

Motion Controlled Apartment Building Corridor Lighting

Date:	April 20, 2009
To:	Licensing and Standards Committee
From:	Executive Director – Municipal Licensing and Standards
Wards:	All
Reference Number:	P:\2009\Cluster B\MLS\L&S Committee\May\Sensor Controlled Lighting April 20 2009.doc

SUMMARY

The Ontario Building Code in section 12.2.2.1 permits the use of motion sensor controlled lighting in the common areas of apartment buildings except where the lighting is intended for 24-hour operation; the lighting is emergency lighting; or the lighting for spaces where an automatic shut-off would endanger safety or security

The purpose of this report is to recommend an amendment of the Toronto Municipal Code Chapter 629, Property Standards, § 629-36 so that the owners of existing multiple residential apartment buildings are permitted to realize energy savings by permitting the installation and use of motion controlled switches.

Three areas in buildings were considered: interior corridors; stairways; and garages.

All interior lighting required to provide a minimum level of illumination may be controlled by motion sensor controlled switches, except where the lighting is:

- (a) For a storage garage with a capacity of more than five vehicles.
- (b) For a stairway.
- (c) Adjacent to or within a doorway identified as an exit.

It is also considered, from a safety and security prospective, to be highly desirable that a minimum level of illumination of 10 lux is maintained at all times, in all areas.

RECOMMENDATIONS

The Executive Director, Municipal Licensing and Standards recommends that:

1. The City of Toronto Municipal Code Chapter 629, Property Standards, be amended substantially as follows:

- a. The following definition be inserted in alphabetical order in § 629-1, Definitions:

MOTION SENSOR CONTROLLED SWITCH —An electrical control device activated by movement within a defined area, for the purpose of operating one or more electrical fixtures

- b. Section 629-36, Lighting, be amended by adding the following:

H. Motion sensor controlled switches.

- (1) All interior lighting required by this chapter to provide a minimum level of illumination may be controlled by motion sensor controlled switches, except where the lighting is:
 - (a) For a storage garage with a capacity of more than five vehicles.
 - (b) For a stairway.
 - (c) Adjacent to or within a doorway identified as an exit.
- (2) A motion sensor controlled switch permitted under Subsection H(1) shall:
 - (a) Be designed for fail-safe operation so that if the motion sensor controlled switch fails, the electrical fixture which it controls activates.
 - (b) Control an area that is not more than 240 square metres or 7.5 metres in any direction.
 - (c) Maintain the lights within its area of control active for a minimum of 15 minutes after the activity that caused the light to activate has stopped or left its area of control.
- (3) Where lighting is activated by motion sensor controlled switches permitted under Subsection H(1):

- (a) All of the lighting within an area contained between vertical partitions shall be activated by the operation of any motion sensor controlled switch located within that area.
 - (b) A minimum level of illumination of 10 lux, and equal to the minimum level of illumination required for emergency lighting shall be provided to all areas, at all times.
- 2. The City Solicitor prepare the necessary bill to give effect to the recommendations of this report.

Financial Impact

There is **no** financial impact beyond what has already been approved in the current year's budget

COMMENTS

In June 2006, Toronto City Council directed staff to develop a plan that addressed energy conservation on a short, medium and long term basis.

In June 2006, the Ontario Provincial Government passed regulation 349/06 which re-enacted the Ontario Building Code with new section 12.2.2.1 which permits motion sensor controlled lighting in the common areas of apartment buildings. As the Ontario Building Code applies to new construction, the owner of an existing building could only use motion sensors to control lighting if this use does not conflict with the standards in Municipal Code Chapter 629.

Regulation 349/06, which became sec 12.2.2., of the Ontario Building Code, and states:

Section: 12.2.2.1. Motion Sensors

- (1) Lighting installed to provide the minimum illumination levels required by this Code may be controlled by motion sensors except where the lighting
 - (a) is installed in an *exit*,
 - (b) is installed in a corridor serving patients or residents in a Group B, Division 2 or Division 3 *occupancy*, or (*hospitals or care facilities*)
 - (c) is required to conform to Sentence 3.2.7.1.(5).
- (2) Where motion sensors are used to control minimum lighting in a *public corridor* or corridor providing *access to exit* for the public, the motion sensors shall be installed with switch controllers equipped for fail-safe operation and illumination timers set for a minimum 15-minute duration.
- (3) A motion sensor shall not be used to control emergency lighting.

In addition the section 12.2.2., the Ontario Building Code also has section 12.3.4.9. Interior Lighting Controls, which states:

- (1) Except as provided by Sentence (2), interior lighting in a *building* that exceeds 500 m² in *building area* shall be controlled with an automatic control device to shut off *building* lighting in all spaces.
- (2) Sentence (1) does not apply to,
- (a) lighting intended for 24-hour operation,
 - (b) emergency lighting, or
 - (c) lighting for spaces where an automatic shut-off would endanger safety or security
- (3) The automatic control device required in Sentence (1) shall operate on,
- (a) a scheduled basis using a time-of-day operated control device that turns lighting off at specific programmed times,
 - (b) an occupant sensor that shall turn lighting off within 30 minutes of an occupant leaving a space, or
 - (c) a signal from another control or alarm system that indicates the area is unoccupied.
- (4) Where the automatic control device conforms to Clause 12.3.4.9.(3)(a), an independent program schedule shall be provided for each floor.
- (5) Each space enclosed by *partitions* that extend to the ceiling shall have at least one control device to independently control the general lighting within the space.
- (6) Each manual operated control device shall be readily accessible and located so the occupants can see the controlled lighting.
- (7) Except as required by Sentences (8) and (9) and except for reasons of safety or security, an individual control device shall,
- (a) be capable of being activated,
 - (i) either manually, or
 - (ii) automatically by sensing an occupant,
 - (b) control a floor area having an area not more than 240 m², and
 - (c) be capable of overriding at any time of-day scheduled shut-off control for not more than 4 h.
- (8) Except in spaces with multi-scene control, a control device that automatically turns lighting off within 30 minutes of all occupants leaving a space shall be provided in,
- (a) conference rooms, (b) meeting rooms, and (c) employee lunch and break rooms.
- (9) A separate control device shall control,
- (a) display lighting, (b) accent lighting, (c) case lighting, (d) task lighting, (e) non-visual lighting, and (f) demonstration lighting.

In December of 2008, Municipal Licensing and Standards was approached by owners of existing buildings, to amend the Toronto Municipal Code, Chapter 629, Property Standards, to permit the use of motion sensor controlled lighting in the common areas of existing apartment buildings. Three areas in buildings were considered: interior corridors; stairways; and garages.

Automatic control of lighting within is positive from an energy efficiency and conservation prospective. However, there is safety and security considerations with respect to reducing the level of illumination which is present at all times.

A review of the Chapter and the Building Code was conducted, and considering safety and security concerns, it is recommended that:

All interior lighting required to provide a minimum level of illumination may be controlled by motion sensor controlled switches, except where the lighting is:

- (a) For a storage garage with a capacity of more than five vehicles.
- (b) For a stairway.
- (c) Adjacent to or within a doorway identified as an exit.

As noted above, sec 12.3.4.9. of the Building Code states that interior lighting in a *building* that exceeds 500 m² in *building area* shall be controlled with an automatic control device to shut off *building* lighting except:

- (a) lighting intended for 24-hour operation,
- (b) emergency lighting, or
- (c) lighting for spaces where an automatic shut-off would endanger safety or security.

It is for the reasons specified in articles (a) & (c) that motion sensor controlled lighting is not be recommended for use in stairwells and garages with a capacity of more than five vehicles.

It is also considered, from a safety and security prospective, to be highly desirable that a minimum level of illumination is maintained at all times, in all areas. It is recommended that this minimum level of illumination of 10 lux is being recommended. This lighting level is the same as that provided by emergency lighting.

The following City Divisions & Organizations were consulted prior to this report being submitted: Legal Services Division; the City Managers Office, Tower Renewal Program; the Toronto Police Service; the Energy Efficiency Office; City Planning Division; the Canadian Apartment Properties Real Estate Investment Trust; The Crime Prevention Association of Toronto; and Crime Prevention Through Environmental Design Ontario.

CONTACT

Warwick R. Perrin
Policy and Research Consultant
Municipal Licensing and Standards
City Hall, 12th Floor, East Tower
100 Queen Street West
Toronto, Ontario
M5H 2N2

Tel: (416) 392-8096
Fax: (416) 397-5463
wperrin@toronto.ca

SIGNATURE

Jim Hart
Executive Director,
Municipal Licensing and Standards.