

## The Light-Efficient Community (LEC)

### – A Win-Win for Dark Skies and Communities Alike

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In many cases, efforts to protect or create dark sky areas and combat light pollution have met with far less than desirable results in spite of the resources brought into play. However, the concept of the Light-Efficient Community is gathering increased awareness and interest as communities of various sizes create policies and adopt programs supporting the concept.

I live in the city of Edmonton, Alberta, an extremely light-polluted community of nearly one million people. I also have a home located 150 km northeast, near the hamlet of Ashmont. An avid astronomy buff since childhood, I enjoyed dark, spectacular night skies filled with brilliant stars. However, over the years, light pollution from growing towns and the city of Edmonton gradually increased and slowly crept over the horizon. The glow from Edmonton is now a never-ending sunset blanketing the south-western skies while polluting all of central Alberta.

On a warm November night in 2008, I sat under the black velvet darkness of a moonless sky pondering what could be done to combat the encroaching light pollution from Edmonton and save my dark skies. Something had to be done and I was determined to see changes made. I decided to form an association, **The Alberta Dark Sky Association** and spent time researching light pollution and its effects while preparing

educational materials. I also created a web site to provide on-line support and materials for our educational efforts ([www.AlbertaDarkSky.ca](http://www.AlbertaDarkSky.ca)).

I initiated a meeting with Karen Leibovici, my city councillor, and provided her with a set of materials including photographs showing Edmonton's light dome, visible from 150 km away. Edmonton's wasted light was lighting our fields at that distance! The tremendous amount of wasted energy, the costs involved and the effects on resources; land air and water pollution, along with health and environmental effects was also emphasized along with solutions. Although I was promised a fifteen-minute meeting, three-quarters of an hour later we were still talking. Councillor Leibovici, followed by Councillor Iveson and others became staunch supporters for changes in the city's lighting policy.

I also met with a people from various professions and organizations with similar concerns. Eventually, we formed a loose association with common goals related to reducing light pollution, exchanging information and pooling our resources. We also had to gain a realistic understanding of public perceptions of light pollution and how that knowledge could be used to create effective educational programs leading to public support and major changes in lighting in our community.

Dark skies are not a prime concern for the general public. The greatest part of our population, born and raised in towns and cities, has never been under a truly dark sky and has no experience with which to relate. Most people have never

experienced the incredible spectacle of a dark night sky, brilliant stars and the Milky Way extending from horizon to horizon. Their nights are flooded with porch lights, streetlights, brilliant signs and fully-lit buildings. Thus, there is little reason for concern or support. Previous letters to city council over the years promoting dark skies and requesting light pollution controls were always met with indifference and even ridicule on the part of the public and media.

Dark-sky supporters have had to deal with the public's deeply rooted anxieties and natural fears, emotions as old as humanity. The first reaction to suggestions of light control and reduction is usually great apprehension of the unknown and what could be waiting out there in the darkness. They are afraid of not being able to see and a great concern for the increased criminal activity that would 'automatically follow' light reduction or control.

The lack of knowledge of relevant research and misunderstanding about the creation, effects and reduction of light pollution contributes substantially to a lack of concern and appropriate subsequent action. Lack of knowledge also breeds indifference and inaction. Indeed, for many, the thought of light control or reduction often breeds fear followed by backlash. Attempting to create concern in other people about protecting the dark sky was, in most cases, a futile endeavour but could be changed with education and appropriate goals. As with any educational program, dark sky or light pollution reduction programs must build on previously understood concepts already familiar to and accepted by the public. This makes

it easier for the public to 'buy in' to proposed changes.

As a former science educator, I knew that we had an educational problem to deal with before we could get city council and public acceptance. Our problem was how to create and promote a concept that would utilize previous educational experiences and translate those into an easily-understood concept that what could be achieved that was better than what currently existed.

In the end, the public needed to understand and accept the importance of more intelligent use of light and energy resources. People had to understand that we were not simply going to shut off the lights, but reduce costs while creating a better living environment through the intelligent and judicious use of appropriate lighting. City council had to see the financial advantages, among others, of adopting new lighting technologies and programs in order to support our initiative. We needed something to immediately catch Council's attention and promote change. We needed a catch phrase that would quickly and easily describe our goal state while incorporating the basic concepts with which we were working.

At a meeting of our group in 2009 I recommended that we use the term "**Light-Efficient Community**" to describe our program and the goal state toward which we were working.

***A Light-Efficient Community (LEC) is one that uses lighting intelligently and responsibly. It uses the most effective, efficient artificial lighting available to minimize energy waste, glare, light trespass and light pollution. A Light-Efficient Community employs sound planning, designs, measures, legislation, fixtures, technologies and good lighting practices to reduce its energy costs and carbon footprint while preserving the natural environment and ensuring health, safety, security and a high quality of life for all.***

For our purposes this meant intelligent energy use along with reduced glare, light pollution and trespass. LEC policies are directed not only at exterior city lighting assets but those of government, industry, business and homeowners. It means dramatic energy and cost savings to all areas of the community along with reduced effects on the public health and the environment while promoting better safety and security. (In the end, we could achieve our goals without even mentioning dark skies and running the risk of increasing fears and the consequent backlash.)

The '***Light-Efficient Community***' (LEC) concept is quickly and easily understood. It builds on and encompasses previous and commonly understood concepts (energy savings, efficiency and community along with related goals.) It is easily accepted, given the public concern for energy conservation and the environment along as well as the state of the world's resources, greenhouse gas emissions and environmental damage. LEC policies show fiscal, health, safety, security and environmental responsibility on the part of city councils

– all words councils want to support and the public wants to hear.

Many recent technological changes in lighting have occurred, fortunately just in time to support the LEC initiative. New LED lighting technologies provide highly efficient light production along with the ability to direct the light only where it is needed, when it is needed and in exactly the amounts required. Use of LED streetlighting means reduced energy consumption (up to 80% or more), increased efficiency, better lighting control, improved colour temperatures, longer lifespan, greatly reduced maintenance costs along with reduced power costs. These LED characteristics mesh very well with the LEC approach, not to mention the fiscal goals of the community.

Concurrently, the environmental or 'green' movement has quickly grown and flourished. Communities are now familiar with global concerns over energy and resource use and waste. Through various channels, people of all ages have been subjected to many educational programs promoting energy efficiency and waste reduction as energy costs have continued to rise. They have also become aware of and appreciate the environment, its fragility and the necessity to protect it in order to protect all life on earth. These are all programs on which we could easily build using the LEC approach.

In 2009 we asked for and received the opportunity to meet with the Transportation Department and a city councillor with whom we aired our concerns and suggested ways in which the city's lighting could be improved.

Our emphasis was on lighting efficiency, effectiveness and fiscal responsibility.

This led to continued meetings with City Council and the Transportation Department. At Council's direction, Transportation was ordered to create the **Edmonton Light-Efficient Community Policy Committee**, a body charged with the preparation of creating a new lighting policy for the city. Our group, the **Light-Efficient Community Coalition**, forms part of this working group which includes representatives of other city departments and the city police. The new Light-Efficient Community Policy is expected to be presented to city council early this year and LEC concepts have been incorporated into the city's new long range planning document called 'The Way We Green.'

In the meantime, city council, acting on our recommendations, approved an Interim Light-Efficient Community Policy which immediately prevented the further installation of any lighting but IDA-approved, LED streetlights in residential areas while restricting pole placement changes and light level increases. Energy and cost savings will be substantial! Light pollution, glare and trespass will be reduced. Last year twelve communities have been converted to LED lighting (8,000 LED streetlights) with more planned for each year until completion. Edmontonians and Albertans are on our way to darker skies! Meanwhile, other cities in Alberta have announced plans to convert to LED's and adopt LEC programs.

In March, 2011, the public service efforts of our LEC Coalition were recognized by the Alberta Legislature

when we were introduced to the province's Legislative Assembly.

The "**Light-Efficient Community**" concept has proven easy to understand and accept in our community and others with whom we have worked and are working. It fits in easily with a community's various goals, programs, policies and procedures, already in place in most cases. Our LEC approach is now yielding positive results in various towns and cities throughout Alberta and has the support of councils who see the many fiscal, safety, security, health and environmental advantages to adopting the LEC Program.

With the adoption of the LEC approach, not only do our communities and environment win but so, ultimately, do our dark skies.

More information can be obtained at [www.AlbertaDarkSky.ca](http://www.AlbertaDarkSky.ca)

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