed under severe time constraints. The fact that the program was simultaneously applied to all owners did not leave them at a competitive disadvantage to one another. This stands in sharp contrast to the present Apartment Upgrading Program which can only address a small portion of the effected apartment blocks at one time.

The Hotel Upgrading Program, the first real upgrading program undertaken by the City, established the procedural precedent of using the Building Commission for its enforcement. As an upgrading program it proved to be economically viable to those effected mainly due to the realistic application of time phasing.

B. City of Winnipeg School Buildings

Later in Winnipeg's fire prevention history was the example set by the old City of Winnipeg School Division. Through the initiation of the Fire Department, extensive measures including combined smoke and heat detectors and central monitoring of each school's alarm system were implemented. Such measures were the first to be practiced in North American schools. The fire chief and the School Board had shown the foresight to see beyond the limitations of the Building Code and the insufficient measures ordered by the

Building Commission. Through their own realization of the need, the schools completed a successful program of centrally supervised automatic fire detection installations which were completed in 1965. In addition to the detection system, a program of education and training of school personnel was established and has been maintained ever since. The results of the program have been extremely successful both in terms of life safety and in the significant reduction of property loss to a level well below that of suburban Winnipeg school divisions which did not enact such measures.⁴

The school division's program of fire protection was the first comprehensive system of smoke and heat detection throughout a building with central supervision and a trained staff in fire safety procedures. Because it has been in operation for approximately fifteen years and it has involved a large number of buildings, the school program has provided an excellent example for evaluating both the strong and the weak components of a centrally supervised detection system.

4. Research and Development Officer, City of Winnipeg Fire Department. A Study presented to the National Fire Protection Association Conference, Cincinnati, 1976.

C. The Fire Department's Nursing Home Program

In 1964 the Fire Department initiated a brief but aggressive program to have smoke detector systems installed in nursing homes located in converted single family residential buildings. The significance of this program was the recognition by the City that smoke detectors located in the hallways of multiple unit dwellings could greatly improve life safety.

D. The Rooming House By-law 19019

Prior to his retirement in 1964, Winnipeg Fire Chief Dunnet had requested the enactment of regulations for existing rooming houses that would require the installation of automatic smoke detector and fire alarm systems, a secondary means of egress above the ground floor, and the elimination of individual room heaters and doors in which glass had to be broken before they could be used as exits. The by-law, as passed, called only for fire escapes.⁵ Under this by-law, the Fire Prevention Division of the Fire Department issued approximately 250 to 275 orders in nine months. The by-law was repealed in 1965, the argument being that the economic hardship of the law was too onerous.

With the repeal of the law and no policy or program backing, the Fire Department's inspectors, for all succeeding years, felt that

5. Deborah McCauley, Rooming House Fire Traps, (unpublished paper, 1974), p.3.

they could not order any new exit requirements under the general authority given them to deal with unspecified, unsafe conditions in a building. It reinforced the feeling that inspectors could only enforce the status quo, i.e. repair and maintain only what already existed.⁶ The repeal of the Rooming House By-law was to set the political tone as to a posture of non-involvement over the next decade.

The pendulum has swung from a period of benign neglect to a period of super zealotry commencing with the adoption of the Apartment Upgrading By-law. There has been a shift over the years in the attitude of the City administration and government towards fire safety measures and the speed at which they can be instituted and delivered. Previously there had been little attention paid to existing buildings. However, those programs that were implemented, the School Division program, the Rooming House By-law and the Hotel Upgrading Program, were enforced with realistic time constraints. There is now a feeling that as soon as something is considered

6. It was this feeling that produced the situation discovered in the 1977 judicial inquest into the Preston Avenue fire which killed eight tenants. Judge H. Gyles stated, "It seems incredible that an inspection by the Fire Department on June 18, 1970, required that owners repair or renew the fire escapes which only extended to the second floor (and not to the third)...Requiring the fire escapes to be rebuilt without extending them to the third floor was unconscionable."

to be unsafe, it must be repaired immediately, regardless of the number of buildings affected or the financial questions involved. (Table 1) Looking at the issue historically it is possible to see the change in direction of safety enforcement, the reduction in the time allocated to the program, and also the declining degree of tolerance in the timing and phasing of these programs.

1-2 The Present Code System

Winnipeg's Housing Codes address different dimensions of the built environment, the physical nature of the building, the form of tenure and the arrangement of living facilities within the building. With regard to multiple unit dwellings, codes distinguish between standards for the individual units within the building and standards for the structure in its entirety. Some codes vary with the form of tenure, be it rented, owned or under condominium management. For example, by-laws protect the renter from the landlord and vice-versa by ensuring minimum standards of health and safety either within the apartment suite or in the building as a whole. In the case of a rooming house land use, it is the communal sharing of the kitchen and sanitary facilities which make it a special form of housing subject to specific code requirements. It is these basic premises that determine how public authorities may intervene in the operation of living space.

Table 1

Time Phasing of Fire Safety Programs

By-law	Planning Phase	Length of Program	Total Yrs. of Program	Number of Buildings Affected	Time Allowance For Compliance	Buildings Per Year	
Pre 1970	- Hotel Program	3 yr.	7 yr.	10 yr.	57	5 yr.	11.5
	- School Program	1 yr.	5 yr.	6 yr.	80	n/a	14
Post 1970	- Apt. Upgrading ¹	3-4 mo.	2 yr.	2 1/3 yr.	274 ²	9-12 mo.	274
	- 4 Storey Fire Alarm By-law	9 mo.	1 yr.	1 2/3 yr.	500	1 yr.	500

1 Upgrading Program has only been in existence a few years and is not completed.

2 Affected so far - well over 1,000 buildings await inspection.

There are codes that apply to existing buildings and codes that apply to new construction. Existing housing codes deal with the performance of a structure in meeting the standards enforced when the building was originally constructed. New building codes are established as our technology advances and there are changes in our values and expectations. When applied to new construction, the new building codes simply ensure that the development maintains minimum standards. However, when codes that apply to new construction are enforced against existing structures, there is a retroactive change in standards and a new onus placed on the authority which passes the law. This principle of retroactivity is important to recognize because, in Winnipeg, it has not been accompanied by special measures to offset the difficulties in upgrading the older buildings to new construction standards.

The code system in Winnipeg can be divided into:

1. codes for new construction
2. codes for maintenance of existing buildings, and
3. upgrading codes for existing buildings which contain a formula of retroactivity and generally address the issue of fire safety.

The following description of housing by-laws is a compilation of those codes which are most pertinent to the maintenance and upgrading of buildings in Winnipeg. Except where noted, the political body having final jurisdiction over appeals against the regulations and orders of the codes is Environment Committee of Council.

A. Codes for New Construction

The relevancy of the new building codes is that they form a basis for the new upgrading by-law. Standards which apply to new construction are applied to old buildings under the belief that new buildings are inherently better than old ones. In many cases the transposition of the new standards on the old are inappropriate and can cause the destruction of aesthetically valuable features.

1. Building By-law 1544

Passed in 1977, the City adopted the new 1977 Provincial Building Code as the city's and set out the procedures for enforcement. It defines the composition of the Winnipeg Building Commission. It's technical requirements are modelled after the National Building Code, with modifications, and cover everything except electrical standards.

Enforcement is with the Supervisor of Building Inspections. Appeals or modifications go either to the Winnipeg Building Commission and then to the Environment Committee or directly to the Environment Committee depending on the circumstance.

This by-law superceded by-law 740 which, in 1974, had replaced the multiplicity of building codes prior to Unicity.

2. Electrical By-law 1380

Passed in 1976, it adopts, with minimum modification, the Canadian Electrical Code. Enforcement is with the Electrical Supervisor of the Building Department.

B. Codes for the Maintenance of Existing Buildings

1. Fire Prevention By-law 1322

Passed in 1976, it adopts the National Fire Code as the local Fire Prevention By-law. It covers all buildings although in actual practice it has been interpreted to mean only the maintenance of existing conditions. This by-law gives the local jurisdiction the power of discretionary judgement regarding what is an unacceptable present condition when compared with the standards of the Fire Code and the National Building Code for new construction. It gives the Fire Chief and the Supervisor of Building Inspections a residual power which they have not used or applied in a wide ranging way. Instead, the City uses more specific by-laws for upgrading which will be described in the section dealing with upgrading by-laws.

Enforcement is through a systematic inspection program by the Fire Prevention Branch of the Fire Department. There are nineteen fire prevention officers who carry out a year round program of building inspections, each aiming to see the buildings in their jurisdiction at least twice a year.

2. Maintenance and Occupancy By-law 765

Passed August 21, 1974 due to the federal government's stipulation for Neighbourhood Improvement Areas, the by-law covers all rental units in the city as well as those in NIP areas. It is essentially a merger of the Provincial Health Act and Winnipeg By-law 19165.

The By-law is enforced by the Maintenance and Occupancy Inspection Branch consisting of six inspectors. The NIP areas have a separate inspection branch. Enforcement is generally conducted through a registered complaint basis whereas the NIP areas employ a more systematic approach.

3. Minimum Standard of Housing Repair By-law 19165

Passed in 1972, By-law 19165 was the housing maintainancy by-law for the old City of Winnipeg. It sets standards for the exteriors of buildings. Although its provisions are not necessarily directly related to health, enforcement is through the Health Department's Housing Inspection Division. Inspection is based, on the most part, on receipt of complaints.

4. The Provincial Health Act as amended to 1974, the Untidy and Unsightly Premises By-law and the Winnipeg

Heating By-law passed in 1964 are all maintenance by-laws enforced by the Inner City Health Department and the Building Inspection Branch. They set conditions on exteriors and cleanliness although only orders issued through the Provincial Health Act may legally authorize buildings to be placarded. Unlike other orders issued in this section, those pursuant to the Provincial Health Act are appealable to the courts rather than the Committee of the Environment.

C. Fire Related Upgrading By-laws

1. Rooming House By-law 1004/75

Passed June 25, 1975, this by-law instituted the licencing of rooming houses. Technically it could cover all multiple unit buildings although, through administrative definition if a building contained three or more self-contained units it would be subject to the Apartment Upgrading By-law.⁷

It required that in order for a rooming house to be licenced, it must install smoke detectors in the hallways of each

7. Testimony by Building Department Supervisor of Inspections, F. Nicholson at the Preston Avenue Fire Deaths Inquest, March 1977.

floor before May 31, 1977 as well as achieve general compliance with the Maintenance and Occupancy and Health By-laws.

Administration of the Rooming House By-law was coordinated by the Licensing Department. The Electrical Division looked after the inspection of smoke detectors in liason with the Fire Prevention Division of the Fire Department; the Health Department and the Existing Buildings Branch of the Building Department were also involved.

Enforcement of the critical smoke detector aspect of the Rooming House By-law was suspended after the Preston Avenue fire exposed the definitional problems inherent in the mulitplicity of by-laws that then covered residential fire safety. It was decided that rooming houses should be governed under the Apartment Building Upgrading By-law. In this manner, all multiple unit buildings would come under the same procedures and theoretically, at least, the same standards. It is ironic that in resolving the problems of defining building types, the City also changed the applicable standards for fire safety in a direction contrary to that recommended in Judge Gyles' inquest report. He had recommended a modest but immediate program of smoke

detector installation in many buildings, with more comprehensive upgrading of those buildings to be done, of necessity, over a much longer period of time. The Apartment Upgrading By-law, however, took the latter, more comprehensive approach.

2. Apartment Upgrading By-law 1046

Originally passed August 20, 1976 as a result of the Haslemere and other tragic fires, the Apartment Upgrading By-law gave a legal basis for the enforcement of seventeen guidelines of a technical nature which had been proposed by the Building Commission. The guidelines included such measures as automatic fire alarm systems, external monitoring of an alarm system within a building, two independent exits, interior surfaces of various fire resistance ratings, emergency lighting and the installation of fire doors.⁸ In theory, the aim was compliance with the new Building Code.

8. Building Commission "Policies Followed by the Winnipeg Building Commission" - with regard to the guidelines set by City Council for Improvement of Life Safety in Existing Apartment Buildings (By-law 1046/75) as revised January, 1977. - Found in "City Council Minutes, April 6, 1977. pp.133-152.

The practical difficulties of such compliance were recognized in provisions imparting some flexibility to the standards. For example, the fire ratings of doors for existing blocks were less rigorous than the ratings in the Building Code. Nevertheless, in almost all cases, doors still had to be changed or modified. The Building Commission in trying to work with the guidelines, created policies of interpretation and trade-offs for each guideline.

The buildings were to be inspected in descending order of age. Only new buildings with a history of problems were to be inspected. The enforcement was a two tier process. Having received the upgrading orders, the owner was given a two to three month period during which he was required to obtain a building permit. Once the building permit was obtained, the owner usually had nine to twelve months to complete the work, depending on the nature of the order from the Building Commission and the Committee of the Environment. Compliance was not required until after inspection had been completed and the order received. Thus, enforcement was dependent upon the speed and resources of the Inspection Branch and the Building Commission. The legal sanctions for non-compliance were that on summary

conviction, the offender, in the case of an individual, would be fined \$1,000.00 and/or imprisonment for six months and, in the case of a corporation, would be fined \$5,000.00.

3. Residential Upgrading By-law 1617

Passed June 1, 1977, this by-law was created to supercede the Apartment Upgrading By-law and to extend the coverage of the upgrading codes to include rooming houses, terraces etc. The guidelines remained basically the same. Significantly, however, it appears that in practice the enforcement of the by-law against rooming houses specifically is less vigorous than for conventional apartments, notwithstanding that rooming houses are equivalent and if not worse fire risks.

4. Existing Building Fire Alarm By-law 1484

Passed February, 1977, this by-law requires a fire alarm system in all residential, commercial and institutional buildings of four storeys or more by February 28, 1978. It includes specifications for detection and sprinkler systems based on new Building Code standards. In effect, it is a partial upgrading approach with implicitly defined priorities. It is enforced by the Electrical Inspection Branch of the Building Division. The Electrical Supervisor

may waive upgrading requirements if he feels the present fire alarm system is adequate. Appeals go to the Building Commission.

In summary, the preceding material has described both the historical development of codes in Winnipeg and provided a brief description of the more recent upgrading and residential improvement by-laws. The earlier period showed a time of sporadic attention to the need for life safety in our living space. The latest period shows an attempt at greater sophistication which has resulted in a series of relatively complex by-laws aimed at life safety through the reconstruction of physical features and improved alarm systems. There is concern that the passage of these new by-laws has lead to:

1. major changes in the concept of upgrading for fire safety purposes which have in turn lead to a retroactivity without a corollary of financial assistance,
2. overlap of the regulations within the codes themselves,
3. duplication in the administration of those codes by a multiplicity of inspection branches,
4. failure to take full cognisance of the overall effects of the program in such larger concerns as to affordability and availability of housing.

II. EFFECTIVENESS OF FIRE RELATED CODES IN TERMS OF THEIR OWN OBJECTIVES & THE OVERALL PROBLEM

In order to determine whether or not the present upgrading program will meet its primary objective, that being the prevention of future losses due to fire, the following section will evaluate the effectiveness of the codes in the prevention and suppression of fire. Through an examination of national fire statistics, provided by the National Fire Data Systems of the United States government, the nature of fire will be described. Having then established the characteristic behavior of fire, the ability of the present codes to protect against typical fire situations shall be discussed.

The national scale of fire data has been employed to prevent an over reliance on local fire statistics which are insufficient in establishing overall fire trends. The cases of fire incidence and fire losses in Winnipeg form too small a sample to establish definitive patterns upon which to base policy decisions regarding the many causal factors of fire ignition, fire spread and

human casualties. Because only a small percentage of fires result in death, there is a greater possibility for an unusual fluctuation in any one year's number of fire deaths as a result of one extraordinary event. For example as Table 2 illustrates, Winnipeg statistics indicate the incidence of multiple deaths is greater in apartment blocks than in single family dwellings. The table does however show that although there is a greater loss of life in apartment blocks due to multiple death fires, the frequency of fatal fires is no greater in apartment buildings than in single family dwellings.

Table 2

Fire Fatalities By Dwelling Type in Winnipeg

<u>Date</u>	<u>Fire Fatalities in Single Family Dwellings</u>		<u>Fire Fatalities in Apartments</u>	
	1 or 2 deaths	multiple deaths	1 or 2 deaths	multiple deaths
1977	5	none	5	1 fire-8 deaths
1976	5	none	5	1 fire-5 deaths
1975	8	none	8	none
1974	10	1 fire-4 deaths	4	1 fire-9 deaths

Source: City of Winnipeg Fire Department - Annual Reports 1974 - 1977.

National fire statistics may be used in clarifying standard fire situations. The most comprehensive and reliable data source is the National Fire Prevention and Control Administration (NFPA) located in Washington D.C. Their fire statistics show many similarities to our local situation in terms of age distribution, fatalities by occupancy type and cause of ignition for fatal fires. For example, in 1974, 69.4% of all fatal fires in Manitoba occurred in single family residences as opposed to 16.7% in apartment buildings.⁹ American National Statistics show that 55% of fire deaths occur in single family residences as opposed to 16% in apartments.¹⁰ As there appears to be enough correlation between national and local fire statistics, it may be assumed that material dealing with the nature of fire based upon national data is applicable to Winnipeg's case.

9. Claud Wright, Report on Fire Losses and Fire Services in the Province of Manitoba for the Ministry of Labour, 1975, pp. 61 - 75.

10. National Fire Data Systems, U.S. Government as cited in "Fire Death Senarios and Fire Safety Planning," Fire Journal, (May 1976), p. 22.

The national statistics convey the following:

1. The majority of fire deaths occur in residences.¹¹
2. The greatest number of fire fatalities in residential buildings occur in one and two family homes.¹²
3. The correlation when graphing the occurrence of fire in relation to the hours of the day reveals:
 - a bell-shaped curve distribution, the greatest frequency of fire occurring in the early evening from six p.m. and the least active period between six to seven a.m.¹³
4. The pattern of fire deaths is significantly different. When plotted on the same graph, the peak occurs between nine p.m. and six a.m. Seventy-five percent of all multiple-death residential fires occur at night.¹⁴
5. In regard to the causes of fire and the causes of fire deaths ... sleeping persons are involved in fifty-seven percent of dwelling fire deaths. The young and the old are more likely to be victims than those in the 20-40 age range.¹⁵
6. Smoking is by far the greatest source of ignition for fatal fires. Bedding and upholstery are the initial fuels which most often ignite, not the structural components of a building that are regulated by building codes.

11. N.F.P.A., "A Study of Fatal Residential Fires," No. FR 72-1, 1972.

12. "Multiple-death Fires, 1974," Fire Journal, (July, 1975), p. 9.

13. "Recent Advances in Residential Smoke Detectors," Fire Journal, November, 1974, p. 71.

14. Editorial, "Talking Fire Protection Systems: Protection for Dwellings." Fire Journal, (January 1975), p. 33.

15. Ibid. p. 33.

7. The vast majority of deaths from fire are caused by inhalation of toxic gases rather than flame. A contributing secondary factor in a significant proportion of victims is the pre-existence of medical problems as well as the presence of alcohol in the blood stream.¹⁶
8. The place of origin of apartment house fires caused by smoking is 54% in the livingroom, den or lounge and 31% in the bedroom.¹⁷
9. The material first ignited from all sources of ignition in apartment house fires are:
 - 26.2% - soft goods i.e. bedding, clothing
 - 25.6% - furniture
 - 24.6% - structure and finish materials
 - 5.4% - fuels
 - 18.2% - other materials.¹⁸

The statistics show three basic features of fire and fire death:

- deaths are predominately single incident, not multiple incident,
- the ignition areas are the living spaces of residential structures,¹⁹ and
- most fire deaths occur at night.

The form of fire prevention used to protect life must combat the consequences of these three features.

16. Bryon Halpin et al, "A Fire Fatality Study," Fire Journal, (May 1975): 11-13 & 90-99.

17. N.F.P.A. op.cit.

18. Ibid.

19. Wright, Report on Fire Losses, p.37.

Major public attention has been centred on the few multiple fire deaths which have received considerable media coverage, while in fact, the greatest danger of fire is in single incident fires occurring randomly. The basic emphasis of the fire codes has been to inhibit the spread of fire to prevent multiple deaths.

At the present time the codes, predicated on the building code which stresses compartmentalization, are based on the principle that multiple deaths will not occur if the fire is prevented from spreading from one unit to another. The converse is not necessarily true whereby the design to prevent multiple deaths will protect against single unit fires which may or may not, in themselves, involve multiple death. Statistics show that single deaths are more likely to occur in a fire situation. Therefore, there is a need of a different approach to fire protection stressing early warning which can prevent single fires and potential consequent multiple deaths.

Early Fire Detection

The codes are directed at preventing the spread of fire throughout a building once the fire has begun. However, if codes were aimed at alerting and detecting a fire during its initial phase of smoldering or early ignition, it would be possible to minimize the condition of it spreading by use of alternative methods of prevention. Early extinguishment, early alarms, and greater advance warning would allow more time to react and escape from the blaze. Not only would it be possible to limit single deaths, but it would furthermore be possible to improve the detection systems for multiple deaths by preventing the larger fire from growing out of the smaller fire.

The fire systems installed under the present code enforcement program all require individuals to understand and use the fire system rationally. However, there can be no guarantee that the tenants will respond to the fire as they are expected to. In the case of the "Fort Garry Court Fire", the majority of the tenants were not the least bit affected by the alarm. There had been too many false alarms, several people weren't roused

until the caretaker pounded on their door or they had visible signs to confirm that there was a fire in the building.²⁰

Secondly, the rate of spread can be slowed by fire doors and compartmentalization, but if occupants do not use the time that has been gained, that advantage will be lost. Thirdly, if tenants are not made aware of the purpose of the fire safety equipment, they will not use it correctly. For example, in older buildings where compartmentalization has required the installation of several fire doors, these doors prove a nuisance to tenants who have been accustomed to freer movement in the building. The tenants often prop the doors open, thereby destroying the purpose of the fire door.

It appears from the arrangement of the by-laws that they emphasize compartmentalization. They require the installation of smoke or heat detectors at the tops of stairways that have been enclosed with fire doors. From a life-safety viewpoint this is an illogical location for the placement of detectors. Firstly stairways are the least likely place for non-arson fires to start

20. Emergency Planning, Fort Gary Court Fire Report, (October 1976) pp. 7-14. For a fuller discussion of the limitations of fire alarms see "The Alarming Problem," Fire Journal, (September 1973) pp.15-17.

and secondly, fires originating elsewhere in the building will not activate those detectors in any event because compartmentalization has separated the smoke and heat from the area of the detector.

The emphasis for fire safety features in the public areas of buildings, i.e. the basement areas, stairwells, hallways and locker rooms has been directly related to recorded incidences of arson fires in publically accessible locations in apartment blocks. This has caused a prevailing fear of arson in Winnipeg and the belief that the damage of arson fires may be reduced through such measures. The catalyst for the Upgrading By-law was arson-caused fires in public areas.

It must be remembered that arson fires are not only profit motivated or due to the desire to destroy an economically unfeasible building. Furthermore, arson is not solely a premeditated problem. Arson may be motivated by the psychological problems of the arsonist, in which case, the fire may be started anywhere. The following statistics show that fires caused by arsonists do not only happen in public areas.²¹

21. For further discussion of arson motives and attempts to deal with the problem see Nicholas Borg and Leonard David, "Arson: A Multidimensional Problem," Society of Fire Protection Engineers, Technology Report No.76-4, 1976.

Table 3

Place of Origin and Materials First
Ignited in Arson Apartment House Fires

<u>Place of Origin</u>	<u>Materials</u>
Interior stairways...13.5%	Flammable liquids...30.8%
Multiple*locations...10.8	Papers and trash....26.9
Storage rooms.....10.8	Fabrics..... 7.7
Living room..... 8.1	Other materials.....34.6
Bedroom..... 8.1	
Hallways..... 8.1	
Other places.....40.6	
TOTAL.....100.0%	

Source: N.F.P.A. "Study of Apartment Building Fires," No.FR 74-2,
1974, p.19.

Table 4

Area of Origin of all Apartment House Fires

Bedroom.....	19.6%
Living room, den, lounge.....	16.9
Kitchen.....	10.8
Storage room, attic, closet.....	8.8
Hallways.....	4.7
Interior stairs, lobby, entrance or foyer.....	4.7
Utility and service areas (other than heater room).....	4.7
Heater rooms.....	4.3
Exterior of building.....	3.6
Concealed spaces (within walls, floors and ceilings).....	3.6
Bathroom, powder room.....	3.5
Other areas.....	14.8
TOTAL.....	100.0%

Source: N.F.P.A. "Study of Apartment Building Fires," No.FR 74-2,
p.19.

The statistical evidence shows that arson fires are not necessarily started in public areas of apartment buildings. The treatment of detection equipment in public areas (while it should be retained) is not by itself sufficient. Detection devices in public areas should be supplemented with detectors in other likely places of fire origin in a building.

Physical alterations to a building are costly in terms of labour and materials. The interior structural changes required by the codes especially to older apartment blocks are considerable i.e. the addition of fire doors and exits, the replacement of wall materials, the compartmentalization of elevator shafts and stairwells. In the process of complying with the codes there is the added negative destruction of the aesthetic feature. The financial demands become a contributing factor to the loss of housing and the increased cost of housing to tenants. Without further criticizing whether or not the codes can accomplish the job for which they were formulated, perhaps there are other means by which equitable safety conditions may be met.

The preceding information leads to the conclusion that fire prevention should be aimed at detecting fire where and when it is still small. The emphasis of any fire protection program should be on early alarm warnings with a system of detection

equipment located strategically throughout an apartment block so as to cover those areas of a building where fire is most likely to start. Such an approach must recognize that fires which tend to lead to death have different patterns than fires in general. Life safety considerations are not necessarily the same as property safety measures. It is time to re-evaluate the present system of fire prevention and life safety in light of these findings and to consider alternative methods which might prove more economically attainable, physically realistic and aesthetically desirable to ensure that there is no further loss of housing as well as loss of life.

III. AVAILABLE ALTERNATIVES OR IMPROVED METHODS OF ACHIEVING THE SAME OBJECTIVES OF LIFE SAFETY

The following alternative approaches to code enforcement are based on the proposition that there is more than one way to deal with fire safety. The present codes have their utility. However, there may be other methods which lead to a better cost effective equation.

The conventional emphasis of fire safety has been on exit routes, the structural integrity of a building, isolation of the fire and some form of warning system. Thus, physical alterations to a structure have formed the major ingredients to a code enforcement program. Despite these measures, a large number of deaths have occurred.

Optimization of the code features has not taken place in Winnipeg because no one has measured the cost effectiveness of the various bylaws in meeting their objectives. Trade-offs between fire safety measures and the economic costs to individuals and government are rarely calculated. For example, the con-

struction of a fire escape will not stop a fire. There is no economic benefit to having a fire escape in terms of a reduced insurance rate. However, a detection system or a sprinkler system may reduce fire spread and thereby reduce insurance ratings. This can lead to cost savings to individual property owners, reduced capital expenditures to the fire department and reduced loss due to property damage and life. The codes presently allow sprinkler systems although their use is infrequently applied because there has not been a concerted cost benefit analysis to show their utility and long term benefits. Under the present enforcement program, property owners must front end the entire cost of installation. Meanwhile, not only does the building and its occupants gain increased protection from the more sophisticated detection system but the entire community benefits by a reduced insurance rating.

Winnipeg could learn from the case of the City of Fresno, California where there was an effective program to encourage owners to install automatic fire sprinkler systems by use of a revolving building incentive fund. The owners who installed sprinklers got the benefits of low interest loans made by the City and the resulting low insurance rates. The City's lending fund was replenished as the owners who had installed sprinklers paid back their loans. The end result has been lower insurance

rates for the property owners in the Central Business District and lower capital costs to the municipal government for fire protection facilities and equipment.

What is lacking in Winnipeg is a master plan for fire protection which will lead to an overall economic incentive to both property owners and the City. Drawing from examples of progressive upgrading programs in other North American cities, Winnipeg is capable of developing:

1. better detection systems and related safety measures in individual units,
2. a more flexible method of inspection geared to the individual building,
3. an enforcement program whereby improvements with the greatest cost effectiveness and the greatest necessity for safety would receive first priority.

3-1 Improved Detection and Related Safety Measures

A. Smoke and Heat Detectors

1. Economic incentives

A study completed in 1962 by the National Research Council of Canada has shown that smoke detectors have a potential of reducing residential loss by 41% whereas heat detectors could reduce loss by 8%.²² These findings have been

22. Rosco and McGuire, "The Value of a Fire Detector in the Home," National Research Council of Canada 7162, 1962, pp.67 & 71.

used in American codes since the 1970's although they have never been expressed in public policy for Canada and are not yet in our new National Building Code.

2. Legislated Experience Elsewhere

In the early 1970's the National Fire Protection Association changed its regulations governing home fire detection systems. They established four levels of protection beginning with one or more smoke detectors to protect each sleeping area as well as one smoke detector located at the top of any stairway in a typical family dwelling unit.²³ Later the U.S. Department of Housing and Urban Development adopted regulations requiring a smoke detector in all new federally subsidized or mortgage insured single family and multiple-unit buildings. Other states and localities followed suit, for both new construction and in some cases existing buildings.²⁴

Most recently the N.F.P.A. is recommending further change to their fire protection standards. The proposed change would eliminate the previous four levels of protection,

23. Richard Bright, "Recent Advances in Residential Smoke Detection," Fire Journal (November 1974), pp.69-73.

24. For a summary of a survey of 800 U.S. localities and their legislative positions on smoke detectors. See "Interest in Smoke Detection Legislation Growing", Fire Journal, July 1977, p.14. Many were requiring detectors for new and less frequently, in all buildings or homes. One U.S. city was even using urban renewal funds to provide 2,000 detectors to residents.

replacing them with the single requirement of smoke detectors "outside of each separate sleeping area in the immediate vicinity of the bedrooms, and on each additional storey of the family living units, including basement, and excluding crawl spaces and unfurnished attics."²⁵

In Canada, the Ontario Housing Corporation appears to have set the precedent in the use of smoke detection equipment. In 1974, OHC initiated the installation of smoke detectors in all existing and newly constructed units. To protect their investment in this \$6 million program and to ensure long term fire protection, an ongoing maintenance system for an annual operational check and cleaning of detectors has been established.

A review of the fire record in O.H.C. dwellings during the past two years shows significant improvements in fire safety. A follow-up survey of sixty-four actual fires in dwelling units in which detectors were installed indicated the detectors "discovered" 85% of the fires. In 70%

25. Report of Committee of Signaling Systems, Proposed Amendments to the Standard for Household Fire Warning Equipment N.F.P.A. 74-1975, p.74-2, Section 2-4,1.1, 1977.

of the fires the dwellings' occupants responded to the alarm, and in 25% of the cases, neighbours were alerted by the alarm. Of critical importance to life safety is the fact that in 35% of the fire incidents the occupants were asleep when the alarm sounded. It is safe to assume that some of these particular types of fire situations would have resulted in one or more deaths per fire. In addition, preliminary estimates show that the detector's early warning has significantly reduced property damage.

Due in part to O.H.C.'s smoke detector installation program, many Ontario municipalities have passed by-laws requiring early warning smoke detectors in residences. Smoke detectors have been a requirement in the City of Toronto's Fire Prevention By-law introduced in June, 1974, and Toronto's Rooming House By-law since November, 1975. In addition, smoke detectors have been stipulated for all new small residential buildings such as detached, semi-detached and row housing throughout the province according to the Ontario Building Code, January 1976.

Alberta, in 1977 passed legislation requiring smoke detectors in living units of all existing multi-unit buildings by 1979. On the hope that local governments will voluntarily

pass legislation applicable to single and semi-detached dwellings, the province has omitted their inclusion in the provincial mandatory requirements.

3. Winnipeg's Case

Smoke and heat detection systems, as they have been utilized in Winnipeg's apartment upgrading and fire prevention by-laws, show an imprecise understanding of the problem. A better understanding of the operational effectiveness of detection equipment in terms of 1) location 2) interconnection and 3) follow-up maintenance must be established in order to receive the optimum benefits of early detection and warning systems.

Location

According to the fire protection guidelines smoke and heat detectors are required in both public areas and individual suites of multiple unit dwellings.²⁶

In the case of publically accessible areas, heat detectors are required in storage areas because of the presence of flammable material, the anticipated rapid temperature

26. Pursuant to guideline enterpretation rather than literal by-law provision itself.

build up due to the small room area and the compartmentalized space. Heat detectors are also required in stairways even though all the criteria for storage areas are absent in stairways. There is not likely to be a rapid build up of heat in a stairwell therefore, heat detection would appear to be less effective than smoke detection.

In private areas of apartment blocks, the City has required detectors as a last resort in suites when an ideal exit route cannot be achieved. The detector usually required is a heat detector although the more sensitive smoke detector would be more effective. The detector is required to be located directly next to the entry door of the suite. The objective appears to be the warning of other occupants of the building before the fire burns from the suite into the hallway rather than warning the occupants of the suite in time to save themselves, i.e. when they are sleeping. The location where a smoke detector should be placed for the latter objective would be between the sleeping areas and the living spaces within the unit.

In some of the orders issued by the City there is an allowance for either heat or smoke detectors. Since the

detector heads in a heat detector system are less costly, heat detectors tend to be used more frequently although there are cases when smoke detectors would be better.

Interconnection

The City has required that where detectors must be placed in suites, they must be interconnected. This, however, may cause the loss of effectiveness of the warning system because people tend to ignore alarms when they happen too frequently or when they have no visible evidence of fire.

There is no single solution to the problem of interconnection although there are some logical arguments which help to delineate when interconnection may be the most effective.

The question of whether or not to integrate a warning system depends on the construction of the individual building. The more fire safe the construction, the less critical it becomes to notify everyone through interconnection. Secondly, if there is competent building supervision, either internal or external which can interpret the alarm, then there may be overall interconnection because any tendency for excessive false alarms can be rectified by fire-competent personnel. Lastly, interconnection should be weighed against the type of tenant and anticipated tenant behaviour within

an individual building. If the tenants are disabled, elderly or tend to be irresponsible, the alarm system should be connected to warn everyone, preferably in conjunction with a building supervisor to minimize false alarm problems.

Maintenance

Any detection system or alarm will only serve its purpose if it is properly maintained and not merely installed.

Smoke detectors especially need routine cleaning and checking. This maintenance and follow-up aspect has been virtually ignored in the orders requiring owners to install detection equipment. The legal requirements for record keeping and maintenance are contained in the City's Fire Prevention By-law yet most owners and caretakers are not aware of them. Frequently they are unaware of even the manufacturer's maintenance requirements.

A legal requirement for installation of detection devices alone is not sufficient. Owners of apartment blocks and their tenants must be educated in the operation and care of alarm systems to ensure that sensory devices are kept in their best operating order.

In summary, the application and use of heat and smoke

detectors should be analyzed and their usefulness re-evaluated. It is difficult to adopt universal regulations for their use as it appears from the previous discussion that each building is unique in its construction, tenant type and occupancy provisions. The detection system which is required in a building should therefore be set up geared to the specific building type and tenancy. This would dictate both what improvements are necessary and what priority the detection system has within the total picture of fire protection for that building.

B. Central Monitoring of Fire Alarm Systems

Once the fire is detected it is important to have an immediate response from the tenants and the fire department. A centrally monitored warning system is a valid trade-off to an approved secondary means of egress by substituting a faster response from the fire department for a faster evacuation. The fire department can provide an additional means of egress by ladders as well as manpower to assist in evacuation and start extinguishment procedures. This is especially important for tenants who are not particularly mobile as in the case of senior citizens and children. The need for a supervised warning system has already been recognized in the new building code for

housing provided for senior citizens even though these buildings have a great degree of compartmentalization from fire designed into them.

In Winnipeg, the value of externally monitoring a building's warning system is appreciated in theory but much less so in practice. For instance, the guidelines provide for central monitoring only in buildings which have more than thirty suites even though it could be useful in smaller blocks. Even the potential coverage requirement in the by-law is not being realized since the City's policy is not to require it for extra hazardous structures.

The Building Commission has provided no explicit rationale for their lack of enthusiasm for central supervision. However, it can be speculated that two reasons are involved: supervision is, after all, an extension of that same early detection system which the Building Commission has de-emphasized, and concern over the possible cost to the City Fire Department's responding to unnecessary alarms. However, it can be counter-argued that the Fire Department is precisely the most appropriate group to first become aware of these unnecessary alarms and to initiate corrective measures, for its role should transcend fire suppression.

The Fire Department and the Board of Commissioners have already recognized the importance of the central supervision issue by setting up a task force in early 1977.²⁷ A critical question is how much support (technical and financial) the City should give to individual buildings in order to integrate them into the central system. However, the task force has not yet reported.

C. Management of Building and Supervision

It is possible to reduce the likelihood of fire through proper management supervision. Through the use of prevention training, routine fire drills, and instruction of what a fire drill entails other than simple evacuation, both management and caretakers can teach their tenants to be more fire safety conscious. In general, the current upgrading program is being handled as an inspection project. There has been no emphasis placed upon the public fire protection forces to take the initiative in this education process of self-help training.²⁸

27. Letter from City Communications Engineer to I.U.S., Feb.11,1977.

28. Constructing an effective fire safety education program, for some assistance see - Richard Peacock, "Fire Prevention - a Blueprint for Changing out Attitudes and Actions," Fire Command (October 1974) p.24 and Edward Crossman, "A Fire Risk and Readiness Study of Berkley Households," Fire Journal(January 1877) pp.67-70.

D. Cost Effectiveness and Priorization

The issue of when repairs should be made can be addressed at both the macro and micro level. In the case of the Apartment Upgrading By-law, the macro or city wide level, the city has already decided to do a total and comprehensive inspection of all buildings starting with the oldest buildings first. This approach, predicated on the assumption that the oldest buildings are the greatest fire risk, offers the additional advantage of relative administrative simplicity. While such an approach may be commendable in that it will theoretically eventually provide a comprehensive coverage of the buildings, the magnitude of the problem and the small size of the inspection team mean that years are required to complete the program. An alternative process which may be equally or more effective would be the universal requirement that the single most effective measure be immediately applied to all buildings. Such an approach has already been suggested (in the specific case of the rooming house building type) by the judge at a coroners inquest following a multiple death fire.²⁹ In fact, the City itself has already implicitly followed this approach with the Fire Alarm By-law. The City, in essence, did isolate one component of fire safety - public area alarm systems - and required their installation

29. Report of Provincial Judge Gyles, Preston Avenue Fire Deaths, April 6, 1977, pp.6-7.

universally by a certain date in all buildings (not only residential) four storeys and over, regardless of their age. This approach, however, was consciously rejected³⁰ for the Apartment Upgrading Program, notwithstanding the fact that the lower buildings constitute as great a fire hazard.

Thus, implicitly, the City is following a process of time prioritization in its approach to the whole problem. By contrast, at the level of the individual building, the City's position is generally³¹ that all fire safety improvements are of equal importance, and all must be completed at the same time. The Building Commission rejects the possibility of prioritizing these improvements.

The Building Commission feel quite strongly that they cannot properly relate safety to time. While they recognize that financial problems cannot be completely ignored, they have stated that they are neither equipped nor prepared to accept the responsibility of assessing the financial ramifications of upgrading orders.³²

30. Report of Building Commission to Environment Committee, City Council Agenda, April 6, 1977, item 20, p.100.

31. The one exception to date is the Warwick Apartments. The Committee of Environment allowed a time-phased prioritization over the objection of the Building Commission.

32. Letter from the Building Commission to Environment Committee regarding the Warwick Building Appeal, October 12, 1977.

No one has taken the initiative to properly assemble priorities and their scheduling. There is a legitimate concern by officials as to how much risk is permissible. On the other hand, in the absence of priorities and without any major assistance to owners for upgrading, an undue hardship is created when every improvement must be completed without any phasing.

The City must either improve financial assistance or else prioritize the requirements by their cost effectiveness or both. In the case of financial assistance, the City could develop a program of grants and low-interest loans. Nor is direct fiscal contribution the only financial measure available to the city; tax incentives and disincentives and encouragement of support from private lending institutions and insurance firms as to their policies and criteria are among the others.

In addition to financial measures, it is crucial that the City develop a basis for prioritizing its fire safety requirements and programs, both at the City-wide and individual building level. Such a prioritization has been attempted in Ontario, and is summarized elsewhere in this chapter.

3-2 Inspection Approaches

The effectiveness of the Upgrading By-laws are only as effective as their administration. There are two components to this administration: the inspection and the enforcement.

1. Inspection

Each by-law has its own inspection requirements, (as explained in section 2), each requiring different expertise. Consequently many inspection divisions and City departments are involved. There is some degree of overlap which is confusing to owners and the public.³³

For example, under the Fire Alarm By-law, the Electrical Division of the building inspection branch is involved in the inspection. Their electrical expertise has not trained them to be aware of other fire sensitive problems which may then go undetected. Moreover, placement of the correct type of detector in the right spot so that it will work well requires considerable judgement about the nature of fire

33. See, for example, the City's advertisement to owners concerning by-law requirements, Winnipeg Tribune, March 5, 1977, p.81 which clearly illustrates the overlap of the by-laws, the fragmentation of the responsibility for them and the considerable problem facing the owner in ascertaining which and how many of the by-laws are applicable to him.

behaviour. The proper electrical hookup and wiring is a secondary issue. Therefore, the lead role for inspection should not be played by electrical specialists as it is currently practiced for the Fire Alarm By-law.

Although the creation of a Committee on Co-ordination of Inspection Forces has attempted to alleviate the problem of compartmentalization at the administrative level, this does not obviate the need for integration at the operational level.

2. Enforcement

The current inspection system for all by-laws is fragmented due to historic factors in the creation of the City's by-laws and agencies. However, this compartmentalization needs to be rationalized in response to complexities of current City enforcement practices. Whereas initially only those who either failed to take out a permit to do the work or those who took out the permit and then did nothing were prosecuted. The City is now taking a more aggressive posture and prosecuting those who do not make satisfactorily complete the work, even though a substantial portion may be completed. Efforts to prosecute have, in the past, have been hampered by two impediments: the backlog of cases before the courts and concomitant

delays, and until recently the minimal fines handed out.

The prosecutions almost, invariably result in convictions

In the early stages of the program, fines were as low as \$25, clearly a token penalty and a totally ineffective deterrent. However, it must be remembered that the real objective of the program is the upgrading of buildings, rather than the compilation of an extensive record of prosecutions and convictions. For this reason, the inspection branch has shown considerable flexibility with owners, frequently declining to prosecute in cases where technically they could, on the defensible reasoning that progress was being made on the building and a conviction would retard or destroy co-operation between the owner and the City.

Exacerbating this confusion is the City's practice of including in its initial notification to owners under the Apartment Upgrading Program, the statement that further inspection orders may be forthcoming under other by-laws, in particular the Maintenance and Occupancy By-law.

The technical complexity of this Maintenance and Occupancy By-law coupled with the ambiguities surrounding the degree of non-compliance and schedule of compliance together

create tremendous uncertainty in the mind of the owner. This mitigates against prompt compliance by the owner with the Apartment Upgrading By-law.

Improvements which could better the effectiveness of the administration of the upgrading by-laws are itemized below.

- a. Fragmentation begins at the management and City Council level of government. The Fire Department and its governing by-law, the Fire Prevention By-law, are the responsibility of the Finance Committee. The other inspection branches including all the upgrading for fire safety purposes report to the Committee of Environment, yet housing is the common link. Appeals go to the Committee of Environment. Council members are spending valuable time with quasi judicial responsibilities and have less time for more important policy issues. Many of these appeals could be better dealt with at the administrative level.
- b. Rather than the fragmented inspection system which presently exists, a team approach would be more efficient. Through case conferences between health, fire and building inspectors, a building could be dealt with in a generic sense. There is already a

precedent for this approach in the NIP program with the generalist inspector.

- c. The technical language of the by-laws and orders themselves should be supplemented by a pamphlet in laymans language, as for example is done by the Rentalsman Office with regard to the Landlord Tenant Act.
- d. A strengthened and simplified system of prosecution is needed. Minor infractions could be handled through a ticketing system.
- e. There is a need for either inspector education to improve their knowledge of fire situations beyond the requirements of the by-laws or a shift of responsibility of fire inspection to people with a fire background.
- f. Inspectors could be better trained to advise property owners with regard to the orders against buildings. Presently, they offer a single dimension inspection service which does not promote dialogue with the owners or tenants as well as it could.

In light of the comments contained in this report, the following recommendations will reinforce the process of code enforcement in Winnipeg.

RECOMMENDATIONS

There is a need for a re-assessment of the principles and formula for fire safety and prevention. In the present codes, the emphasis has been placed on physical alternations to a structure to prohibit the spread of fire. Recent evidence, particularly from the United States, has provided a statistical base revealing where and how fires start and suggesting alternative means of prevention. It is clear from these studies that Winnipeg should re-evaluate its code enforcement program to see if we are getting the full package of benefits for resources spent. In order for this to happen the re-evaluation would require a conscious, overt decision by Council.

Moreover, it should be remembered that the specific alterations to the fire safety program recommended here are in themselves a part of a larger system of community fire protection. They could be maximally effective if contained within a larger, more comprehensive planning effort for the entire fire safety system.

This is important since the various components of the City's fire safety system are closely interrelated and changes such as these recommended here show implications for other components. For example, changes in the fire safety measures employed within buildings may affect the placement of fire stations and number of men necessary to man vehicles.

The recommendations have been organized under the following

- categories:
1. City Administrative Structure
 2. Fiscal Measures
 3. Fire Education
 4. Technical By-law Considerations.

City Administrative Structure

1. There is need for integration of all aspects of the fire safety system. Co-ordination of all city departments involved in code enforcement needs to be improved. The present system of a Committee of Department Heads, while a significant improvement over the past, is not the final answer. A separate housing inspection division for existing buildings should be considered. It might be composed of elements of the present health, licensing, environmental planning and fire departments.
2. The role of the Building Commission vis a vis City Council should be evaluated. In theory Council is responsible for

policy guidance regarding the larger implications of the upgrading program and the Building Commission is responsible for purely technical advice. However, in practice these roles become somewhat blurred. Many of the Building Commission's recommendations transcend mere technical considerations and become ones of policy whereas Council's ostensible policy inputs (in the form of guidelines) actually constitute a reiteration of the technical solutions recommended by the Building Commission. What is required is clearly written policy direction from Council to the Building Commission indicating Council's overriding political objectives for this program. Such policy considerations would include a concern for the preservation of housing stock, and an appreciation of the economic feasibility of the alternative technical measures under consideration. This would be of invaluable assistance to the Building Commission in more clearly delineating its role, and placing its technical work in a larger context, so that it does not jeopardize other overriding policy concerns.

3. If Council Committees are to be the bodies of appeal, housing safety requirements should be located in the same Committee of Council. This would allow Councillors the opportunity to

sense the issues involved in housing and safety. Alternately, a separate housing appeal system should be created so that Council Committees can deal with programs and policies rather than individual appeals.

4. The responsibilities of the different Council Committees for fire⁹ related matters should be clarified and rationalized. Rather than the current division of responsibility between Finance and Environment Committees, the decision making authority should be lodged within a single Council Committee. Similarly the reporting relationship with the city administration should be similarly rationalized i.e., the Fire Chief would then report to such a Committee. This is a question the Council should deal with as part of its discussion on the restructuring of the municipal government.

Fiscal Measures

1. The nature of our codes as passed since 1972 has been retroactive in effect which puts a special obligation on the City of minimizing the hardship to individual owners. It is important that some assistance be given to owners. Concern has been voiced in the past by the City Administration that such a program would be tantamount to subsidization

for slum landlords. However, in the first place, such a program could be designed in such a way to give Council complete discretion in the allocation of funding. Moreover, it should be remembered that the important consideration is improving the living conditions for tenants, and disfav-
our for a particular landlord should not be allowed to obscure this issue.

2. The existing rate of compliance has shown that a purely regulatory approach will not gain total compliance. Compliance could be facilitated by:
 - a. extending time phasing and prioritizing repairs according to their cost effectiveness for fire safety,
 - b. utilizing fiscal or tax measures, such as grants, low-interest loans, and tax incentives and disincentives.

Fire Education

1. There is nothing in the codes for continued education to management training. Residents, caretakers and managers have to be included in the effort to improve safety conditions. There should be a training program of inspectors and fire department personnel in both educational techniques and new trends in fire protection to provide an information network

both inside and outside the profession.

2. The Fire Department's activities of fire prevention and inspection should be strengthened by a) increasing the educational component and b) training and utilizing to a greater degree the manpower assigned to fire stations for essential fire suppression. Fire stations could become a local neighbourhood resource for the dissemination of fire safety advice and information.
3. There should be mechanisms to raise fire safety awareness amongst tenants and property owners. These should include a team inspection approach with the objective to talk with and educate the occupants of buildings being inspected. The standards and by-laws cannot normally be written in layman's terms. However, in order to make them understandable to the general public, they should be supplemented by appropriate explanatory material.

Technical By-law Considerations

1. Winnipeg should follow the example of many jurisdictions in Canada and the United States and require individual smoke detectors in single family homes and apartment suites in both new and existing buildings. In addition to the legal

requirements, the equipment must be properly located, installed and maintained in conjunction with a fire safety inspection program.

2. The Building Department's \$10,000 budget request for National Research Council tests of flame retardent paints on existing surfaces should be supported. The major benefit of this would be the present requirements affecting hall and stair wall surfaces and doors to suites. This approach would have significant impact on the economic, aesthetic and management concerns about the upgrading of older buildings.

As the results and effects of the by-laws, standards and enforcement program are evaluated, the following questions should be asked: At what cost is this being done? Who will benefit? Who will pay? and Why is this particular approach being taken instead of others?