

Signs of the Times: An Integrated Approach for Permanent Signs in Ottawa

Analysis: Illumination

The [Permanent Signs on Private Property By-law](#) (the By-law) specifies whether or not signs can be artificially illuminated, and, if so, in which areas, the separation from other uses, and the type(s) of illumination allowed, including:

- External – lighting directed at the sign from an external source such as gooseneck lamps, spotlights, floodlights
- Internal – lighting projects from inside the signage panel, box or letters with the light source being fluorescent lights, LEDs, neon tubing
- Reversed – illumination through the lettering or graphics of an opaque sign face
- Digital – for digital billboards and electronic message centres (EMCs)



External illumination

In the realm of non-digital signs, external illumination is considered the least obtrusive of the methods used to illuminate signs and internal illumination the most obtrusive. Digital displays (EMCs and billboards) have the greatest impact in terms of brightness.



Internal illumination

Illumination is usually not permitted in residential areas. Provisions are less restrictive in non-residential areas (commercial, industrial, institutional, agricultural). Where illumination is allowed, there are limitations if:

- The sign is within 30 metres of a residential use (dwelling) in a residential zone if the sign is visible from the residential use (prohibited)
- It is a ground sign located between 30 and 45 metres from a residential use in a residential zone.



Digital billboard

EMCs and digital billboards are generally only allowed in commercial and industrial zones. They are subject to location and operational restrictions, including maximum brightness levels to control their impact on adjacent uses and limit their distracting effects. These brightness levels are 5,000 cd/m² (for EMCs) or 6,000 cd/m² (for digital billboards) between sunrise and sunset and 300

cd/m² (for EMCs) or 220 cd/m² (for digital billboards) between sunset and sunrise,

controlled by an automatic sensor so as to display lighting of no more than 3 LUX above ambient light conditions. The brightness parameters in other municipalities that regulate these signs are all over the map.

Guidelines for digital displays issued recently by the Transportation Association of Canada (TAC) recommend illumination levels up to 3 LUX above ambient light, or where a sign is not equipped with an ambient light sensor, a fixed 100 cd/m² brightness with no differentiation between day and night.

cd/m² and LUX

There are two ways to determine sign brightness. The first measures luminance in “nits” or “candelas per square metre” (cd/m²). This is the intensity of light that is emitted from the sign, and is not dependent on the distance from the sign. The second measures illuminance in lumens per square metre, or LUX, which is the intensity of light at the sign surface from all sources, measured at a specific distance.

Most other Ontario municipalities also regulate the areas where artificial illumination is permitted and differentiate between internal and external illumination (sometimes called direct and indirect lighting).

Restrictions on illumination include:

- Times during which illumination is permitted for all or some signs (for example, between 7:00 a.m. and 11:00 p.m. during business hours, etc.) (Toronto, Kitchener, Burlington)
- Levels of brightness for all signs, not just digital displays (Toronto, Kitchener)
- Prohibitions in residential areas and/or adjacent to residential areas (most)
- No light trespass on residential or open space areas (most)
- Only specific types of illumination allowed in certain areas (most)
- Other operational limitations, such as requiring lights be fully shielded and/or oriented downward, no flashing or flashing permitted only in designated areas (Brampton, Markham, Kitchener, Windsor)



EMC on internally-illuminated ground sign

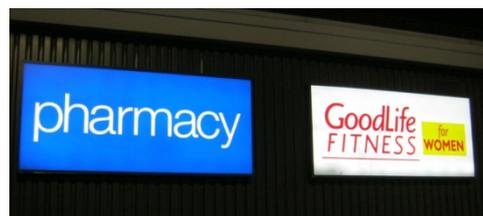
How does illumination fit in with the objectives for the City’s review of its approach to signage?

Public safety. Illuminated signs can pose a safety hazard if they are too bright, incorporate special effects, or where light sources are directed at passers-by in a way that “blinds” them or otherwise diverts their attention at decision-making points such as intersections or driveways. On the other hand, they may facilitate after-dark wayfinding and situational awareness.

Design context. The most significant compatibility-related sign illumination issue is its impact on residential dwellings and other sensitive areas such as environmental protection zones and open spaces. The current By-law generally prohibits illuminated signs in these

uses and restricts them in adjacent-to-residential areas where light spillage could be problematic. However, with intensification in urban areas, more mixed-use developments, and the rezoning of certain properties in residential neighbourhoods to permit “local commercial” uses, it is a challenge to balance the needs of businesses for visibility with the concerns of residents with respect to light trespass. Setbacks are a typical method of reducing the impact on residential properties, but intensification, infill and smaller lots are creating more complicated scenarios that generic setbacks cannot adequately address. Setbacks also do not take into account the size of an illuminated sign, with larger signs having a greater impact than smaller ones at the same distance.

With Ottawa being Canada’s capital and the site of many important historic and cultural landmarks (such as Parliament, the National War Memorial, the Rideau Canal), the City faces additional constraints in crafting sign illumination provisions that respect the significance of these landmarks as well as the National Capital Commission’s (NCC’s) Views Protection Policy (VPP), signage design principles and high level guidelines (for example, the NCC guidelines state that “corporate logos not be permitted where they will be visible from the Rideau Canal...”). Another issue is the impact of illuminated signs, particularly large signs such as digital billboards, on the night sky and traditional views of the rural landscape. Skyglow generated by illuminated signs contrasted against the dark backdrops found in rural areas is perceived by many as more problematic than the impact of bright signs in an urban context. Also to be considered are the varying effects of different kinds of sign illumination and whether certain types of higher-impact signs should be limited to particular areas. The current By-law specifies that only reversed illumination (a type of internal illumination that uses a darker-coloured opaque background with white or lighter-coloured lettering to reduce the brightness of a sign) can be used in districts where light trespass is an issue. The example below shows reversed illumination on the left, and standard internal illumination on the right.



Reversed illumination (left); Internal illumination (right)

Halo lighting behind unlit channel letters is another approach to mitigating light trespass and making a lighted sign more compatible with its surroundings. The examples below illustrate how the impact of illumination can be reduced through various lighting techniques.



Non-illuminated channel letters with halo lighting

Some municipalities restrict the hours a sign can be illuminated or set daytime/night-time limits for sign brightness to address illumination issues. Ottawa does the latter for digital billboards and EMCs, but not for other types of illuminated signs. Enforcement of luminance and illuminance limits requires special equipment (nit guns, illuminance meters) and is most effective with regular monitoring and/or random spot checks of compliance.

Economic Development. Illumination contributes to the visibility of signs after dark, particularly for signs that are in locations with no ambient light (streetlights, etc.) nearby. This can be important for some businesses that operate into the evening or 24/7. Some argue that an on-premise sign needs to be visible regardless of a business's operating hours since it is a form of identification and advertising, and that on/off times undermine those functions and diminish the value of the sign. On the other hand, more and more businesses now rely on establishing their brand and presence through online means and social media, reducing the need for nighttime on-premise illumination. Ottawa's By-law currently only controls levels of illumination for digital billboards and EMCs. The illumination levels in the By-law were established prior to the development of the TAC recommendations. They are consistent with the latter with respect to LUX above ambient light, but much higher than the recommended 100 cd/m^2 brightness limit which is intended to have digital displays no brighter than conventional illuminated signs. The higher existing permissible levels might explain why some of the in-place digital billboards appear illegible at night due to excessive brightness/screen glare, defeating the benefits of the technology and generating complaints from the public.