

Written submission, for Pelham Town Council

We are here to request development and implementation of an official outdoor lighting policy.

Pelham Town Council in May 2007 passed a resolution to prepare a standards and policies bylaw:

C-88-2007

Minutes of a regular meeting of Council held on Monday, May 7th, 2007 at 7:00 p.m. in the Municipal Council Chambers, 20 Pelham Town Square, Fonthill.

RESOLUTION NO. 2

MOVED BY COUNCILLOR P. PAPP, SECONDED BY COUNCILLOR S. COOK

THAT staff be directed to prepare a standards and policies by-law in line with the bylaw of the Regional Municipality of Niagara for presentation at a future date, with regard to responsible lighting.

Regional Policy (7.C.1.8, 2005) recognizes the adverse impacts of light pollution and pledges to develop a strategy to address it:

DPD 155-2005, Appendix I

December 7, 2005

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SECTION SEVEN ENVIRONMENTAL POLICIES

Policy 7.C.1.8 The Region, recognizing that excessive, unnecessary or misdirected outdoor lighting can have adverse impacts on the environment, the economy and human health as well as on the quality of the night sky, will investigate outdoor lighting and develop a strategy to address it.

Since then, light pollution has burgeoned, as is obvious in this comparison.

Not only is every photon visible [in this slide] utterly wasted, light pollution has insidious effects on people and the environment.

Light trespass, glare and skyglow affect everyone.

The causes of light pollution are easily understood.

This could be summarized simply as “Too much light, in the wrong places, wrong spectra”

Light pollution is emphatically NOT an aspect of modern civilization that we should just accept.

Of its many adverse consequences, we'll touch on these few:

- Human health
- Safety and security
- Environment and wildlife
- Economics

Human health concerns:

Light is biologically active.

Almost all organisms operate with a circadian rhythm regulated by our 24-hour daily cycle. Only in the last century has this natural cycle been disrupted.

Exposure to bright light after sunset confuses our internal regulation; it triggers daytime biology, and eliminates the darkness essential for regulating our circadian clock.

New scientific advances are helping understand how we detect light and how our entire genome is directly affected. Circadian rhythmicity is crucial to overall health, including control of metabolism, DNA repair, hormone production, cell regulation, and sleep patterns.

While any bright light suppresses natural production of the hormone melatonin, blue wavelengths have the greatest effect ... and blues are prevalent in most LED lights.

We rarely see blue light, but we might remember from school and Newton's prism that white light *contains* blue. Though human vision is relatively insensitive to perception of blue wavelengths, they are still detected, mainly by a type of receptor in the eye discovered less than two decades ago.

The science of how light affects life is young, but warning signs are clear.

Many scholarly articles have sounded alarms, and authoritative organizations have expressed concern. Just two examples:

- the American Medical Association (AMA) notes that:
 - Pervasive nighttime lighting disrupts various biological processes, potentially creating harmful health effects, including potential carcinogenic effects related to melatonin suppression, especially for breast and prostate cancer.
 - Circadian disruption may worsen other conditions including other cancers, obesity, diabetes, and psychiatric disorders; and may affect prognosis in treatment and therapy.
 - Bright residential nighttime lighting is associated with reduced sleep time and quality, and impaired daytime functioning.

AMA's official Policy advocates reduction of light pollution.

- In 2007, the World Health Organization concluded that "shiftwork that involves circadian disruption is probably carcinogenic to humans."

Safety and security:

Two major aspects of light pollution are glare and trespass/intrusion.

Glare, caused by excessive contrast (lights too bright compared to surroundings) causes discomfort and often vision disability.

Glare reduces safety and security because we cannot see adjacent areas, and because our vision is inhibited afterward (think of those oncoming cars with dazzling bluish headlights).

Light trespass even intrudes into our homes.

Trashy, glary, cluttered nightscapes are not only unpleasant; they hamper visibility and navigation, placing drivers and pedestrians at risk. The effects are worse in rain, snow, and fog.

Because the aging eye is more affected, there are even greater consequences for an aging population.

Environment and wildlife:

Humans are not the only life forms affected by light.

Light at night has profound effects on an astonishingly wide variety of organisms, including plants, microbes, insects, birds, mammals, and more.

A large proportion of animals are nocturnal, potentially adversely affected by nighttime lighting.

Artificial lighting also consumes resources and contributes to other forms of pollution.

As for Economics:

Using light in a smarter way means we need to produce less of it, therefore reducing use of resources, including electricity. Cost and other implications are pretty obvious.

This is just the briefest overview of some of the problems associated with light pollution.

But society is not going back to pre-electricity times.

So, what can be done?

Of all the forms of pollution and environmental degradation, light pollution is the simplest to control, and its control usually *saves* money.

The basic principles of light pollution abatement are very simple and sensible:

- use only as much light as needed
- light only *where* needed
- light only *when* needed
- use energy-efficient lamps
- avoid emission of blue wavelengths (<500 nm); maximum acceptable CCT 2700K
- wherever appropriate, use motion-sensing fixtures

Often it's as simple as choosing the right fixtures.

Following these basic principles results in better lighting for less cost.

Respectful lighting prevents lighting that is misdirected, excessive, unsafe, or unnecessary. It:

- Protects human health

- Improves visibility, safety, security, and nightscape esthetics
- Limits impacts on the natural environment and wildlife
- Conserves energy and resources, saves money
- Reduces the potential for conflict among residents and businesses
- Curtails degradation of the nighttime visual environment and the natural night sky

Other jurisdictions, including entire countries, have enacted legislation to curb light pollution. Here at home, we can begin addressing rampant light pollution by developing and implementing an official light pollution abatement policy.

A lighting policy would mandate *smart* lighting ... *respectful* lighting.

A respectful lighting policy would support nightscapes that are considerate of health and environment, that are safe, inviting, and economical.

What a pleasant contrast to so many other garish, trashy, confusing, cluttered places.

By having a good policy in place, the Town could avoid conflicts and costs experienced by other jurisdictions.

It's true that a municipal Policy is limited in scope. It primarily affects municipally-controlled properties, and it would influence new developments through site plan control.

Though it would not, by itself, address all existing problems, it would allow the Town to lead by example.

At some point, the Town might decide that it's a good idea to develop a bylaw, as many municipalities have done.

The literature about light pollution is vast, and here we are able to make only the briefest introduction to the subject, so helpful electronic files have been provided as supplements, including a draft policy framework.

We are willing to assist as much as possible in the process of policy development.

We urge that the development and implementation of a light pollution control policy be a matter of priority.

Thank you.